

**Capitalist Development, Space and Environment  
in Postwar Korea:  
A Regulationist Approach**

**Thesis submitted in accordance with the requirements of  
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**by  
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## **Abstract**

This thesis examines the linkages between capitalist development processes and the degradation of the environment, with particular reference to Korea. In order to understand the dynamic relationship between economic, political and social forces and environmental degradation, the study employs a holistic theoretical approach. There seem to be a lot of studies of the environment from many different academic fields. However, due to the epistemological and ontological limitations of these studies, the causal mechanisms of environmental degradation have not been fully exposed. The aim of the thesis is to investigate the causal mechanisms of environmental degradation in Korea using the approach defined by regulation theory, in order to identify the forces and mechanisms (structure and agency) of degradation. The thesis is informed by four main themes: global economic forces, local political economy, spatial structuration, and state regulation including the propagation of hegemonic ideology. Through the analysis of these concrete forms of capitalist development, the intention is to identify the forces and processes which impact upon the environment: economic structure, nature of the state and legislative framework, and political and social regulation.

The regulationist approach has been chosen for the analysis of environmental degradation due to its historical materialist and spatially specific attributes. This theoretical perspective integrates in a detailed manner the economic, political and ideological functions of society into a unitary framework. Recent developments have been directed towards the spatialising of regulation theory in order to link changes in sub-national space with changes in the mode of development. It is this more sophisticated theoretical framework that is considered appropriate to the holistic analysis of environmental transformation.

The conceptual framework of this thesis is that the historical development of the Korean economy is characterised by repeated phases of accumulation-crisis-accumulation, with the state playing a pivotal role in economic and spatial restructuring. The accumulation strategy has not only involved restructuring of the economy, but also restructuring of space. The development of Korean accumulation regimes under state guidance stimulated rapid accumulation and centralisation of capital, which in turn led to uneven spatial development, creating differentiated environmental conditions in regions with differing levels of development. In this respect, the form of spatial transformation and the role of the state are central to the linkage between development and the environment.

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# **Chapter 1**

## **Introduction**

This study was initiated to investigate the linkages between capitalist development processes and the environment. Despite the growing significance of environmental problems in the reproduction of capital, human society and the ecosystem in recent years, a theoretical framework has not yet been established to analyse the causal mechanisms of environmental problems which takes into account the complex dynamics of social forces (Leff, E. 1993). Due to the nature of environmental problems and their linkage with human society, the analysis needs to be holistic and yet it needs at the same time to be at a concrete level. In the first and second sections of this chapter, current environmental literature, political actions and theoretical approaches will be reviewed to show that a new epistemological approach is necessary. In the last section, the purpose, scope and objectives as well as an outline of the chapters of this thesis are described.

### **1.1 Environmental Issues and Concerns**

#### **1.1.1 Global and Local Environmental Problems**

There is not a single country which has not recognised environmental problems, whether they be local or global in origin. The degradation of the environment has increased since the beginning of industrialisation and globalisation of economic activities. Particularly, in the latter half of the Twentieth Century, with the intensification of industrial activities centred around mass consumption of consumer durables, the exploitation of resources and pollution of the global commons have threatened the survival of the entire ecosystem on which humankind depend. The depletion of renewable and non-renewable resources, loss of biodiversity, the pollution of global and local commons, loss of the ozone layer, climate change due to the build up of greenhouse gases and soil erosion and contamination are some of the current global environmental issues (World Bank 1992). However, the causes of global environmental problems are rooted in specific human economic activities and practices in specific places.

During the early industrialisation period in England, the rapid urbanisation in the industrial cities saw a rapid deterioration of urban environmental conditions, particularly for the working classes. Lack of sanitation and housing and the build up of industrial pollution during the Victorian era brought about a political movement for the provision of urban infrastructure, public housing and urban planning (Cherry, G. 1988). Such responses have reduced or resolved some socio-

environmental problems, but as accumulation dynamics intensified, new problems were produced. After the Second World War, with the implementation of an economic system based on mass consumption, the environment has been under greater pressure from development and pollution. Particularly, urban environmental problems of air pollution from automobile use and industries have become a major problem (OECD 1987, 1988). The urbanisation of the countryside has presented widespread challenges to entire ecosystems.

Since the beginning of modern colonialism, the nations of the global periphery have been exploited for their natural resources as well as agricultural products. This has left the Third World countries with such serious problems as rain forest destruction and soil degradation from intensive farming and ranching. The dependency relationship with the core industrialised nations has been seen as the root cause of Third World underdevelopment and environmental destruction. The further twist of globalisation of capital in recent decades has created a new set of issues for the Third World countries because of industrialisation and urbanisation. As multinational companies started to locate their production lines in developing countries, the Newly Industrialising Countries of Latin America, East and Southeast Asia were faced with a range of pollution and urban environmental problems. Due to the concentration of industrial activities and population in the cities with little urban infrastructure and services, the quality of the natural and human environment often came to crisis point. The large sections of the population marginalised in the development process (farmers, the urban poor and much of the working classes) saw their means of reproduction eroded as industrialisation proceeded<sup>1</sup>. The environmental situation of the urban poor in the cities of the late developing countries is widely recognised as one of the most stark issues of a broadly environmental nature (Drakakis-Smith, D. 1987, WCED 1987, Hardoy and Satterthwaite 1989, Goodman and Redclift 1991, Gilbert and Gugler 1992, Hasan and Azam Ali 1992).

Thus, three features arise from this brief review of environmental problems: firstly, the roots of contemporary environmental conditions must be situated in historical development processes. Secondly, although the nations of the world are subject to common (global) economic changes, the state of local environmental problems is quite different from place to place and are differentiated by the level of development and the position in the global economy. Thirdly, global environmental problems are a product of the combined pollution effects of local development processes.

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<sup>1</sup> See Redclift, M. (1984) for environmental problems in Mexico.

### 1.1.2 Recent Developments in Environmental Concern

Concern about the natural and human environment has a long history, but its political importance has grown and changed considerably since the wave of environmental protests which swept across developed countries during the 1960s.<sup>2</sup> Under the pressures of these activities, the UN Economic and Social Council (ECOSOC) issued a call which directly led to the first comprehensive international conference on the environment in Stockholm in 1972<sup>3</sup>.

The Stockholm Conference brought together representatives of 113 countries and 400 intergovernmental and non-governmental organisations (NGOs), and addressed to some extent the concerns brought forward by both the developed and developing countries. The agreed documents which came out of the meeting were the *Stockholm Declaration on Human Environment* and the *Action Plan for the Human Environment* which dealt with major environmental issues such as education and science, social and economic development and pollution (Grubb, M. et al 1993, p.5). Though the interaction of environment and development was formally recognised in several principles of the Declaration, in terms of real commitment in the Action Plan, development issues were not covered in much detail except for the human settlement policies, which were addressed in depth (ibid.).<sup>4</sup>

The most important outcomes of this conference were that it did a great deal in promoting the development of national environmental policies, mainly (but not exclusively) in the industrialised countries, and that the United Nations Environment Programme (UNEP) was created to promote environmental awareness and issues within the UN systems.

Several initiatives followed in the 1970s and 1980s on environmental and development issues. Specific environmental agreements included the London Dumping Convention, the Basel Convention on the Protection of the Ozone Layer (and its Montreal Protocol), together with regional initiatives such as the Mediterranean Action Plan and other regional seas programmes under UNEP. In addition to these specific agreements, the UN established the Brandt Commission on North-South issues, and the Palme Commission on security and disarmament which also touched upon development aspect of militarisation (Grubb, M. et al 1993, p.6).

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<sup>2</sup> For an analysis of the development of environmental concerns on the international agenda, see Caroline Thomas, (1992) *The Environment in International Relations*, The Royal Institute of International Affairs, London, Chapter 2.

<sup>3</sup> The official name was the UN Conference on the Human Environment. For detailed discussion on the preparation and outcome of the conference, see: John McCormick, (1989) *The Global Environmental Movement, Reclaiming Paradise*, Belhaven Press, London.

<sup>4</sup> Also see: UN, (1975) *Yearbook of the United Nations 1972*, Vol. 26, UN Office of Public Information, New York, pp.318-337.



Yet environmental problems grew visibly from local to regional and then to global levels. Not only were local environments affected by specific human activities, but the global environment was under threat. That many environmental problems were inextricably linked with broader, global aspects of socio-economic developments received increasing recognition. Third World countries were under greater threat through increasing burdens of international debt, reaching crisis proportions in the early 1980s. There was also increasing criticism of the environmental impacts of many of the grand internationally-funded development projects, and a growing awareness that the pursuit of commodity-export-led growth in developing countries was undermining the environmental and resource bases on which they depended. Thus, in 1983, the UN General Assembly established the World Commission on Environment and Development to examine the general issues in environment and development and their interlinkages.

The World Commission on Environment and Development, under Norwegian Prime minister Gro Harlem Brundtland, was established as an independent body to critically re-examine "issues of environment and development and to formulate innovative, concrete and realistic proposals to deal with them, and to strengthen international co-operation on environment and development" (WCED 1987, pp.356-357). The Commission's overall conclusion and recommendation was that human activities could and should be redirected towards a pathway of 'sustainable development', with environmental issues not seen as an obstacle but rather as an aspect which needed to be reflected in policies if growth were to be sustained.

Due to this and other studies, in 1992 the United Nations Conference on Environment and Development (UNCED) was held in Rio. The 'Earth Summit' as it is popularly known, had its main themes as 'the need to reverse environmental degradation, the linkage of environmental and developmental issues, the importance of international co-operation and the developmental priorities of the developing countries'. However, as Pepper (1993) states the Conference was limited in its success:

"The 1992 Earth Summit in Rio de Janeiro made this plain. For while some third world [sic] leaders and other eminent public figures correctly identified the problems and their causes, Western leaders staunchly defended the 'right' of multinational capital to continue operating in the same old way and resurrect old Malthusian (third world [sic]) 'overpopulation' canards for their explanations of causes. Faced with draft global accords, conventions and other agreements to take fundamental action on social and environmental problems they watered them down, prevaricated and even refused point blank to sign them. Or, more dishonestly, they did so and then went home and carried on with the same old policies." (Pepper, D. 1993, p.2)

The effectiveness of international action and concerns has been limited and has highlighted the difference of perspectives on environment and development issues between developed and underdeveloped nations.

The main issues are historical responsibility of environmental degradation and compensation, unsustainable development and lifestyle in the core regions, financial support for development and environmental conservation, transfer of non-commercial environmental technologies, and so on. The North-South conflict over environmental problems is the conflict between the industrialised nations and the developing countries. The former attempt to maintain the *status quo* of present economic dominance and energy intensive development strategies, to sell environmental technologies and to control trade terms through enforcement of their environmental standards. The developing nations attempt to continue their economic growth with minimal international environmental and trade restrictions, while receiving the maximum financial and technological support (Kim, B-W. 1994, p.152-3).

### **1.1.3 The Concept of Sustainable Development**

Out of these global environmental concerns, a significant contribution was made in the concept of sustainable development, first conceived in the Brundtland Report, *Our Common Future*<sup>5</sup>. Though there are many definitions of the concept, the definition given by the report shows the essence:

"Sustainable development is development which meets the needs of the present without compromising the ability of future generations' to meet their own needs" (WCED 1987, p.43).

The report focuses particularly on the linkages of environment and development as the main cause of global problems, and identifies many consequences of environment/development interactions, most notably poverty as one. Hence equity becomes one of the Brundtland Commission's main conditions for sustainable development. The Report recommended many changes:

- a political system that secures effective citizen participation in decision making;
- an economic system that is able to generate surplus and technical knowledge on a self-reliant and sustainable basis;
- a social system that provides for solutions to the tensions arising from disharmonious development;
- a production system that respects the obligation to preserve the ecological base for development;
- a technical system that can search continuously for new solutions;

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<sup>5</sup> WCED, (1987) *Our Common Future*, Oxford University Press, Oxford

- an international system that fosters sustainable pattern of trade and finance;
- an administrative system that is flexible and has the capacity for self-correction.

There have been numerous institutions, conventions and agreements which stem from this Report and from the Rio 'Earth Summit'. The Commission for Sustainable Development and Agenda 21 have been the most significant.

However, there has been no consensus on the principles and strategies regarding sustainable development. On the contrary, the term 'sustainable development' has been hijacked to legitimise the prevailing development trends with only cosmetic adjustments. The huge amount of literature on the principles and applications of sustainable development has largely been theoretical or abstract (Archibugi and Nijkamp 1989, Adams 1990, Carley and Christie 1992, Meadows et al 1992, Holmberg 1991, Pearce et al 1990, 1991, Redclift 1987), and sustainable development theories which have been applied to specific areas have not addressed the main objective: social and inter-generational justice (Seoul Development Institute 1994). Without concrete and holistic analysis of the development processes, taking into account social, spatial and environmental considerations, any strategies for sustainable development will always fall short of the objectives outlined in the Brundtland Report.

#### **1.1.4 Nature and Definition of Environmental Problems**

From the review of the environmental problems and the recommendations of the Brundtland Report, we can see that many institutions and systems<sup>6</sup> contribute to environmental degradation. It has also been suggested that environmental issues do not merely encompass the problems of natural environment such as resource depletion and pollution but poverty and social justice issues are also to be included. Examples are the unequal access to environmental 'goods' (means of reproduction such as housing) and the impact of environmental 'bads'. The North-South division in environmental issues demonstrates that environmental problems are spatially differentiated at the global scale, but it is believed that such differentiated conditions exist within a nation if uneven development occurs at sub-national scale (O'Connor 1989, Tickell and Peck 1992a). Therefore, the theoretical framework for the investigation of the causal mechanisms of environmental problems should take into account the economic (global and local), political, spatial and social forces and issues. Thus, we turn to the examination of existing theoretical approaches.

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<sup>6</sup> The term 'Systems' is taken from the Brundtland Report, i.e. economic, political, cultural, technical, trade, administrative, etc.. See p.5-6 above.

## 1.2 Theoretical Approaches and Analysis of the Environment

### 1.2.1 Introduction to Environmental Literature and Theoretical Approaches

The variety of environmental literature is vast. The scope of literature ranges from politics to economics, from analysis to prescription and from scientific to ideological. Apart from the copious environmental data and source books (The World Bank 1992, Brown, L. B. et al 1993), there is a huge literature dealing with the causes of environmental problems, with environmentalism and environmental politics and with environmental planning and policies.

The literature on environmentalism has established the foundation for an environmental debate and for visions for a future society. There is a range of ecopolitical perspectives, and these can be classified into three distinct historical phases: environmental problems as problems of 'participation', of 'survival' and as opportunities for 'emancipation' (Eckersley 1992, p.7). As Eckersley (1992) puts it:

"Indeed, the last three decades have seen a general broadening of ecopolitical dialogue as a result of the gradual interpenetration of these themes or phases of inquiry. That is, the participatory, survivalist and emancipatory phases may be seen as representing the thesis, antithesis, and higher synthesis respectively in the ecopolitical dialogue of the last three decades." (p.7)

Each phase of ecopolitical development has brought different perspectives on the nature of environmental problems and how to deal with them. These views have widened the spectrum of environmental debate and indicate that environmentalism<sup>7</sup> is widespread in the 1990s (O'Riordan 1981, 1989, Dobson 1991). If we can summarise the cleavage within environmentalism, there are three main strands, technocentrism, anthropocentrism and ecocentrism, within which lie further divisions. The various approaches such as orthodox and humanist Marxism, Ecosocialism, State Managerialism, Conservatism, Ecofeminism, Ecoanarchism and Gaianism can be located within the spectrum. These tendencies not only prescribe the way in which environmental problems can be resolved, but they also have particular stances regarding the causes of environmental problems.

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<sup>7</sup> Environmentalism is often confused with Green politics or Greenness. Environmentalism is a "collage of values and views of the world, a general patterning of predispositions, being first and foremost a social movement, though one with political overtones. Being Green is a subset of environmentalism". Green politics is a particular view among many in the environmentalist debate. There are those in the environmental discussion, who hold the view that technology will save us from the impending doom; technocentrist. So if "Green is about creating the conditions that will channel the tide; environmentalism is about the many cross-currents within the complex patterns of tidal forces that constitute modern social values"; in O'Riordan, T. (1989) "The Challenge for Environmentalism" in N. Thrift (ed) *New Models in Geography*, vol. 1, Unwin-Hyman, London: p.80

*The liberal and the neo-classical approaches* which represent the technocentrist's perspective are the most uncritical of the current capitalist economic system, and tend to blame environmental problems on technical processes, and on the failure of the free market or inefficient state planning. The problem is not seen to lie in the economic and political system itself. Therefore the solutions proposed are improvement of technology, or better use of market mechanisms such as taxes on carbon emissions and fines for pollution. This does not, naturally, imply any reform at the heart of capitalist system. Moreover, nature preservation is viewed in terms of resource conservation, which has instrumental value to the human race. This has spawned many publications concerning environmental economics (Hufsmidt 1983, Nijkamp 1977, Pearce 1993). The solutions are anthropocentric and limited in scale. In addition, such market approaches could be used to justify protectionist strategies. The liberal approach is not merely limited in its understanding of the causes of environmental problems, but also it is also limited in its effectiveness in providing solutions.

The most common and widely read environmental literature comes from the 'Green' movement, which often offers a fierce critique of technocentrism. The mainstream Greens claim that environmental damage is the result of 'industrialisation' (Porritt 1984), allied to incorrect attitudes and values, especially those inherent in classical science, and also to Judeo-Christian ideology and patriarchy (White 1967, Capra 1982). Environmental problems are blamed on guilt invoking "greed, hubris and original sin" (Pepper 1991, 116-8) which makes human beings in general and the *self* in particular the 'seventh enemy' (Higgins 1980). Statements such as, "We have met the enemy and it is us" (Parsons 1977) are "really a self-accusing and self-moralising abstraction amounting to mumbo-jumbo that has typified the views of ecocentrists" (Pepper, D. 1993, pp.90-1). The ecocentric Green ideology and its views on economy is suffused with strong neo-Malthusian currents and anarchist traditions. A consensus exist among Greens that 'limits to growth' must underlie all human activity, and this translates directly into 'Gaian' desires to fashion societies that mirror the rest of nature and are subject to its laws - living within its limits.

Atkinson's (1992) summation of bioregionalism perfectly encapsulates the desire for living within the means of ecological limits. Bioregionalism advocates a return to a network of small decentralised 'democratic' communities based on ecological planning concepts such as using the carrying capacity of river basins as guiding the limits to future settlements (ibid.). This concept has been criticised by radical theorists in that there is more than a hint of authoritarianism, surveillance and confinement in the local enforcement of such a decentralised politics and a naive belief that (1) respect for human diversity is compatible with the belief that all decentralised societies will necessarily construct themselves upon the values of democracy, liberty, freedom and justice (Sale, 1985) rather than in terms of slavery, sexual oppression and

other such oppressive politics (see Dobson, 1990, 122), (2) the 'impoverishment' which often attaches to communal autarky and strong restrictions on foreign trade can be overcome, and (3) the restrictions on population movements coupled with exclusions of disruptive outsiders can be squared with ideals of maximising individual freedom, democracy and openness to 'others' (Harvey, D. 1993, p.45, Pepper, D. 1993).

A strong critique of the Green perspective has been mounted by the radical theorists, particularly in the 1980s and 1990s. Pepper (1993) criticises the ecological movement in that it is not only linked to anarchism but also linked to such liberal economic theories as Subjective Preference (SP) theory and Cost of Production (COP) theory<sup>8</sup> (ibid., p.43). The lack of scientific analysis of the socio-economic conditions for the cause of environmental problems has been the fundamental weakness of the Greens.

Marxism suggests a dialectical view of the society-nature relationship, which is not like that of 'ecocentrics' or 'technocentrics', and challenges both of them. Its strength is said to lie in the historical materialist approach to environmental analysis, which not only reveals social causes of environmental degradation but also is able to inform green strategy (Pepper, D. 1993, p.3). A historical materialist analysis of capitalism demonstrates that it is not just individual 'greedy' monopolists or consumers who are to blame, but the mode of production itself: the productive forces and relations which constitute capitalism. Marxists believe that it is 'the way in which human "interference" with nature is managed under capitalism that is the cause of much land degradation and the appalling human consequences that stem from this' (Johnston 1989, p.95). And poverty, a cause of much environmental degradation (WCED, 1987), is a necessary feature of capitalism "to goad its people into a competitive striving" (Seabrook 1985, p.37, Pepper, D. 1993, p.91).

It is in this radical school of thought that exists the most insightful and varied environmental perspectives and analysis. The orthodox Marxist perspective has been criticised for its technocratic and anthropocentric tendencies as well as its rigid application of scientific and deterministic approaches and endless reference to the 'holy scriptures' (Schumacher 1973, Ullrich 1979 p.95, Pepper 1993, p.3). The concern for working class politics and its concentration on revolutionising political economic processes comes then to be seen as a perpetuation rather than a resolution of the problem. The best that socialist politics can achieve, it is often argued, is an environmental (instrumental and managerial) politics rather than ecological. At its worst,

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<sup>8</sup> According to Cole, Cameron and Edwards (1983) there are just three schools of thought in the development of economies, which are the subjective preference (SP) theory of value, deriving from political economists such as Malthus, Jevons, and Adam Smith, the cost of production (COP) theory, owing much to Ricardo, J.S. Mills and Keynes, and the labour theory of value or abstract labour (AL) theory (Pepper's term), which derives from Marx, drawing on some of Ricardo's ideas. see Pepper, D. (1993), p.37-43 for more information.

socialism stoops to so-called 'promethean' projects in which the 'domination' of nature is presumed both possible and desirable (Harvey, D. 1993, pp.3-4). One notable recent exponent of anthropocentrism and need for complete domination of nature is Grundmann (1991). This perspective has the same positive attitude to technical advancement and the creation of material wealth as the liberal approach, and has been criticised to be both too anthropocentric and too technocentric. This political ideology which dominated the state socialism of the Eastern bloc is to blame for the environmental crisis in those countries.

Another criticism levelled at the orthodox Marxists is that they rely too much on the working class as the source of social change and as the potential guardian of the environment. In the postwar era, as the working class was assimilated into the system through the welfare state in advanced western economies, class based theories have come under criticism. The working classes saw the environmental movement as a threat to their livelihood, since addressing environmental problems may mean the curtailment of some industrial activities, especially those which produce hazardous waste such as the chemical industry, with consequent loss of jobs. This reality of the current situation in the advanced industrialised countries has spurred a new branch of Marxist thinking.

*The Neo-Marxists* centred around the Frankfurt school of critical theory take these new developments into account and look more closely at so called 'new social movements'. They examine the whole process of capitalist accumulation and its social and political context, which includes the conflict in civil society and the state. This theory has broadened the traditional Marxist debate centralised around social relations of production to a more comprehensive political economic approach encompassing the economic base, civil society and the state. Their emphasis is less on the struggle within the workplace, but rather on the struggle over conditions of reproduction, such as that over welfare and collective consumption goods. Since these are the realm of the state, the neo-Marxists contribution is particularly important in the theories about the state.

The dominant structuralist approach within radical theory separates the three elements into three tiers: the economic base, civil society in the middle and the state as the superstructure. There are various schools of thought such as the instrumentalist, neo-Gramscian and neo-Ricardian. These arguments are discussed in Chapter 2.

Recently, an important contribution has come in the form of eco-socialism. This approach builds on the neo-Marxists themes and tries to overcome the human-nature dualism as well as incorporating environmental problems into the Marxist theory of production. Much of this radical literature has risen above anthropocentrism, in that both labour and nature are taken as

the object of exploitation as means of production in the capitalist accumulation process (O'Connor 1988, Enzensberger, 1974). Eco-socialism maintains that the domination of labour and nature by the capitalist accumulation process lies at the root of social and environmental problems. Thus, it addresses both environmental problems and social justice issues: a new concept of 'environmental justice' (Harvey 1994). This approach has been influenced by some theories of Marxist geographers' which link the mode of production/accumulation process to the 'production of nature', production of space and uneven development (Smith, 1984, O'Connor 1989). As Harvey (1993) describes ecosocialism:

"Socialism is not necessarily about the construction of homogeneity. . . . [rather it] can be about creative search for and exploration of diversity and heterogeneity. Socio-ecological projects, much more in tune with resolving questions of alienation and opening up diverse possibilities of self-realisation, can be regarded as fundamentally part of some socialist future. The failures of capitalism to produce anything other than the uneven geographical development of bland, commodified, homogeneity is, surely, one of the most striking features of its failures." (Harvey, D. 1993, p.44-5)

Thus, he suggests the following:

"Any ecosocialist project has to confront that opposition. Here I think a more *geographical* historical materialism, one that is more ecologically sensitive, has much to offer, both in terms of analysis as well as in terms of prospective transformations. The *general* struggle against capitalist forms of domination is always made up of *particular* struggles against the specific kinds of socio-ecological projects in which capitalists are engaged and the distinctive social relations they presuppose . . ." (Harvey, D. 1993, p.44).

Although left-wing theoretical approaches may have their inadequacies, they nonetheless provide us with the most hopeful theoretical base for analysing the causal mechanisms of environmental degradation. This theoretical approach will be explored further in Chapter 2.

There remain epistemological shortcomings in the existing theoretical approaches. Epistemological problems of the grand theories are that they lack the methodological framework to link global and national capitalist economic forces to the environmental problems at both the local and global scale. They provide no meta-theoretical framework by which concrete analysis may incorporate political and ideological projects which regulate societal behaviour. The grand theories tend to deal with environmental problems in abstract form under universal forces of capitalism. Also, even though the importance of state and space have been recognised as significant forces in environmental transformation, and that there exist theories on the state and on space, these have not yet been utilised or synthesised to examine causal mechanisms of environmental problems.



Thus, problems in epistemology point to the need for the analysis of environmental problems to be at a level of a geographical unit which holds distinct integrity of economic, social and cultural practices; a nation state. Therefore, analysis of environmental problems must start at the scale of the nation state and must encompass all the forces that exist within it and exert influences upon it.

### **1.3 Purpose and Scope of Thesis**

#### **1.3.1 Purpose and Objective of Study**

The purpose of this study is to examine the interlinkages between environment and development in a newly industrialising country, South Korea. There have been few in-depth analyses of the linkages between the many factors of economic development and the environmental problems at the national scale. Particularly, there are few analyses of East Asian Newly Industrialising Countries' (NIC) environmental problems. In the 'development and environment' dichotomy, there are many political, economic, cultural, social, ideological and spatial processes involved, but how these interact in a specific territory, particularly at the level of the nation-state, has not been extensively investigated.

Thus, this study proposes to examine the conjunctural transformation of accumulation regimes and the environment in South Korea. This national unit has been chosen for its unique qualifications: its status as one of the most successful NICs in the prominent Pacific Asian region, its maturity in economic structure, its unique political, institutional and cultural inheritance and practices, its physical size (most East Asian NICs are too small for sub-national geographical analysis; Thailand was not considered due to its relatively early stages of capitalist development). Korea also has prominent social and environmental conditions. This study aims to analyse the restructuring of the Korean economy and space, and to explore the forces within this development which have produced environmental problems. That is, the thesis attempts to identify the main influences on Korea's restructuring and its spatial and environmental implications. Thus, the aim is to provide an adequate understanding of the economic, political, social and ideological causal mechanisms of Korea's environmental crisis.

#### **1.3.2 Existing Literature on Korean Development**

A brief review of current literature on economic development in Korea is undertaken here to show the limitations of existing theoretical approaches.

### *Contending Views of Korean Development*

The emergence of Korea on the world economic scene has been meteoric. The rapid economic growth and the transformation from a war-devastated and disarticulated economy to a prosperous and industrial nation has grabbed the attention of economic observers worldwide. The source of this unprecedented growth in Korea and in the other NICs has been much debated, and has spawned a wide-ranging economic and political literature. Until quite recently, the free market proponents dominated this debate (Chen 1979, Balassa 1981). Left-wing theories had been discredited, largely because 'dependency theory' was unable to account for the NICs' economic miracles. However, there has been an increasing number of works, which have concluded that the role of the state and/or the global economic opportunities/constraints have played a significant part rather than the operation of the free market in the development of the late industrialising nations such as Japan, Taiwan, Singapore and Korea (Appelbaum and Henderson 1992, Henderson 1993a, 1993b, Amsden 1979, 1989, Wade 1988, 1990, Luedde-Neurath 1988, 1993, Woo 1991). Such analysis shows that in the case of the NICs, the internal markets were very much distorted, and as Amsden has pointed out, in Korea state policies deliberately got 'the prices wrong' to stimulate growth (Amsden 1989, p.14).

Within the growing body of works of radical theorists, there seems to be a division in the approaches. On the one hand, there are works which put central emphasis on global forces such as the 'world systems' and the 'Globalist' approach (Cumings 1988, Dicken 1993, Lipietz 1987). On the other hand, there are theses which stress the role played by the state as the central source of development - the 'statist' approach (Luedde-Neurath 1988, Amsden 1989, Henderson 1993). While the former underplay the importance of internal forces in determining the course of development, the latter fall into the trap of functional reductionism, with their proposition of a 'developmental state' in which global capitalist development is downplayed. These views must not be seen as mutually exclusive, but rather a balanced synthesis of both contending theses is necessary which should provide a more fruitful insight to the mechanisms of the development process and economic restructuring, which in turn should give us a basis for a better understanding of social, spatial and environmental problems.

### **1.3.3 Scope and Objectives of Thesis**

The above examination of literature on Korean development shows that the analysis of Korean economic and environmental transformation must take into account both global and internal forces. In order to examine the complex capitalist development processes and their interactions with the environment, and to overcome the epistemological shortcomings of existing theoretical approaches, an appropriate analytical framework must be constructed through the synthesis of

various economic, spatial and state theses. This synthesis will be done under regulation theory. A geographical historical materialist approach will be the basis of the investigation in order to examine the political economic forces and socio-environmental developments at the global, national and sub-national spatial scales for it is important to acknowledge the differences in the historical, political, economic and cultural practices of a nation state as well as its position in the global accumulation system.

The primary objective is to identify the causal mechanisms of environmental degradation in a nation state which has been undergoing rapid economic growth and social change. Therefore, detailed historical analysis of Korean economic development is undertaken. This is to reveal the mechanism by which the 'economic miracle' has been achieved and to identify the factors that contribute to social and environmental problems. In addition, spatial transformation which accompanies economic development is examined to reveal the role of space in both economic growth and environmental crisis. In view of the importance of the role of the state in national development, particular focus will be on the character of state intervention and its implications in Korea. The examination of economic, spatial and environmental transformation should reveal the mechanisms and the determinants of environmental problems. Lastly, the regulation of the environment (utilisation and problems) will be examined to see how it is integrated into the reproduction of the accumulation regime.

#### **1.3.4 Outline of Thesis**

Chapter 2: The chapter begins with an examination of radical theories on nature-society relationship and the spatial dynamics of capitalist development. The second part of the chapter looks at the role and nature of the state in the capitalist accumulation process. The third section synthesises the economic dynamics and the role and nature of political/state control in the regulation approach as a vehicle for analysis of the Korean development process and environmental problems.

Chapter 3: The examination of the modes of development in Korea is carried out in this chapter in order to identify the important features of the Korean accumulation system, particularly the role of the state and monopoly capital. In this investigation attention is given to the influence of global forces and their impact on the national accumulation strategy, the regulation of labour relations and the concentration and centralisation of capital. Also the impact of capital accumulation on social development is briefly examined.

Chapter 4: This chapter concentrates on the spatial impact of Korean industrialisation and the dialectical relationship between space and spatial strategies for capital accumulation. This

analysis attempts to establish the link between economic development and differentiated environmental conditions through the examination of the uneven spatial development process.

Chapter 5: Environmental problems of Korea are the focus of this chapter. A historical development of national environmental problems is followed by a more in-depth study of the environmental problems of specific spatial zones. In the analysis of these spatial zones, the interrelated mechanisms of environmental degradation will be revealed.

Chapter 6: This chapter examines the mode of environmental regulation, both in terms of state regulatory mechanisms and in terms of more broader social means of environmental control such as hegemonic ideology and social awareness. The socio-ecological projects and strategies implemented primarily by the state should indicate not only the future of environmental justice but also the direction of economic and social development.

Chapter 7: This chapter reviews and summarises the findings of the previous chapters, and examines the contradictions between the reproduction of the EOI regime in a changing global accumulation system and the goals of sustainable development. The pursuit by the state of the integration of the Korean economy into the global economy in the 1990s is bringing great changes to the accumulation regime, and is predicted to heighten socio-ecological problems.

Due to the theoretical nature and the scope of the thesis, primary data collection was not appropriate. Although some interviews have been conducted much of the material was not used since interviewees were reluctant to provide any information that they saw as 'sensitive'. Surveys such as environmental awareness surveys would not only have been difficult for me to conduct due to limited resources, but they would have been of little value since far more comprehensive and extensive surveys have already been conducted by government and academic institutions. Thus, while primary data were used where ver possible, secondary sources were, of necessity, heavily relied upon. The National Assembly Library in Korea provided the bulk of the Korean literature and other statistical and survey data for this study. This study hopes to draw together many different fields of study related to the environment (economy, spatial development, environmental science and politics and so on) to reveal the mechanisms of environmental degradation through the regulation approach. Thus, the predominant use of secondary sources should not detract from the substance of the work.

## **Chapter 2**

### **Capitalist Development, Environment and The State; A Theoretical Framework**

As the previous chapter briefly described, due to the absence of a holistic and concrete theoretical framework in the current research on the environment, there is a need for a new approach in this field. This chapter sets out the conceptual framework for the study of environmental degradation, centering on the complex mechanism of capitalist accumulation processes and the social and political forces which control the interaction between socio-economic developments and the environment. Therefore, in the first section of this chapter, theses concerned with the interrelationship between the dynamics of capitalism and 'nature' and space are examined. These include examination of the mode of production, the contradictions inherent in capitalism, the dynamics of accumulation and its impact on space and nature. This is to demonstrate the economic mechanisms of capitalist society, as well as to reveal environmental transformations.

The study of the nature and the function of the state is undertaken in the second part of this chapter through a critical review of state theories, revealing relationships with the economic, social and environmental spheres. An understanding of the nature of the state is essential if we are to understand the particular position the state takes in its intervention in the society as a whole and in the protection of the environment in particular. Most environmental literature neglects not only the complex social forces in capital accumulation, but also the nature and limitations of the state in its interventions.

In the last section, the specific features of regulation theory are introduced. An appropriate analytical framework is developed describing the relations between capitalist economy, civil society, the state and the environment. In the synthesis of capital-environmental theories and state theories under the regulation framework, hypotheses will be put forward for this study.

## 2.1 Capitalism, Production of Space and the Environment

The purpose here is to outline a number of theses concerned with the workings of broad economic forces, thereby exposing the various mechanisms of environmental degradation. Thus, I shall attempt to reveal not only the particular forces or factors which affect the environment, but also the complexity of interrelationships between the capitalist mode of development and the environment.

### 2.1.1 'Mode of Production' Approach

#### *Production of Nature Thesis*

This thesis focuses upon the historical relationship between humans and nature through the mode of production. It tries to overcome the dualistic conception of nature in both bourgeois and Marxist literature<sup>9</sup>, of external nature (first nature) and man made nature (second nature), and tries to see the totality of the transformation of nature through the changing human/nature relationship, which is primarily affected by the development of the mode of production (Marx 1959, Grundmann 1990, Smith and O'Keefe 1980, Smith 1984, O'Connor 1988).

According to Marx:

Labour is, first of all, a process between man and nature, a process which man, through his own actions, mediates, regulates, and controls the metabolism between himself and nature. He confronts the materials of nature as a force of nature. He sets in motion natural forces which belong to his own body, his arms, legs, head, and hands, in order to appropriate the materials of nature in a form adapted to his own needs. Through this movement he acts upon external nature and changes it, and this way he simultaneously changes his own nature. He develops the potentialities slumbering within nature, and subjects the play of its forces to his own sovereign power.

(Marx, 1959, p. 283)

Smith and O'Keefe (1980) state that man and nature are unified through the labour process, - that is, labour transforms both nature and man simultaneously<sup>10</sup>. As division of labour occurred with the development of the mode of production, social relations became central to the relationship between man and nature. The division of labour was systematised in the production of means of subsistence and a social surplus which became a necessity for the reproduction of the society as a whole. In short, this led to the division of society into classes and the control of means of production by a specific class (Peet 1991, p.59, Smith 1984, pp.38-41).

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<sup>9</sup> See Schmidt, A. (1974) for the debate on Man/Nature relationship in Marx's writings.

<sup>10</sup> See Smith and O'Keefe (1980), p.34 for detailed description of 'relations with nature'.

The class which controlled the means of production were able to exploit the rest of the population. The difference in the ability to control people and nature, which affect productivity, has profound implications for consciousness, politics and socio-cultural life as a whole. Entire modes of production came into being as a certain way of enhancing productivity, and directed by particular social relations. So ".....the totality of these relations of production constitutes the economic structure of society, the real foundation, on which arises a legal and political superstructure and to which correspond definite forms of social consciousness" (Marx, 1893, p.20-1). The birth and development of social institutions such as the state and/or religious institutions not only controls the direction of surplus production, but it also intervenes in the way in which humanity interacts with nature. Social development, however, splits the harmonious balance of nature. No longer does the abstract natural individual 'man' fit simply into an equally natural environment, since the relation with nature is mediated through the social institutions. Thus, the production of a permanent social surplus allows human society to begin the long process of emancipating itself from the constraints of nature. But at the same time, the increased social control, which a more complex society necessitates, enslaves a large part of the population (Smith 1984, p.39).

The transformation of mode of production through history has thus changed the relationship between man and nature; from use-value production, to production for exchange to capitalist production for surplus value. Throughout history, one mode of production, and hence its social relations has been overthrown by another due to the developments in productive forces and capacity, which out-grows the old social relations (Peet 1991, p.63, Smith 1984). As social relations and the forces of production developed and intensified, the exploitation of nature and alienation of people from nature increased in order to produce an ever greater rate of surplus and to emancipate society from nature's constraints through greater social control. The progressive nature of the capitalist mode of production not only organised the search for means of production and markets on a world scale for the first time, but also as it developed internationally, dissolved all other modes of production under it (Smith and O'Keefe 1980, p.35).

In a capitalist society, it is the material production of nature that unifies the previously separate social and natural realms, but it does so without the loss of their separate identity. As Smith shows,

"..... but it is not just this "second nature that is increasingly produced as part of the capitalist mode of production. The "first nature" is also produced. Indeed the "second nature" is no longer produced out of the first nature, but rather the first is produced by and within the confines of the second. Whether we are talking about the laborious conversion of iron ore into steel and eventually into auto-mobiles or the professional packaging of Yosemite National Park, nature is produced. In quite concrete sense, this process of production transcends the ideal distinction between a first and a second nature. The form of all nature has been altered by human activity, and today production

is accomplished not for the fulfillment of needs in general but for the fulfillment of one particular "need": profit." (Smith and O'Keefe 1980, p.35)

Smith and O'Keefe (1980) claim that this offers a superior framework within which to view natural disasters. It emphasises not nature or society as such, but primarily the relation that is responsible for shaping both nature and society in the production process. Thus vulnerability to disasters is a class relation, but which does not lie with the individual capabilities of the working class. This has a qualitative significance in a capitalist society where differential access to nature is ensured, and the consequences of this exposure are far from uniform (p.37).

The strength of this view lies in the recognition of the centrality of mode of production in the man/nature relationship. Environmental disasters, for example, are products of this process, rather than due to human greed, technology, industrialism or enlightenment philosophy. Here, we can see that the development of the productive forces and social relations within the mode of production allows for the greater exploitation of nature and the alienation of individuals not only from nature but also from the production process. The limitation of this approach is its abstractness. Though Smith constructs a sophisticated framework for understanding the man/nature relationship, its abstractness and generality gives little insight to actual mechanisms involved in this relationship, other than the mode of production. Taking this as the starting point, we now turn to examining the capitalist mode of production and its contradiction with nature.

### *Second Contradiction thesis*

The capitalist mode of production has inherent contradictions such as the competition between capitals and between the antagonistic classes, these cumulatively resulting in the crisis of overproduction of capital. There exists, however, another contradiction: with nature. This has been termed the 'Second Contradiction' (O'Connor 1988), the starting point for many radical theorists. Harvey (1985a) notes the contradiction with nature, which inevitably arises out of the interaction between the dynamics of capital accumulation and the 'natural resource' (ibid., p.3). Nature is turned into the 'universal means of production' under capitalism. As we have seen earlier, production is based on the transformation of nature's resources into commodities, via the labour process. The most obvious contradiction is the exploitation of nature for the extraction of cheaper raw materials and the dumping of waste into the 'commons', in order to lower production costs. Exploitation of resources - stripping their assets without worrying about effects on future productivity - has become an inexorable trend and has been at an exponentially increasing rate<sup>11</sup> in capitalist economies. Costs are externalised partly by discounting them to the future (Pearce *et*

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<sup>11</sup> See Meadows, D.H. (1972) *The Limits to Growth; A Report for the Club of Rome's Project on the Predicament of Mankind*, Pan, London; he shows that exponential consumption of non-renewable resources of the present capitalist economy is one of the most serious environmental problems, though their claim that these resources could soon be depleted has been much criticised for its methodological flaws.



al. 1989), leaving the next generation to pick up the tab for present abuse. It spawns what Johnston (1989) calls 'ecological imperialism', which prefers to exploit new land and resources because they offer potential for initial profits and rapidly increasing productivity. Similarly, externalisation of costs can be seen in atmospheric, water and land pollution, in preferring road to rail transport, in throwaway products and packaging, indeed in the 'rationalisation' of production via machinery. Incidentally, the social costs of the resultant unemployment is charged to society as a whole, both human and natural resources being treated as 'commons' (Hardin 1968; Pepper 1993, p.93).

The above 'contradiction with nature' approach only deals with the abuse of nature and the exploitation of its resources. O'Connor (1988) introduces in his thesis the 'second contradiction' of the capitalist mode of production, this being the underproduction of (pre-) conditions of production. This approach comprehensively encompasses all the environmental issues.

O'Connor (1988) outlines the contradiction in the 'conditions of production'<sup>12</sup>. He states that Marx defined three kinds of production conditions; the "external physical conditions", the "labor power" of workers, and "the communal, general conditions of social production". These correspond to natural environmental conditions such as the quality of the biosphere, the resource endowment and the ecology of the immediate environment, the living and working conditions and standards of the labouring class, and the condition of the man-made environment such as cities, provision of social, cultural and environmental goods, transportation network and other means of communication (ibid., p.16). He broadens the general argument on the environment so that not merely the issues of nature, pollution and resources are included, but also the "personal condition for production and reproduction" of the labour force such as "the physical and mental well-being of workers; the nature and degree of socialization; toxicity of work relations ..... ; and human beings as social productive forces and biological organisms generally", and the "social and communal conditions" which include fixed capital for production and consumption. Hence implied in the concept of production condition are the concepts of space and 'social environment'.

We include as a production condition, therefore, "urban space" ("urban capitalized nature") and other forms of space which structures and is structured by the relationship between people and "environment," which in turn helps to produce social environments. In short, production conditions include commodified or capitalized materiality and

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<sup>12</sup> The condition of production has also been expressed as 'social reproductive conditions' by Carlo Carboni, however O'Connor confines himself to the discussion of crisis tendencies in the process of the production and circulation of capital, rather than the social reproduction as a whole. However, this should not be restricted to the production process since a large proportion of what constitutes the conditions of production cannot be separated from the reproduction process as stated by Harvey (1985) *Urbanisation of Capital*.

sociality excluding commodity production, distribution, and exchange themselves (O'Connor 1988, pp.16-7).

O'Connor, after defining the contradiction regarding the environment as the struggle over the conditions of production, looks at the way in which capitalist production relations and productive forces 'self-destruct' by impairing or destroying their own conditions. Three important contradictory processes are identified: the process of exploitation of labour and the valorisation of capital, state regulation of the provision of production conditions and social struggle organised around capital's use and abuse of these conditions. This ecological Marxist account is similar to that of the 'Frankfurt School of Critical Theory' in which Marcuse and Habermas saw the struggle over the conditions of reproduction as the main feature of modern society. He concludes that the conditions of production are impaired by capital itself due to valorisation of capital and its universalising tendencies, the negation of site specificity and the lack of ownership of labour power, external nature and space (O'Connor 1988, p.25).

It is enough at this point to say that the contradiction of capital with nature originates from the inherent characteristics of exploitation and the continuous drive for profits under competition. The three contradictions are seen to be very much linked together, and any combination of the three create a crisis of *overaccumulation*<sup>13</sup>.

To summarise, environmental problems are said to arise from the interactions and the contradictions with the capitalist mode of production. Not only has nature become a universal means of production (as a resource base and as a 'common'), but also man has been enslaved in the production process, alienated from nature and has had his own reproduction undermined. Although the various theses have laid the foundations of the economic mechanisms of environmental problems, their limitations stem from not considering the spatial dynamics of capital accumulation processes. In ignoring this essential factor, they take the position that environmental problems in the world are undifferentiated over space. However, environmental degradation depends on the level of development, the type of industries and the concentration and distribution of production and consumption in space. The uneven development of capital and the consequent spatial patterns and structures have been the subject of much research and examination. Thus we move on to look at the spatial development of capitalism in order to unify the differentiated environmental conditions under one process.

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<sup>13</sup> The term 'overaccumulation' is used by Harvey (1985), a concept which is similar to the crisis of overproduction of capital. This can be conceptualised in a closed system where too much capital is produced in relation to the opportunities to employ that capital. This is the case when the market becomes saturated and that there is no reason for further investment until consumption is stimulated.

## 2.1.2 Capitalism, Space and Uneven Development

### *Production of Space and Uneven Development*

The concept of the production of space has been pioneered by David Harvey (1973) in the examination of “*created space* . . . as the overriding principle of geographic organisation” (p.309), as has Castells (1977, see pp.437-71). However, it is Henri Lefebvre (1970) who has coined the phrase ‘the production of space’. Lefebvre focuses on the reproduction of social relations of production which, he says, ‘constitutes the central and hidden process’ of capitalist society, and this process is inherently spatial. The reproduction of the social relations of production occurs not only in the factory or even in society as a whole, ‘but in space as a whole’. He emphasises the dialectics of spatial relation through human activity in and on space, and ‘this dialecticised conflictive space that produces reproduction, by introducing into it its multiple contradictions.’ Thus, Lefebvre concludes:

“Capitalism has found itself able to attenuate (if not resolve) its internal contradictions for a century, and consequently, in the hundred years since the writing of *Capital*, it has succeeded in achieving ‘growth’. We cannot calculate at what price, but we do know the means: by occupying space, by producing space”(Lefebvre 1970, cited in Smith 1984, p.91)

The point of departure of the ‘uneven development’ thesis is the need for capital to overcome the inherent contradictions in the capitalist mode of production by displacing it through spatial expansion and mobility. In order to overcome the crisis of overaccumulation stemming from the contradiction of the capitalist mode of production, capital is forced to expand in space in search for new markets and cheaper sources of raw material and labour. The extension of the market in space leads to greater cost and time of circulation. Hence capital, through development of technology, especially in the means of transportation and communication lowers cost and time of circulation. Through the means of fixed capital, particularly transport infrastructure, capital is able to strive beyond all spatial barriers and at the same time annihilate space with time, enabling it to achieve both spatial expansion and concentration. Thus, the mobility of capital is dependent upon the spatial fixity of capital (Harvey 1985a, pp.35-37, 1985b, p.26-9, Smith 1984, pp.97-130, 149-154).

The expansion in and annihilation of space leads to the tendency for differentiation and equalisation of space. The differentiation of world space is a direct result of the contradictory need for capital to immobilise itself in the landscape as well as for its mobility. Capital must be immobilised for long periods of time in the production process in the form of machines, factories, transport routes and other direct and indirect means of production (Smith, 1984, pp.88-9). The development of technology leads to greater differentiation through greater clustering or movement to those sectors and areas in which a greater rate of profit is possible. Therefore, there

is a tendency for concentration and centralisation of productive activities as well as ancillary services in the urban centres where centralised investment of fixed capital has taken place (Harvey 1985a, p.40, Smith 1984, pp.121-4). Improvements in the means of transportation tend in the direction of the already existing markets, centres of production and population, and towards ports of export. This rational organisation of production in space is crucial to the reduction of turnover time and costs within the circulation process of capital. This depicts the cumulative forces making for the production of urbanisation under capitalism (Harvey 1985a, p.40).

However, the tendency towards agglomeration is partially offset by an increasingly specialised 'territorial division of labour which confines special branches of production to special districts of a country' coupled with the rise of a 'new and international division of labour' (Harvey 1985a, p.42, Massey 1979). This division of labour and capital in space further differentiates geographical space. Smith (1984) looks at the separation of *departments*, *sectors* and *individuals* of capital in space that leads to international and regional differentiations (ibid. p.112-3, 145). It is the switching from one location to another that leads to differentiated conditions. The development of technology, especially means of transportation not only allows for greater concentration as mentioned above, but also liberates industry from close dependence from localised raw materials and organic conditions in general, which results in a shifting and relocation of places of production and of markets as a consequence of the changes in their relative positions in the global market (ibid. p.145, Harvey 1985a).

The other opposing dynamic of capital accumulation is the tendency toward equalisation. This tendency originates from the universalisation of wage-labour by the levelling of the pre-capitalist mode of production to the level of capital. As we have seen, the need for mobility of capital, and the development of means of transportation and communication leads to the continual drive to overcome all spatial barriers and to the annihilation of space by time:

The more production comes to rest on exchange value, hence on exchange, the more important do the physical conditions of exchange - the means of communication and transport - become for the cost of circulation. Capital by its nature drives beyond every spatial barrier. Thus the creation of the physical conditions of exchange- of the means of communication and transport - the annihilation of space by time - becomes an extraordinary necessity for it . . . . Thus, while capital must on one side strive to tear down every spatial barrier to intercourse, i.e. to exchange, and conquer the whole earth for its market, it strives on the other side to annihilate this space with time, i.e. to reduce to a minimum the time spent in motion from one place to another. The more developed the capital, therefore, the more extensive the market over which it circulates, which forms the spatial orbit of its circulation, the more does it strive simultaneously for an ever greater extension of the market and for the greater annihilation of space by time ..... There appears here the universalising tendency of capital, which distinguishes it from all previous stages of production. (Marx, 1973, pp.524, 539-40)

The historical tendency for society to emancipate itself from space is most developed under capitalism and takes a unique form that expresses the inner rationale of capital: emancipation through annihilation. In this context, the 'universalising tendency of capital' represents an inherent drive toward spacelessness, in other words, toward an equalisation of conditions and levels of production: thus 'a shrinking world'. Spatial development is treated as an integral moment of overall societal development rather than simply as an independent effect. The so-called shrinking world, as Smith states, is "not merely an effect of generalized progress of modernization but the specific necessity of the capitalist mode of production" (Smith 1984, pp.93-4).

It is claimed that the consequences of equalisation is to reduce the individual worker to a 'crippled monstrosity' and an 'appendage of the machines', dragging workers down to a common level. A parallel degradation results from the capitalist pursuit of raw materials at a world scale. In quantitative terms, the equalisation process is manifested in the common scarcity of objects of labour. From wood to whales to petroleum, the presumed scarcity of these materials is a social creation, not an act of nature. In qualitative terms, capital engages in a frantic search for the primary inputs - old and new - which fuel the accumulation process. Therefore, the production of nature brings about an equalisation in the relation with nature: "first, nature is made the universal appendage of capital; second, the quality of nature is levelled downward at the hands of capital" (ibid., p.115).

The outcome of these contradictory tendencies of differentiation and equalisation tend to form a geographical pattern of uneven development. The geographical fixation of use-value and the fluidity of exchange-value translate into tendencies toward differentiation and equalisation. The universalisation tendency of capital turns the whole earth and everything in it as source for surplus value, thus equalising the conditions and level of production over space. Yet the division between developed and underdeveloped countries and regions are produced by the inherent tendency of capital to differentiate space. The differentiation of space is the result of capital's displacement of crisis into space. As differentiation becomes an increasing necessity in order to stave off crisis, "uneven spatial development is both a product and the spatial premise of capitalist development" (ibid., p.153).

The renewed importance of geographical space is reflected in the increased attention paid to issues such as the centralisation and decentralisation of industry, the selective industrialisation of the Third World, regional decline, deindustrialisation, nationalism, urban redevelopment and gentrification, and the more general issues of spatial restructuring during crisis. These geographical patterns are the product of contradictory dynamics: first, the more society strives to emancipate itself from space, more important does spatial fixity become; second, the

displacement of crisis of capitalism leads to continued mobility of capital. As this contradictory dynamic plays itself out in reality, it results in the production of space according to a very particular pattern. Space is neither levelled out into single entity nor infinitely differentiated. Rather the pattern which results is one of *uneven development*, not in a general sense but as the specific product of the contradictory dynamic guiding 'the production of space'. Uneven development is the concrete manifestation of the production of space under capitalism, and the production of geographical space has a growing role in the evolution and survival of capitalism (ibid., pp.89-90).

O'Connor (1989) looks at the environmental impact of uneven development through the transfer of commodities between developed and underdeveloped regions, claiming that environmental problems are a result of the universal process of capital valorisation. He claims that uneven development produces two distinct environmental problems, which are however, created by a single process: the capitalist mode of production. The first is the problem of pollution in the developed areas and the second is the depletion/exhaustion of natural resources in the underdeveloped zones. He claims that the greater the uneven development of capital, the greater will be the spatial concentration of industry and population, and the more likely it will be that given volumes of waste will be transformed into dangerous pollution in the developed areas, while the exploitation and depletion of natural resources will occur at an ever increasing rate in the underdeveloped regions (ibid., pp.3-4).

What has happened, historically, and is still happening, is that the soils and resources of the Third World and raw material zones of the First World were and are, in part, exported through the vehicle of commodity production and exchange and capital accumulation, only to make their appearance in the industrial zones in the form of waste and pollution. It is interesting to speculate about the possibility that industrial pollution is indirectly or directly a form of physical matter which once assumed the form of rich soils, fossil fuels, minerals, forests and so on, in the raw material zones. In this way, soil exhaustion, the depletion of forests, etc. and pollution and mass Third World poverty constitute a single historical process - 'one big fact'.

(O'Connor 1989, p.8)

Uneven capitalist development, we may then say, causes mass pollution in the industrial zones and mass degradation of land, soils, plant life and poverty for indigenous people in the raw material zones. In the context of the world economy as a whole, too much is produced during boom periods, while during recessionary periods export agriculture and subsistence producers attempt to maintain their incomes by expanding production, hence pushing nature more against its ecological limits.

### *Combined Development*

A more serious situation is 'combined development', where capital seeks to combine social and economic forms in the most profitable way, for example, twenty-first-century First World technology with nineteenth-century labour/political conditions. The 'combined development'<sup>14</sup> is a phenomenon of the intensification of the process of differentiation and equalisation, which is driven by the intensification of the capital valorisation process. This is the combining of a modern industrial sector with a traditional raw material production sector occurring within a national space, where the growth in the modern sector is at the expense of the indebtedness and intensification of exploitation in the raw material/agricultural production zone. This kind of development tends to intensify the spatial pattern of uneven development within the national boundary. This often leads to greater concentration of capital and population in large urban centres, and a greater environmental degradation in the underdeveloped region. The social disparities are greater even within the urban space. There occurs greater exploitation of labour as well as nature (O'Connor 1989). In the first case, cheap labour, illegal workers are drawn into the older industrial zones; wages tend to fall for everyone, work conditions tend to deteriorate, existing unions are weakened, occupational health and safety problems grow and environmental conditions tend to get worse. Meanwhile, rural zones are deprived of their best young workers, both men and women, leading to more land neglect and ecological damage generally. In the second case, the out-migration of capital creates new zones of industry in labour surplus regions, or capitalises agriculture. At a world scale, pollution of the core is 'exported' to the periphery. Dangerous chemicals banned in the First World find their way into industrial and agricultural production in the Third World. Older and more exploitative styles of labour relations are used. Occupational health and safety are neglected. In both cases, urban-industrial zones grow out of control, creating housing, waste disposal, traffic and other problems (O'Connor 1989, pp.8-9).

Thus, when advanced management, methods of finance and technology are combined with more traditional methods of production, combined development deepens uneven development with all the attendant ecological damage. The 'green revolution', - the capitalisation of Third World agriculture - was achieved by the following process:

farmers pick the 'best' seeds, plant uniformly over the largest area possible, and douse with chemical fertilisers - the reduction of agriculture to this simple formula - not only leaves crops open to attack by diseases and soils highly vulnerable to deterioration, but also ties the farmer into the vicious cycle of debt repayment. Such reductionist agriculture turns chemical fertilisers and pesticides into necessities to cover for its built-in vulnerabilities, and hence higher production costs and higher and higher debt (Moore Lappe 1977, p.164).

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<sup>14</sup> The term was first used by Trotsky to extend the concept of uneven development to encompass a more complex phenomenon, that of a country experiencing development and underdevelopment in a single space, most often in relatively backward countries or late developing countries. See Mandel, E. (1983).

In sum, what is transferred from the 'Centre' to the 'Periphery' is not just technology but also social and environmental costs. If the world is viewed as an arena of capital accumulation in which both forms of combined development occur within the context of uneven development;

First, low-wage, unorganised, state-controlled labour in the Third World and weakened labour organisations in the First World are unable to resist environmental destruction and harm to workers' and others' health. Second, the combination of high technology with cheap labour increases 'social costs' and externalities and the rate of exploitation globally, hence the rate of profit, hence the speed at which resources are used and destroyed and also the rate of pollution in all its forms. The result is a self-perpetuating spiral of ecological and human destruction (O'Connor 1989, p.10).

When uneven and combined development of capital are themselves combined, it would appear that super-pollution in industrial zones may be explained by 'super-ecodestruction' of land and resources in raw material zones, and vice versa.

Depletion and exhaustion of resources and pollution depend on one another; they are the necessary result of the same universal process of capital valorisation. The natural wealth of the world is depleted and turned into garbage, often dangerous garbage, through global capital accumulation. And the unwanted by-products - pollution - have the effect of depleting resources. Put formally, the greater the profit rate, the greater the accumulation rate, the greater the rate of depletion which indirectly leads to a greater rate of pollution. (O'Connor 1989, pp.10-11)

This approach has shown the linkage between the capitalist mode of production, the dynamics of capital valorisation process through the spatialisation of capital accumulation, which leads to geographical uneven development and environmental problems in both developed and underdeveloped regions.

### **2.1.3 A Summary**

The above mentioned theses demonstrate the workings of the capitalist mode of production and its interlinkages with the environment. There are a number of elements which are of great importance to this thesis. Firstly, the definition of 'environment' has been established to include the reproduction of nature, labour and social environment. Secondly, the environment is not only degraded by the capitalist mode of production, but also is greatly controlled by social institutions, particularly by the state. Thirdly, as capital tries to overcome the contradictions in its mode of production through space, there is a tendency towards uneven development which produce differentiated environmental problems. This form of development and the resultant problems describe the Korean and other NICs' situation very closely.



Although, the theses present a useful theoretical basis for understanding the linkage between capitalist development process and environmental problems, they have several shortcomings: first, they do not consider the political dimension, especially the intervention of the state and the impact of class struggle and wage relations. Because these are general theories, they oversimplify the forces in society. The political struggles and the nature and the ideologies of the state would also influence the direction of economic and spatial development. Secondly, though these approaches spatialise environmental problems, these are also in general terms. Particularly, the generality of their approaches which do not take into account the specific conditions of national accumulation strategies, is the main short-coming. The specific influences at the national level need to be considered, particularly, the articulation of national mode of developments. Due to these theoretical lacunae, we need to adopt a theoretical framework whose ontology is rooted in 'realism'.

As we have identified here, the social institution, namely the state which plays an important role in the the relations between capitalist accumulation and the environment, is examined next.

## **2.2 Critical Review of State theories**

The spatial impact of the dynamics of accumulation process gives rise to a geographic pattern of uneven development, and its consequent environmental problems. The gradual emancipation of human society from nature through development of the forces and relations of production was accompanied by the development of social institutions. Furthermore with the crisis ridden system of capitalism the state becomes more and more important in the regulation of the accumulation process, as well as the provision of its preconditions. However, the state has not been explicitly theorised nor introduced in the debate regarding environmental problems and issues. The nature of the state needs to be understood in order to comprehend the limitations of state intervention in the production of and resolution of environmental problems. The understanding of the contradictory nature of state economic, social, spatial and environmental policies and the state response to social and environmental movement can only be fully grasped through the critical examination of state theories.

This section sets out a brief review of state theories pertinent to the discussions on the relationship between capitalist accumulation, civil society, environment and the state. In conjunction with the radical perspective of spatio-environmental theories of capital accumulation, the state theories examined here are restricted to the radical theories so that the synthesis of the various components is achieved within the framework of regulation theory in the final section of this chapter.

## 2.2.1 Political Categories of State Theories

There are three main approaches to state theory in this category; the instrumentalist, the structuralist and Gramscian or neo-Gramscian approach.

### *Instrumentalist and Structuralist Approach*

The instrumentalist approach sees the state as an instrument of the capitalist class whereby it achieves political domination over the labouring classes. This perspective is closest to the works of Marx and Engels<sup>15</sup>. The arguments have been developed by Miliband (1969, 1977) through the critique of liberal pluralist theory. Instrumentalists are concerned with who governs, and Miliband focuses on the nature of ruling classes, the mechanism exerted over the state by the capitalist class and the dependency relationship between the state and capitalist accumulation. He considers the relative autonomy of the state to be at the discretion of those in power to reach the best interest of capital under the structural constraints of the capitalist mode of production. He takes the economic base as a constraint, but not as a determinant of state intervention. This view separates the instrumentalist account from the main body of state theories (Gold et al 1975).

The structuralist approach considers the class conflict arising from the contradictions of capital accumulation as the determining force of state intervention. Poulantzas criticises and rejects all forms of instrumentalism and insists that the state is a complex set of social relations (Jessop, 1990b). The structuralist's argument is that the state is considered a superstructure which is structurally separated from the economic base, civil society and the capitalist classes. Their position is that the state enjoys relative autonomy from the control and mandate of the capitalist class due to the balance of power achieved by its position in class struggle. Poulantzas also argues that the state has an objective function to perform in maintaining social cohesion so that capital accumulation can proceed unhindered, but at the same time, it is involved in fragmenting the unity of the working class by undermining its solidarity through short-run class compromises and reforms (Jessop, 1990b).

### *Gramsci and 'Neo-Gramscian' school*

These theories investigate the problem of political and ideological hegemony and elaborate a number of concepts and assumptions that have greatly advanced the analysis of class struggle. Their 'class-theoretical', rather than 'capital-theoretical' approach plays down the constraints on the state by capital and emphasises the autonomy of politics and ideology. They stress that the state is not a simple instrument manipulated by a unitary bourgeois class, but instead, that the state plays a vital role in unifying the bourgeoisie and organising its political and ideological

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<sup>15</sup> See Marx (1977) p.80, and Engels (1978) P.328; They see the modern state as the means of class exploitation by capital.

domination, while fragmenting the unity of the working class by undermining its solidarity through short-run class compromises and reforms. The most important problem is securing the conditions for the level of class practices. It concerns the organisation of the dominant class and the disorganisation of the dominated class. This is considered necessary because competition between capitals threatens the unity of the bourgeois class at the same time as capital's involvement in class struggle threatens to unify the working class (Poulantzas 1968, p.188-9, 256-7). The solution to this problem is found in the nature of ideological hegemony and/or the form of the state.

As Gramsci argues, consciousness and ideology play a paramount role in the determination of economic structures, and civil society is not simply controlled by open force, but through consent dominated by a bourgeois hegemony which represents a subtle form of cultural domination (Vincent 1987). The state is a means by which the ruling class not only justifies and maintains its dominance, but also manages to win the active consent of those over whom it rules (Gramsci 1971, p.244). Thus the state is conceived as "a mystification, a concrete institution which serves the interests of the dominant class, but which seeks to portray itself as serving the nation as a whole, thereby obscuring the basic lines of class antagonism" (Gold et al 1975, p.40).

The Neo-Gramscians place great emphasis on ideological hegemony, false consciousness and legitimacy and the role of popular-democratic institutions. Those elements derive from Gramsci's notion of 'hegemony' which is further developed in Poulantzas' concept: 'power bloc', 'hegemony', 'governing class', and so on. Their approach argues that the state plays a vital role in organising the dominant class and disorganising the dominated class, for the purpose of continued capital accumulation. For them, ideological hegemony is the pivot of capitalist society. The political institutions of the state therefore become very important in maintaining social cohesion and securing the conditions necessary for continuing capital accumulation.

'Ideological hegemony' is discussed in terms of the intellectual and moral leadership of the popular classes by the dominant classes or power bloc (Poulantzas 1968, p. 130-41, 206-45; 1976a, p. 134-62; Gramsci 1971). For hegemony to exist, then, it is necessary for the dominant bloc to secure the support of the working classes and other social groups and forces (such as the peasantry, the urban petty bourgeoisie, the military, officials, intellectuals, ethnic minorities, religious groups and others capable of intervening with pertinent effects on the class struggle on the side of capital). Such support does not stem from simple 'false consciousness' but is rooted in the incorporation of certain interests and aspirations of the 'people' into the dominant ideology. The ability of the power bloc to maintain its hegemony depends on its success in articulating 'popular-democratic' struggles into an ideology that sustains the power of the dominant classes and fractions, rather than working to reinforce the revolutionary movement (Laclau, 1977, pp.94-111).

The criticism common to all three theses is that they deal with the surface phenomena of political sphere while they fail to consider the economic sphere in depth. Their various analyses therefore underestimate the constraints on the state exerted by the process of capital accumulation; they totally ignore the laws and historical development of the capitalist production and accumulation process (Holloway and Picciotto 1978, pp.3-4, and p.10).

### **2.2.2 Economic categories of state theories**

State theories of the economic category, in contrast to the political category, pay little attention to the relative autonomy of the state. They claim that the role of the state in societal regulation is mainly responsive to the requirement of capital accumulation.

#### *The Neo-Ricardian state*

Neo-Ricardian theorists are explicitly concerned with the economic dimensions of the state. They focus on the influence of the state on the distribution of income between classes, and attempt to show how the state intervenes in the economy to maintain or restore corporate profits at the expenses of the wages. Such action is traced back to the pressure on profitability that stems from trade union struggles and/or international competition. The appropriate response in such situations depends on the specific form of the profits squeeze and the balance of class forces. Capital will generally attempt to manipulate the business cycles to discipline labour and reduce wage costs in the interests of corporate profit maximisation (Boddy and Crotty 1974, 1975) and to redistribute income to the private sector through fiscal changes, subsidies, nationalisation, devaluation, reflection, wage control and legal restrictions on trade union activities (Glyn and Sutcliffe 1972). Furthermore, it will try to counter the inflationary effects of tax increases and public borrowing through cuts in public spending in the 'social wage' (Gough 1975). In contrast, the working class will resist such offensive actions by capital. But the dominant position of capital in the state means that it is the capitalist solution to economic crisis that is imposed (Boddy and Crotty 1975).

The Neo-Ricardian approach is limited in its treatment of the nature of capitalism as a mode of production, and of the class character of the state. It neglects the significance of the social relations of production and the characteristic form of capitalist exploitation through the creation and appropriation of surplus value.

At the heart of the Neo-Ricardian analysis is the distributional struggle rather than the struggle at the point of production, and this is reflected in the tendency to discuss state intervention in terms of income distribution and to neglect the state's fundamental role in the restructuring of production. Thus, not only does this kind of analysis imply that wage restraint and/or public

spending cuts are sufficient to resolve crises, but it also fails totally to confront and explain the causes, nature and limitations of growing state involvement in production itself (Jessop 1990b: p.31).

### *State Monopoly Capitalism*<sup>16</sup>

State monopoly capitalist theories are grounded in Marxist economics, and the law of motion of capitalism occupies a central place. These theories take different forms, but share certain assumptions concerning the periodisation of capitalism and the nature of its latest stage. Thus it is argued that the process of competition during the period of laissez-faire capitalism leads inevitably to the concentration (and capitalization) of capital and hence to a new stage in which monopolies dominate the whole economy. More over, whereas the preceding stage of liberal competition was marked by the self-regulation of market forces and the progressive self-development of the forces of production, the stage of monopoly capitalism is characterized by the increasing tendency of the rate of profit to fall and thus of production to stagnate. To offset this tendency and thereby maintain the dynamism of capital accumulation requires ever-expanding state intervention in the economy. Such intervention takes many different forms. These include the nationalisation of basic industries, state provision of essential services, centralised control over credit and money, state assistance for investment, the creation of a large state market for commodities, state sponsored research and development at the frontiers of technology, state control of wages, state programming of the economy and the creation of international economic agencies.<sup>17</sup> With the growth of such interventions, monopoly capitalism is transformed into 'state monopoly capitalism'. This is the alleged to be the final stage of capitalism and the enormous weight of the state is attributed to the general crisis of capitalism that characterises this stage (Jessop 1990b; pp. 32-33). Theorists of this school argue that the state and monopolies have 'fused' into a single mechanism which acts on behalf of monopoly capital (Dunleavy et al 1987). This approach is interesting but inconsistent for it reduces the state to an epiphenomena of an economic base and also asserts that it is possible to use this state to transform that base.

The concept of state monopoly capitalism, in its crudest form holds that the state is the instrument of monopoly capital in the era of imperialism, and so the means by which the domination of capital over civil society is maintained. This obviously neglects the relative autonomy of the state stemming from political aspects and the implication of class struggle.

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<sup>16</sup> State monopoly capitalism was used in the Soviet bloc and orthodox Western communist parties loyal to Moscow for explanation of the state in advanced capitalist system (Jessop 1982, p.32, Dunleavy et al 1987, p.240)

<sup>17</sup> See Boccara et al (1971, 1976), Afanasyev (1974); Politics and Money (1974-5), Menshikov (1975) pp.137-83 and pp.265-9; Nikolayev (1975) pp.71- 92; references given in Jessop (1990b)

The most obvious faults of this theoretical category comes from;

1) evolutionism, which implies that the contemporary capitalist state is in some sense transitional, and so can be the neutral instrument of the transition to socialism. The theory is therefore unable to grasp the limits of state interventionism inherent in the character of the state as a capitalist state.

2) economic reductionism, which implies that the state is the instrument of capital, ignoring the specificity of the capitalist state as a political institution and the complexity of the class struggle in its relation to the state.

### 2.2.3 'Capital' Theories of the State

Both types of state theories mentioned above have been seen to be inadequate, in that they unduly emphasise the relations between the economic and political as discrete forms of capitalist social relations. Thus, there has been a number of state theories which has tried to overcome the shortcomings.

#### *State as the ideal collective capitalist*

The capital logic school originated from West Berlin, has tried to derive the general form and principal functions of a capitalist state from the pure capitalist mode of production and its conditions of existence. For those within this school of thought, the starting point has been the separation of the state, capital and civil society, so that the state (which is not immediately subordinate to market forces) is required to provide those general preconditions of capital accumulation as a whole, such as infrastructure, legal conditions and wage relations. It is also required to safeguard national capital in the capitalist world market<sup>18</sup>. Thus, to the extent that it is not an actual capitalist but a distinct political institution corresponding to the common needs of capital, the state is an ideal collective capitalist (Altvater 1973). Due to the tendency of the rate of profit to fall, the state is needed to intervene to mobilise counter-tendencies through the restructuring of capital and the reorganisation of the labour process. Thus it is not only argued that the state is essential to capitalism (and so cannot be neutral in the class struggle), but also

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<sup>18</sup> For capitalism to exist, the state must ensure certain conditions such as the legal and monetary systems necessary to facilitate the production and exchange of commodities and the accumulation of capital. The state is required also to secure the reproduction of wage labour to the extent that this cannot be done through market forces and to ensure its subordination to capital in the labour process. This leads to intervention of union activities, education and social welfare. The capital logic school also takes competing capital into account - and hence the state will have to secure provision of those use value which are necessary to capital accumulation but whose private production prove unprofitable; nationalisation or state subsidy; supply of public goods; and whose production will lead to 'natural monopoly'. Lastly, since the total social capital is also divided into different national capitals, the state has to promote the interests of its national capital as well as to cooperate with other states in securing the conditions necessary for continued capital accumulation on a world scale (Altvater 1973).

that the amount and scope of its intervention tend to increase with the gradual unfolding of the process of capital accumulation (Altvater 1973, Yaffe 1973, Jessop 1990b, pp. 36).

The 'capital logic' school qualifies this view of the ideal collective capitalist by considering its continued subordination to the laws of motion of capitalism. It argues that, whilst the state intervenes more and more to maintain demand and reorganise production, it cannot transcend market forces nor eliminate the tendency of the rate of profit to fall. The power of the capitalist state in this respect is necessarily limited, because it cannot directly determine the decision-making of private capital. For state intervention is always mediated through the monetary and legal conditions affecting the operation of market forces and the organization of production in the private sector. Within these limits, however, private capital is free to determine its economic conduct. This constraint is reinforced by the contradictions inherent in capital accumulation. Two cases often cited in this literature concern employment policy and state-sponsored industrial reorganisation. Thus Keynesian-style intervention to maintain full employment is said to be at the expense of accelerating inflation. Keynesian-style intervention to maintain full employment or state-sponsored capital restructuring will have definite costs (inflation and the 'fiscal crisis of the state') and it would therefore seem that the capitalist state is trapped within the capitalist mode of production and cannot escape from its contradictions and crises.

The school represents a fundamental theoretical advance through the demonstration that the state cannot be conceived as a mere political instrument set up and controlled by capital. For its proponents established that the capitalist state is an essential element in the social reproduction of capital - a political force that complements the economic force of competition between individual capitals and assures the imminent necessities that cannot be secured through the latter. This requires, among other things, that the state intervenes against capital as well as the working class, especially when individual capitals or fractions of capital threaten the interests of capital in general (Jessop, 1990b, p. 37).

More recently it has been conceded that the 'capital logic' approach can only indicate the probable forms of the state, and specify the broad limits within which variation can occur without fundamentally threatening the process of capital accumulation. But the difficulty remains that the 'needs of capital' still provide the only explanation, rather than becoming the point of reference for a more developed theory (Jessop, 1990b, p. 38). Thus, it commits the reductionist fallacy which argues that the political forms and functions of the state intervention are determined by the economic base.

#### *Historical-materialist state*

It is in response to some of these difficulties with the 'capital logic' approach that a more recent school of Marxists, centred this time at Frankfurt (but not to be confused with the Frankfurt

school of 'critical social science') has attempted to introduce a greater degree of historical specificity and a sharper awareness of the role of class struggle into the study of the capitalist state. Thus, although this school accepts the basic arguments concerning the need for a separate political institution to secure certain preconditions of capitalism, it rejects an emphasis on the needs of competing capitals considered in isolation from their antagonistic relations with wage labour. This school insists that the state can be understood only in terms of its changing functions in the class struggle over the organisation of the labour process and the appropriation of surplus value (Holloway and Picciotto 1977).

In relation to the process of capital accumulation and crisis, the evolution of the interventionist state is divided into three distinct phases: in the first phase, once the primitive accumulation of capital and labour force have been secured through mercantilism and related domestic policies, the capitalist state must adopt a laissez-faire role to assume the maximum scope for capital accumulation. In the second phase of centralisation and monopolisation of capital with the formation of the imperialist world market, the state implemented mercantilist policies. In the third phase, in order to regulate the self-destructive tendencies of ruthless competition and guarantee the general material conditions necessary to accumulation, the state implemented the socialisation of production through the mobilisation of counter tendencies to the falling rate of profit by the restructuring of capital, the reimposition of capitalist control over the labour process and the reassertion of bourgeois hegemony over the working class. However, in the current Post-Fordist phase, the internationalisation of capital poses new problems and requires new forms of state apparatus and state intervention, in order to secure the continued reorganisation of social relations in favour of capital accumulation on a world scale (Holloway and Picciotto, 1977, Hirsch 1978).

Table 2.2.1 Historical Forms of State Form and Intervention

Changing State	State Intervention
Royal Absolutism	Mercantilist Policies
Bourgeois Parliamentary Democracy	Liberal Capitalism
New Form of State (Bureaucratic State)	Monopoly Capitalism

Source: Jessop (1990b) p.39.

This approach not only introduces some historical specificity into the analysis of the capitalist state, it also develops some significant ideas about the nature and effects of class struggle. It is argued that crisis is the result of failure to maintain the domination of capital over labour, rather than as the result of the inexorable logic of accumulation. This means that state intervention is rarely directed towards the actual needs of capital and generally reflects a response to the political repercussions of accumulation. Since there is no necessary correspondence between



state intervention and the needs of the capital, crises play a role in reshaping its form and redirecting its thrust. For it is in crisis that the immanent necessities of capitalism are most likely to become apparent. So crises are steering mechanisms of state intervention. However, since crises are the complex effects of various contradictory factors and affect different classes in contradictory ways, there will be continuing conflict over their interpretation and resolution (Jessop, 1990b, p.39-40).

Following on from these new conceptual framework, Claus Offe argues that the capitalist state has four main structural features:

- 1) the state is excluded from the organization of capitalist production and the allocation of private capital. Thus it can only affect accumulation indirectly;
- 2) because the state is separate from capitalist production, its survival and performance clearly depend on revenues that originate outside its immediate control;
- 3) since capitalism is neither self-regulating nor self-sufficient, the state has a mandate to create and sustain those conditions necessary to accumulation;
- 4) faced with a precarious combination of exclusion and dependence, the state can function on behalf of capital only if it can equate the needs of capital with the national interest and secure popular support for measures that maintain the conditions for accumulation while respecting its private character (Offe 1975; Offe and Rouge 1975; Jessop 1990b, p. 40).

Offe argues that the political mechanisms required to reproduce these conditions change with the nature of capitalism. As the state is increasingly forced to secure the provision of specific inputs such as productive infrastructure as well as general social conditions for accumulation, it establishes 'planning' and encourages 'participation' as well as centralising the existing administrative system. However, as participation intensifies the class struggle within the state apparatus, the balance of forces required to implement capitalist policies is threatened (Offe 1975). "The state will continually oscillate between these different mechanisms as the state comes up against their different limitations" (Jessop 1990b, p.40) .

#### **2.2.4 Critique of State Theories**

The theories of the state considered here involve heterogeneous explanations of the principles of state intervention in capitalist development. Every thesis has its limits in conceptualising the relations between the state and capitalist development. However, a most common shortcoming lies in the lack of a corporate economic development theory so that they distance the explanation of state reformation, and hence political, economic and social changes from the long-term restructuring of capitalism. In an attempt to make up for these shortcomings, a further

development lies in the theory of regulation, which has in recent years been applied to the state (Hirsh 1983, Bonefield 1987, Clarke 1988, Jessop 1988, 1990b, Bertramsen et al 1991, Florida et al 1991).

It is this regulation theory to which we now turn in order to synthesise the insights gained in the examination of economic mechanisms and political institution under its all encompassing framework.

## **2.3 Regulation Theory**

So far we have reviewed the capitalist mode of production and the implications for the spatial structure of accumulation, as well as the environmental consequences. Also we have examined some of the state theories in order to understand its role in the society. These theories' shortcomings are that the economic approach neglects the political, and the political theories have limited understanding of the economic and spatial dimensions of capitalism. These need to be brought together in order to analyse the cause of environmental problems in their entire political, social and economic setting. We need to move towards a theorisation capable of analysing the interdependent relationship of society at large. We will thus examine regulation theory as a means to achieving this. The main features of regulation theory, and its capacity to analyse the social forces which cause the environmental transformation, will be examined below.

### **2.3.1 Main Elements of Regulation Theory**

Capitalist society consists of various social relations, wage relations being central. In theories of regulation, the concern is with the concrete expression of these fundamental social relations. The major focus of regulation theory is an explanation of the phenomena of stable and continued reproduction of the capitalist accumulation system despite the contradictions and the intermittent emergence of crisis.

The regulationist position is the rejection of the functionalist idea that in the long run, the reforms of a capitalist system result from a self-regulating realm through a sort of 'long-term invisible hand', which plays a role similar to that of the market forces in the short-range regulation of the micro-economic forces, thus resolving macro-economic and social contradictions (Lipietz 1989, p.60, Aglietta 1979). Instead, the theory replaces the functionalist notion of 'capitalist reproduction' with a conjunctural analysis of 'capitalist regulation'. This regulation is seen as an ensemble of practices to adjust and modify short term fluctuations and

discontinuous evolutions in the social system through specific institutional forms, societal norms and networks of accumulation strategies (Torfing 1991, p.72).

Regulation theory's advantage over other forms of Marxist or other meta-theories is that it analyses capitalist development over time and space. On the one hand, it periodises capitalist restructuring into successive regime of accumulation, and on the other, it is concerned with the relationship between global economic forces and national accumulation systems, which makes it explicitly spatial. Its premise is that firstly, the nature of the coupling between the accumulation regime and the mode of social regulation varies from nation to nation; and secondly, for a regime of accumulation to stabilise, this coupling must be functional at the level of the nation-state (Tickell and Peck 1992b). The regulationist view is that for each nation state there is a succession of different regimes of accumulation. Thus, its approach overcomes the general and 'universalist' nature of Marxist theory.

The mode of development is the primary concept for the historical transformation of the accumulation system. It is defined as "the articulation at the national level of the structural forms of a regime of accumulation with the institutional features of a mode of regulation into a regulatory ensemble capable of generating growth, prosperity and social peace in the context of the international division of labour" (Torfing 1991, p.77)

Theories of regulation involve a synthesis of up to four elements: 1) industrial paradigm, 2) regime of accumulation, 3) mode of social regulation and 4) hegemonic structure.

#### *Regime of Accumulation and Mode of Social Regulation (MSR)*

The twin pillars of regulationist theory are the regime of accumulation and mode of social regulation. A regime of accumulation is a systematic organisation of production, income distribution, exchange of the social product and consumption. With the materialisation of a regime of accumulation, economic development is relatively stable: changes in the amount of capital invested, its distribution between sectors and departments and trends in productivity are co-ordinated with changes in the distributions of income and in the field of consumption. The market or the society adopts a type of regime of accumulation dependent upon the conditions inherited from the past and the expectations that earlier trends in the norms of production and consumption will continue are the foundations of a 'social mould' (Dunford, 1990).

The regime of accumulation is generally seen to cover the production and consumption processes. It is thus defined in the words of Alain Lipietz as:

..... a way of dividing and systematically reallocating the social product. Over an extended period of time, there is a certain convergence between the transformation of

production (amount of capital invested, distribution among the branches, norms of production) and transformations in the conditions of final consumption (habits of consumption of wage earners and social groups, collective expenditure etc.) (Lipietz, 1988:31)

The mode of social regulation (MSR) is used to denote a specific local and historical collection of structural forms or institutional arrangements within which individual and collective behaviour unfolds and a particular configuration of market adjustment through which privately made decisions are co-ordinated and which give rise to elements of regularity in economic life. It has two main functions; first, it expresses and serves to reproduce fundamental social relations, and second, it is through these structural forms that multiple, decentralised individual and collective rationalities with their limited horizons result in regular overall process of economic reproduction. A mode of social regulation therefore allows a dynamic adaptation of production and social demands and guides and stabilises the process of accumulation (Dunford, 1990, p.306).

In the development of Western industrialised countries several schematic regimes of accumulation and mode of social regulation have been identified. In the 19th century, a regime of extensive accumulation gave way to a regime involving a combination of extensive and intensive accumulation in which the investment of constant capital, including investment in iron and steel, railway construction and shipbuilding itself validated the growth of Department I<sup>19</sup>. In the 1930s, and after the Second World War in particular, this gave way to a regime of intensive accumulation in which the conditions of existence of the wage earning class was transformed through the articulation of mass production and mass consumption<sup>20</sup>. The MSR underwent a similar historical transformation. Historical studies show that it has assumed very different forms in the course of capitalist development; a Taylorist or competitive regulation in which work was transformed without a commensurate change in working class life styles, and a Fordist or monopolistic regulation in which new norms of production and consumption were established (Dunford 1990, pp.310-314, Tickell and Peck 1992a, pp.6-11).

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<sup>19</sup> This is Marx' categorisation of industries. Department I corresponds to capital goods industrial sector (shipbuilding, steel, coal, chemicals, etc.) and Department II corresponds to consumer goods industrial sector.

<sup>20</sup> See Aglietta (1979) pp. 66-72, Lipietz (1984) pp. 6-7.

Table 2.3.1 The Historical Coupling of Regime of Accumulation and Mode of Social Regulation in Western Industrialised Countries

Time Period	Regime of Accumulation	MSR
19th century	Extensive Accumulation	Competitive regulation
Early 20th century	Extensive and Intensive Accumulation	Modified competitive regulation
1947 - 76	Intensive Accumulation	Monopolistic regulation

Source; compiled from Dunford (1990), and Clark (1988)

Thus what has been identified is the succession of new couplings between regimes of accumulation and modes of social regulation in the course of capitalist development, these having been brought about by phases of crisis (Table 2.3.1).

Due to the contradictions in the capitalist mode of production, crises occur as part of the normal capitalist development process. They occur due to failures in the regime of accumulation and/or mode of regulation. Regulation theory identifies three types of crisis (Boyer 1990a, Lipietz 1987, De Vroey 1984, Moulaert and Swyngedouw 1989, Tickell and Peck 1992a):

Micro-crises affect individual units or fractions of capital which fail to adjust to changes in consumption patterns or to transformations in the production process. They exist during stable periods of regime of accumulation and their effects are limited at the level of the firm or sector.

Conjunctural crises reflect a cyclical downturn in the economy. Such crises may be resolved within an accumulation regime-MSR coupling, requiring 'minor' adjustments, that is, a change in the spatial division of labour or small scale institutional changes. Conjunctural crises are important for the stability of regime of accumulation because they force minor changes to take place before conjunctural difficulties can undermine the 'unity of the circuit' (Lipietz 1987, p.34).

Structural crises on the other hand involve crises in the mode of regulation, signifying exhaustion of a model of development. These types of crisis are also associated with changes in the forces of production.

Structural crises do not, in the view of most writers in this tradition, have regular causes. In 1929, a cumulative collapse was a result of the limits to accumulation in Department I and obstacles to the growth of demand in Department II, whereas the crisis of the 1970s was rooted in a fall in the rate of profit and the exhaustion of an industrial paradigm. The resolution of structural crisis can only occur when a new regime of accumulation is coupled with a complementary MSR. Such linkage is of crucial importance. However, this is not to argue that a

given accumulation system has but one corresponding MSR; there are a number of possible solutions to the crisis and outcomes are contingent upon the historical formation of social and spatial organisations and the dominant hegemony at that particular time. The particular coupling is a 'chance discovery' (Dunford, 1990; Jessop, 1990a; Lipietz, 1987, Peck and Tickell 1992a).

### *Hegemonic Structures*

In the moments of change in the direction of human social development there is not one but a whole range of different possibilities: which ones succeed depends in part on the economic success of different models and in part on the strength of different strategic concepts, the influence of the social groups that support them, the construction of coalitions and the actions of the state. The hegemonic structure is a complex structure of political, ideological and cultural dogmas or concepts which is propagated by the dominant social group or groups such as the state, and whose domain is the civil society. Thus the dominant group will try to control the direction of social development by 'hegemonic projects' (Jessop 1983).

Jessop (1983) has suggested that state action is related to accumulation strategies, on the one hand, and hegemonic projects and associated alliance strategies, on the other. An accumulation strategy is "a specific economic growth model complete with its various extra-economic preconditions and the general strategy appropriate to its realisation" (pp.89-109). Thus, the state economic plans are usually accompanied by a particular propagation of political and ideological strategy. It is also possible to say that under a dominant hegemonic ideology pervasive in civil society, the state is also restricted in the type of socio-economic policies it adopts.

A hegemonic project is a political, institutional and moral strategy which is economically conditioned and relevant but whose domain is civil society as a whole and not just the economic sphere. Through a programme that has a material as well as an ideological content, the construction and reproduction of wider social and electoral blocs is accordingly facilitated. The hegemonic project is an important tool in determining the direction of class compromises and propagating the dominant ideology. The ideological project of the Fordist state was the incorporation of the working class for the advancement of industrial capital interest with the offer of modernisation, social reform, individual consumption, equal opportunities and steady economic advancement (Dunford 1990). Thus the hegemonic project exists to shape the hegemonic structure in order to justify state actions and the particular mode of development. The hegemonic project can also determine which environmental perspective wins the public consensus, thus ensuring any ideological movement damaging to the interest of the dominant capital can be marginalised.

### *Technological Paradigm and Industrial Trajectories*

The technological paradigm is a sub-level of the workings of the regime of accumulation. It encompasses the developments in labour processes and productive forces. It is important in that with each development of the labour process, there comes a crisis in the accumulation system.

In the Western industrialised countries, the development of labour processes has been punctuated by several major transformations. A phase of manufacturing was superseded by mechanisation. Mechanisation was given a new impetus by the development of scientific management of Taylorism which accelerated "the completion of the mechanical cycle of movements on the job and fill the gap in the working day" (Aglietta 1979, pp. 114-5), and in the 1920s the introduction of Ford's semi-automatic assembly line resulted in a mechanisation of transfer and a rationalisation of the flow of work. In the 1970s and 1980s, with advances in electronics, computers and communications technologies, automation or systemofacture emerged as new principles of work organisation. This also afforded the vertical disintegration of the Fordist production processes resulting in the new international division of labour (NIDL).

Successive waves of industrialisation were associated not just with changes in the organisation of work, in the skills and capabilities of workers and with the development of new machines, but also with the development of new materials, a sequence of new products and a succession of leading sectors. After the Second World War, for example, growth was centred on the spectacular development of durable consumer goods and construction industries, and the growth of these sectors stimulated the demand for investment goods and for energy and intermediate goods such as steel and plastics (see Dunford 1988; Freeman 1987). To explain the waves of accumulation and investment, attention must be paid therefore to the development of industries, technologies and human skills that a concept of the forces of production denotes.

### *Institutional Forms*

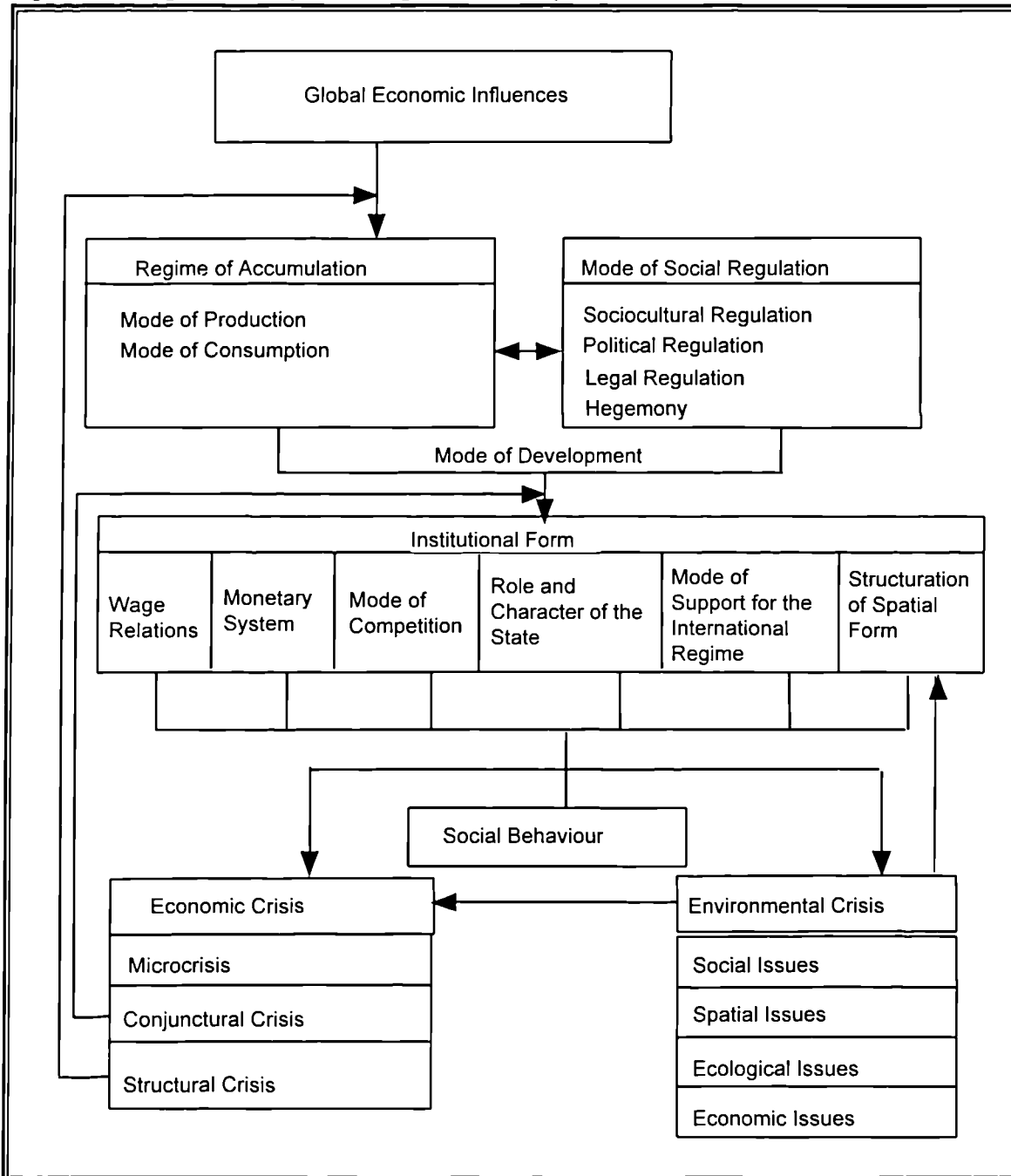
The close interrelationship between the regime of accumulation, the MSR and the hegemonic bloc produces structural forms which crystallise institutionalised compromises. The 'institutional forms' are a set of fundamental social relations, which are characterised by the dominant mode of production (Dunford 1990, p.307) and which "enable the transition between constraints associated with an accumulation regime and collective strategies" (Boyer 1990b, p.332). The institutional forms are a second intermediate level to concrete analysis used to shed light on the origins of the pattern guiding the reproduction of economic formations over given historical periods. (Torfing 1991; Boyer 1990a, p.37)

Among many social relations, there are five important institutional forms that have been identified in the capitalist mode of production (Boyer, 1990a, 1990b):

1. forms of monetary constraint;
2. configurations of the wage relation;
3. mode of competition;
4. position within the international regime;
5. the character and role of the state.

The conceptual framework of regulation theory is laid out in Figure 2.1.

Figure 2.1 Diagrammatic Layout of Regulation Theory and its Elements



Source: compiled by author



The most important institutional form is the role and character of the state. This is because the state plays an indispensable nodal role in bringing about the coherence of a mode of social regulation, and serves as the ultimate guarantor of the other institutional forms (Dunford 1988, p.355; Jessop 1990b, p.202). It is both an object and an agent of regulation since it not only ensures stabilization of regime of accumulation through the articulation of accumulation strategies and hegemonic projects, but it is itself an object for transformation (Jessop 1990b, p.200).

The inadequacies of the state theories reviewed in the above section 2.2, lie in their simplistic dualistic relationship; the political categories of state thesis such as instrumentalist and structuralist only emphasise the state-mode of regulation relationship, while the Gramsci's and neo-Gramscian theories stress the state-hegemony relationship and the economic state thesis the state-regimes of accumulation relationship. In recent years, the regulationist approach has introduced some new advancement to state theories (Bonefield 1987; Clark 1988; Jessop 1988; Bonefield and Holloway 1991). The German school of thought, of which Hirsch is the most prominent, emphasises the political (regulation) and economic (regime of accumulation) dimensions, whereas Jessop (1982, and 1983) is principally concerned with hegemony and politics through the concepts of accumulation strategies and hegemonic projects. Chou (1994), however, synthesises Hirsch' (1985) and Jessop's conceptualisation of the state, in order to achieve 'a relatively balanced comprehension of the state transformation in dynamic terms' (ibid, p.38). He achieves the synthesis by stressing the dual importance of falling rate of profit and intensifying class struggle, whereby the accumulation regime is restructured not only through the re-articulation of the mode of social regulation but also through the propagation of hegemonic projects, which transforms existing historical bloc to a new one (ibid, pp.38-42).

The debate is still raging, and it will no doubt produce theoretical advancement, but it is suffice to conclude here for the purpose at hand that the state is a central institution for social regulation and for maintaining the hegemonic bloc to ensure the stabilization of the regime of accumulation.

Although regulation theory has successfully drawn together many social forces and relations of capitalist development under an encompassing interpretative framework, it has nonetheless attracted many criticisms. Firstly, it is accused of over-generalisation in the periodising of capitalist history into two distinct phases of 'binary opposition' between rigid or collective Fordist period and flexible or fragmented post-Fordist period (Williams et al 1987, Sayer 1989a, Thrift 1989, Sayer and Walker 1992) and has been challenged for both its historical accuracy concerning the nature and breakdown of Fordism and its claim that flexible accumulation is replacing mass production (Brenner and Glick 1992, Sayer 1989a, b). Thus Amin (1994) claims

that theories of transition,<sup>21</sup> of which regulation theory is one should be seen as a debate rather than as universally accepted theories (p.3). Secondly, it is argued that the 'productionist' bias of regulation theory tends to overlook the importance of non-Fordist production processes, service industries and non-Taylorist work organisation in the accumulation regime and MSR (Martin 1994, Clark 1988, Foster 1988, Williams and Haslam 1991). Thirdly, due to the above mentioned flaws, it is also argued that regulation theory ascribes and imposes a facade of coherence upon what is a much more confused and unstructured reality, falling into the functionalist trap (Amin 1994, p.11, Martin 1994, p.32). Many critics stress the open nature of change dependent upon the outcome of conflicting social relations as well as the mixture of continuity and change from one period to another (Meegan 1988, Rustin 1989, Bonefield and Holloway 1991, Lovering 1991, Graham 1992, Bonefield 1993). Fourthly, it is clear that, despite the importance attached to the institutional forms in linking together production and consumption, these forms have not been examined in detail. In particular, the nature of the state has not been adequately theorised (Martin 1994, p.32). Lastly, due to the macroeconomic orientation of regulation theory, it is clear that the national economy, as the key unit of analysis, has been prioritised over both local and global economic and regulatory processes. Thus, the integration of accumulation and regulation at different spatial scales remains untheorised (Martin 1994, Tickell and Peck 1992b).

The conceptual framework set out below attempts to address some of the criticisms and shortcomings of the regulation approach.

## **2.4 Conceptual Framework for Analysis**

### **2.4.1 Regulation Theory and Space**

As mentioned at the beginning of this section, regulation theory has the capacity to be explicitly spatial. However, due to its main focus on the economic transformation, there exist some limitations in dealing with spatial problems. Tickell and Peck (1992a) state that the theory contains no explicit conception of uneven spatial development, either at the subnational or supra-national scales, and that there exist several methodological problems. Concerning these questions, some studies have emerged in recent years (Scott and Storper 1990, Florida and Jonas 1991, Moulaert et al 1992, Tickell and Peck 1992b).

Though not empirically substantiated, Lipietz has broken new ground in spatialising regulation theory. Lipietz (1992) came up with a conceptual framework, which tries to integrate space into

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<sup>21</sup> Amin (1994) categorises three theories or models of transition: the regulation approach, the neo-schumpeterian approach and the flexible specialisation approach.

regulation theory by referring to and developing the Marxist geographers' conception of space, in that it is produced out of social relations, rather than an empty container in which events occur. It is not just that space and society 'interact'; a specific historical logic (that of capital accumulation) guides the historical dialectic of space and society.

As Lipietz claims:

The structuring of space is one of the material dimensions of this stabilization of relations which structures social practices. In this regard, it is at first sight the result of this stabilization. The "choreography" of Hagerstrand illustrates this aspect quite well: because it is human nature to assemble regularly under conditions, and for humankind to continually circulate close to those same places, human beings quite naturally wind up forming places and networks, much the same way one crushes a path into a lawn by always crossing it in the same places. But this structuration of space is at the same time the material base of this social stabilization: once the social places and networks are defined, the infinite plasticity of social practices, as Marx has noted, is framed or reified. In this sense, human space is already a mode of regulation. (Lipietz 1992, pp.103-4)

If we investigate the structuration of space into its component parts, we would find a concrete interaction between people, society and the environment, where the action of one will affect others and their environment.

Each individual human action is embedded in a preexistent space, an always already given space, and participates in the creation of material conditions of all other human activities (in cities, traffic, production, waste). Each human activity occurs within an "environment", but also is an integral part of all other human activities and their environments. In turn, each activity can transform (for better or worse) every other environment (e.g. the construction of a apartment building or the disposal of garbage). (Lipietz 1992, p.104)

These interdependent activities are what he calls "structure" like a skeleton and "agency" like flesh and blood, which simultaneously authorizes self-reproduction, crisis and transformation. Thus, the economic activities are embedded in space by their physical fix in the environment, which in turn means that spatial development is a change in human and environmental conditions through the accumulation system.

Tickell and Peck (1992b) pose questions regarding the linkage between national MSR and sub-national spatial development, and the interaction between national and global spatial scales. In the discussion of the former, they suggest the possibility of national MSR being hegemonic to support conditions for the reproduction of accumulation in 'core' areas at the expense of the 'peripheral' accumulation system, thus conceiving a geographically expressed 'two nations' MSR (p.210). Though this has raised the linkage between accumulation regime-MSR coupling and different forms of uneven development, this has not been extensively theorised at either

subnational or international scales. In the latter, according to Tickell and Peck, the division of the world into a series of national regimes of accumulation also requires reassessment. They stress the need to consider both the historical balance of power within the nation-state (for example, between financial capital and industrial capital) and the influence of pressures arising from the global regime of accumulation (ibid., p.210). These theoretical questions need to be further explored, but they show the possibilities in regulation theories for addressing spatial problems.

Lipietz (1992) examines the spatial and environmental consequences of a changing accumulation regime-MSR coupling. He claims that two paradigmatic axes arose to resolve the crisis of Fordism, which stemmed from the exhaustion of the 'Taylorist' production processes and from the rigidity of the national MSR: the neo-Fordist regime, which aims to re-establish the flexibility of market relations as well as capital-labour relations, and the post-Fordist regime, which aims to overcome the limitation of Taylorist model of mass production by job qualification, 'just in time' organisation and strategic cooperation between companies.

The spatial form of these two models are quite different: neo-Fordist models imply a return to urban concentration since proximity of social and economic interactions becomes ever more important in a social regulation that takes direct marketing as its universal form. This is quite different to the Fordist 'hierarchy', where every thing was dispersed over a topology, although controlled by the hierarchies. However, the post-Fordist model produces a network of smaller and well-organised production systems, where "organized mobilization of territories" becomes its base. Instead of a Fordist hierarchy, this model depends on "negotiated collective and a contractually stabilized interaction, with all the corresponding institutions (professional associations, research and development departments, arbitration boards and union locals)" (ibid., p.106). The megalopolisation, and its social and ecological consequences in the North and South<sup>22</sup> are the greatest menaces that the neo-Fordist models can impose on the future. Just as Fordism of the 1960s has tightly steered the direction different countries have taken through the 1980s, likewise the urban space bequeathed by the 1980s will impose ever more rigid limits on our choices in the 1990s and in the 21st century.

In the above discussion, we can see that space is actively created and recreated through the social activities between people, and their environments. Space is not just an outcome of the accumulation regime, but is greatly structured by the pre-existing space and structures the accumulation strategies of the future. Thus space is a function of society and the physical environment. In other words, the particular spatial form is a manifestation of social relations of environmental interaction.

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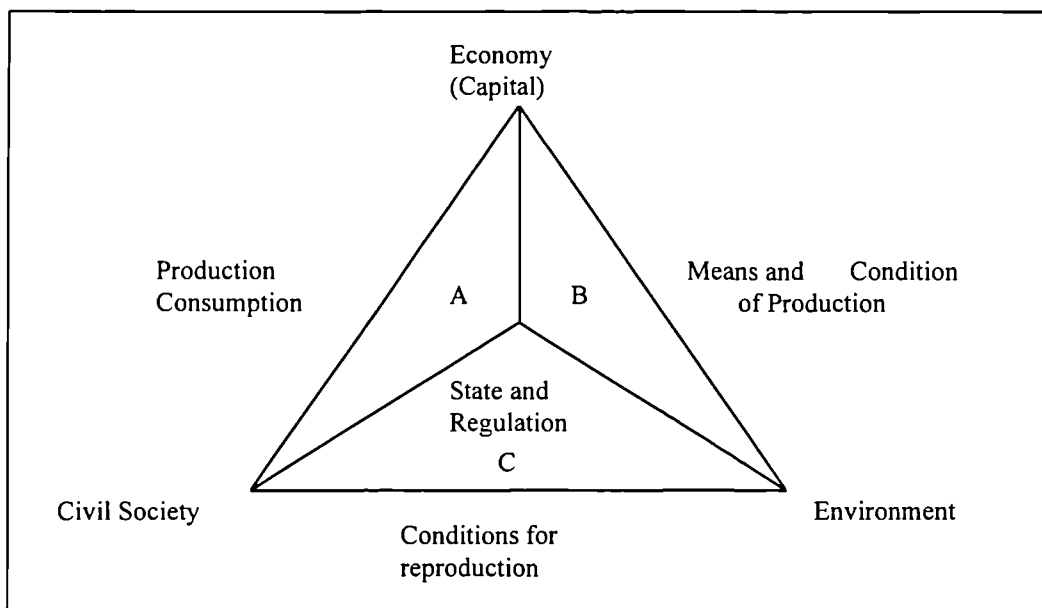
<sup>22</sup> Lipietz (1992) states that London and Paris are European megalopolises, which are rapidly growing to the scale of Los Angeles, Sao Paulo and Mexico City.

## 2.4.2 Crisis-ridden Capitalism, the State and the Environment

As we have seen in the above theoretical discussions, the accumulation system, state intervention and social/spatial/environmental problems are interdependent.

Figure 2.2 shows the model that integrates the economy, civil society, state and the environment. The state (and other social, hegemonic institutions) is situated at the top of the triangular pyramid, where it regulates the interactions between capital, civil society and environment. Each sides of the pyramid (marked A, B, C) represent the field of regulation. The state needs to balance the three sides of regulation to obtain the best possible conditions for the continued reproduction of the accumulation regime. The emphasis however, has been on the production and reproduction of capital (and to a lesser extent, labour) at the expense of the 'environment'. With environmental consciousness awakened, the present emphasis is not on the protection and enhancement of nature in its own right, but as a resource for continued and more efficient use for production and reproduction of capital.

Figure 2.2 Pyramidal Relationship between Economy, Civil Society, Environment and the State: A Conceptual Framework



Note:

Segment A: social regulation in the production/consumption relations such as intervention in union activity, consumption behaviour, education and training, fertility, working conditions etc

Segment B: social regulation and state provision of physical infrastructure for production and the enabling of obtaining raw materials for production, and the protection of nature from overuse and abuse; spatial regulation.

Segment C: social regulation of consumption of nature and environmental goods, the state regulation in the provision of public consumption goods such as clean water, roads, low cost housing and general living conditions.

The 'environment' in this diagram is defined to incorporate not only the physical environment, but also the spatial arrangement of resources, production and consumption. As defined above, space is a manifestation of the interaction between people, and between people and their environment. While social regulation (B) involves the securing the physical preconditions for capital accumulation such as spatial strategies, construction of infrastructure and securing of raw materials, the field of social regulation (C) involves the balance between the environmental needs of the population and the conservation of nature.

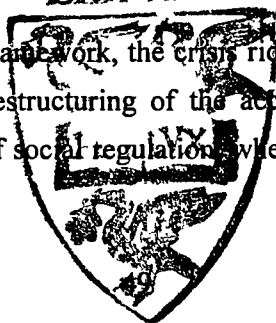
This model shows that crisis could be produced by the dysfunction of any of the four 'poles' and that any adjustment may involve a change in all the poles. The formation of crisis in the accumulation regime gives new directions to state policies as well as new relationship between economy and space/environment. The conjunctural and structural crisis would necessitate some sort of adjustment to the regime of accumulation or a recoupling of a new accumulation with a new mode of regulation which will be contingent upon the historical legacy of the social organisation of that society. Both the former and latter restructuring of the accumulation system would have a social and a spatial impact to a greater or lesser degree depending on the adjustment required. It may also require a 'spatial strategy' in order to help the re-stabilisation of accumulation system. However, the new spatial arrangement will be constrained by the old spatial structure of the past regime since the new spatial structure will evolve from the previous spatial legacy.

Since space is a representation of the geographical distribution of economic activities (reproduction of capital and labour), infrastructure and population, the changing interaction of accumulation regime and physical environment is the basis of spatial transformation. Thus, the changing spatial configuration brings about a change in the environmental conditions in geographical places. As new industrial space is formed and old industrial spaces go into decline, there is a qualitative change in the environmental conditions of both places. Therefore, uneven spatial development results in differentiated environmental qualities. The environmental degradation and problems in a country are not only due to the economic system, i.e. the mode of production and consumption and capital concentration, but also due to the spatial arrangement of production and consumption and the social regulation of production, consumption and the disposal of their wastes.

#### 2.4.3 Conclusion and Hypotheses

Under the regulationist conceptual framework, the crisis ridden capitalist mode of production is reproduced through the continual restructuring of the accumulation regime stabilised by the simultaneous changes in the mode of social regulation where the state is the ultimate guarantor

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of the mode of development. At the same time, space is restructured in order to remove the barriers to capital valorisation process and to construct a new space which reflects the new accumulation regime and mode of regulation. However, the new spatial form constrained by the past spatial structure may intensify the socio-environmental problems, due to the intensifying accumulation regime and mode of regulation. The linkage between the environmental problems and the mode of development can be made through the spatial development which is the physical conditions of production and reproduction.

Three linked hypotheses could tentatively be advanced at this point:

1. The environmental degradation of a nation-state is dependent on the spatial form that arises out of the dialectical relationship between the past spatial legacy and the accumulation strategy, which the state implements in the process of restructuring of the failing regime of accumulation and mode of social regulation stemming from the changing global economic order and/or industrial paradigm.
2. The succession of intensifying regimes of accumulation and MSR creates a topography of uneven spatial development, which results in differentiated environmental conditions in spatial zones of differing levels of development.
3. The methods of tackling environmental problems are dependent on the mode of social regulation (the hegemonic ideology, the regulation of industrial and domestic wastes, the provision of social and environmental amenities), and the 'industrial trajectory'.

## Chapter 3

### Accumulation Regimes and Modes of Regulation in Korea

The investigation of the causes of environmental problems in Korea must begin with the examination of the historical articulation of the mode of development. The successive regimes of accumulation and modes of social regulation must be explored to see the way in which economic, social and political changes have affected spatial structure and environmental conditions.

The introductory section will look at the changing international economic environment in which Korean economic development has taken place. Although the internal dynamics and mechanisms of the development process are crucial factors of environmental change, these cannot be separated from global economic changes, which have been and still are the force that determines the direction of Korean economic, and political development, in particular the changes in the 'core countries'.

The following five sections will look at the different regimes of accumulation in order. After a brief discussion of the colonial legacy which was to play an important role in the postwar development process, the chapter will focus on the post-1950 political, economic and social changes. Post-independence Korean economic development can be divided into five phases which are distinguished by the changes in the regime of accumulation and/or MSR: the 'Import Substitution Industrialisation (ISI) period'; the 'Taylorist Export Oriented Industrialisation (EOI) period'; the '*Yusin*<sup>23</sup> EOI period'; the 'Peripheral Fordist EOI period'<sup>24</sup>; and the 'Neo-Fordist period'<sup>25</sup>. These different modes of development have had different impacts on space and the environment through changes in industrial, social and institutional structures. Thus the internal mechanisms of societal forces and their consequences will be discussed here. In this process the industrial relations, social norms and political systems which affect the use and abuse of the environment and attitudes towards it will also be examined.

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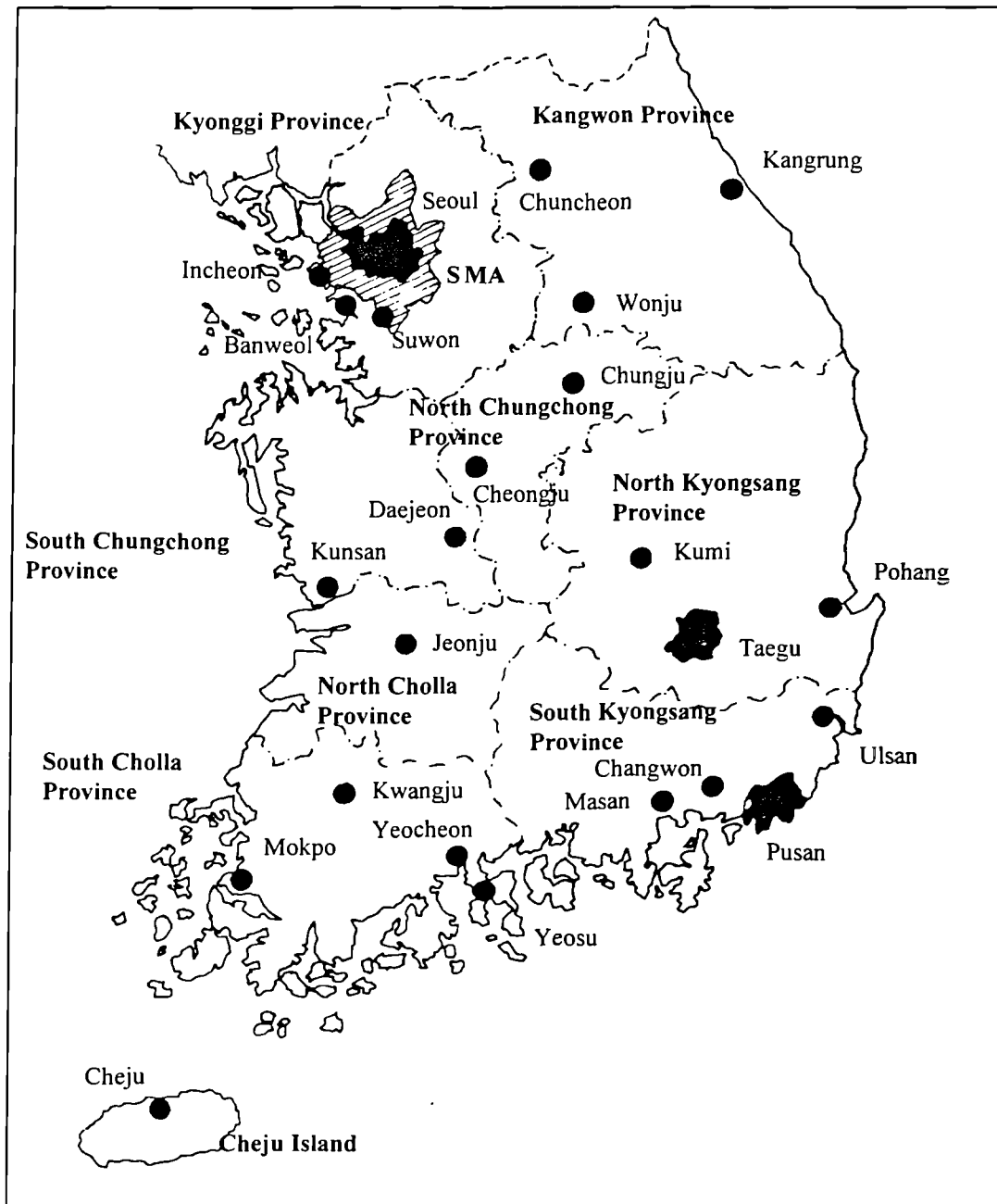
<sup>23</sup> The term *Yusin* comes from the ideological concept of 'self reliance' of Park's period in the 1970s. This term is seen to be appropriate since it represents the dominant character of the MSR during the 1970s.

<sup>24</sup> Peripheral Fordism is characterised by authoritarian state, economy dominated by export of Fordist products to core countries, and labour repression and low wages (Tickell and Peck 1992b, p.202).

<sup>25</sup> The term Neo-Fordist regime has been used by Lipietz (1992) to describe a regime of accumulation, which uses competitive or corporatist mode of social regulation in a flexible accumulation regime.



Figure 3.1 Map of Korea: Provinces and Major Cities



### **3.1 Introduction: Fordist Regime of Accumulation, Crisis and the Rise of the NIDL**

The world economy, upon which Korea has been very much dependent has been dominated by the advanced Western industrialised countries since the beginning of capitalism. The industrialisation of the core countries in the 18th and the 19th century drew more and more peripheral regions and nations into the capitalist development process. Much of the indigenous mode of production was swept aside to be replaced by capitalist social relations.

In the core industrialised countries, there have been many transformations of the regime of accumulation since the late 19th century. The *laissez-faire* era of the 19th and early 20th century was characterised by extensive regimes of accumulation and competitive regulation. During this time, growth was achieved incrementally, through the insertion of additional productive factors into the capitalist circuit. Accumulation occurred as a result of the expansion of capitalist relations into new industrial sectors, new areas within the core countries (of Europe and North America) and new peripheral countries. The major problem for individual units of capital was meeting rapidly growing demand for their goods in expanding markets. It was because of this that the leading industrial sectors were capital goods industries such as coal, steel and chemical industries, and technical progress was largely limited to these Department I industries, not affecting Department II (consumer goods) to any significant extent (de Vroey 1984, Lipnitz 1987). At the level of the nation-state the MSR was economically liberal and non-interventionist. Wages, for example, were negotiated at the level of individual firms and subject to market fluctuations. At the international level, on the other hand, competitive regulation was characterised by the hegemony of the UK, and also by the gold standard.

After the First World War, technical progress began to spread to Department II industries, which altered the structure of the regime of accumulation. However, there was insufficient consumer power to create effective demand for increased production in Department II. This mode of development was exhausted in the 1930s and manifest itself in the crisis of overproduction. The core of the problem was that the competitive MSR was unable to form a social framework where wages could be raised in line with productivity growth. In order for the crisis of the 1930s to be resolved, it was essential that a new coupling between the accumulation system and the MSR be established (Tickell and Peck 1992b).

Between the two world wars, there took place a 'long transition' from the extensive regime to a phase of intensive accumulation or Fordism. Technical changes, often involving deskilling, brought about significant increases in labour productivity in both Departments I and II. This led to massive rise in real wages, which in turn formed a basis for mass markets for consumer goods.

After the Second World War, a new mode of development was established, based on mass production with mass consumption by the labouring class. This new regime of accumulation was coupled with a monopolistic mode of social regulation. In the United States, the roots of this MSR were argued to have been laid in President Roosevelt's 'New Deal for the American people' and in the growing militancy of trade unions (Aglietta 1979). In Britain, the 'hungry thirties' ended with a transformed political climate, more open to state intervention and underpinned by the consensual nature of politics in the wake of the Second World War. The monopolistic MSR was characterised by the interventionist state which developed welfare and social programmes designed to maintain the levels of total consumption, and by the collectively determined wage levels through increased bargaining powers of the workers, which again stimulated growth in consumer demand (Tickell and Peck 1992a).

The Fordist regime based on intensive accumulation and a monopolistic MSR began to dysfunction from the late 1960s, although the structural crisis was not manifest until the mid-1970s. In the late 1960s there was a slow-down in productivity growth in the core Fordist countries as the leading industrial branches reached their technical limits in the context of rising real wages. At the same time investment and capital intensification in Department II slowed down (although the effects of this were mitigated in the short term by rising exports). Finally, resistance to the Taylorist labour process grew within the workplace and industrial strife exploded. All these factors resulted in falling rates of profit and devalorisation (Tickell and Peck 1992b). Aglietta (1982) has suggested that the crisis of Fordism was exacerbated by 'exogenous' shocks to the system. The development of contemporary Fordism in the core countries had brought about an increased competition between the three economic poles in the world economy in western Europe, the USA and Japan in response to the dramatic expansion of global trade among them. The emergence of Japan as an economic power in the 1960s began to present a considerable threat to the established Fordist economies of Europe and North America, eating into tight consumer markets (Lipietz 1987, Hirsh 1978, Tickell and Peck 1992a, 1992b). The oil shocks in 1973 have also contributed to the crisis by inducing acute inflationary consequences (Roddick 1988, Lipietz 1985, 1989).

The unfolding structural crisis triggered further internationalisation of production, in part to offset the rising cost of labour brought about by increased charges on welfare states as a result of increased unemployment. All this led to a reduction in aggregate demand, which in turn caused problems of over-capacity and difficulties in debt repayment for companies. The internationalisation of production and the growth of the export sector meant that wages were increasingly seen as a burden on economic competitiveness rather than as a contributor to consumption. Consequently, real wages began to slow and then decline, compounding the

problems of stagnating consumer demand. The virtuous cycle of Fordism had turned vicious (Tickell and Peck 1992b).

The internationalisation of production and thus capital to those peripheral countries with low labour costs and weak labour unions gave rise to a New International Division of Labour (NIDL) (Froebel, Heinrichs and Kreye 1980). The Fordist principles of labour organisation were characterised by the division of production activities into three levels; (i) conception, organisation and methods, and engineering, all of which became autonomous; (ii) manufacturing, which requires a fairly skilled labour force, and (iii) assembly and execution, which in theory requires few skills (Lipietz 1987). The vertical integration of these three levels of the labour process to maximise economies of scale achieved during the Fordist period were dismantled due to the need to overcome the crisis. The pressures exerted on industrial capital, combined with the developments in production, transport and communication technology, and growing labour militancy, impelled more and more Fordist assembly lines to go 'offshore'. This triggered a substantial growth in sub-contracting production in peripheral countries in an attempt to restore profitability and control over the production process. The new division of international labour had accordingly been formulated in response to the vertical disintegration or putting-out of the unskilled and labour intensive part from the Fordist production lines. Through the development of a NIDL, central capitalism integrated peripheral countries in the world economy as 'sweatshops' committed to the production of Fordist goods (Lipietz 1985, 1987). Labour intensive industries started to locate to peripheral countries such as Mexico, Brazil, Taiwan, Singapore and Korea. This was to expand markets by gaining a foothold in ISI countries protected by high tariff barriers, and to raise competitiveness in the international market by exploiting an almost inexhaustible reservoir of cheap labour in the developing countries through initiating a transnational and subcontracting reorganisation of production (Lipietz 1987).

Table 3.1.1 Phases of Regulation and Accumulation of the Industrialised Countries in the Twentieth Century

	to 1914	1918-39	1945-73	1974-present
Accumulation system	Extensive	Emerging intensive	Intensive (Fordist regime)	Emerging flexible? Protracted crisis?
Mode of Regulation	Competitive	Crisis of competitive	Monopolistic (Fordist-Keynsian mode)	Crisis of monopolistic. Emerging neo-competitive? neo-conservative? neo-corporatist?

Source; Tickell and Peck 1992b, p.194.

Under such global economic restructuring, Korea emerged as a newly industrialised country along with Taiwan, Singapore and Hong Kong in the late 1960s. The 'four tigers' or 'dragons', as they are often referred to, industrialised within this external economic environment. Although the globalisation of capital and production helped their industrialisation process, the intensification of competition for markets which accompanied it posed a constraint and transformational force in their own industrial restructuring. As we will see in the following sections, the emergence and collapse of Fordism in the core industrialised countries had a significant effect on the Korean EOI development. However, it will also be clear that Korean economic development was not as dependent upon the transnational subcontracting or foreign direct investment as was the case in other Asian NICs.

### **3.2 Colonial Development and the Transformation of Korea (1910-45)**

The significance of imperialism carries weight in the explanation of economic development in Korea as it did in the case of Japan a century earlier when it had articulated western technological and institutional contacts with its own cultural forms (Morishima 1982). The foundation of Korean economic growth from the 1950s onwards could be attributed to the industrial, social and institutional infrastructure laid down during the Japanese colonial period (Mason et al 1980, p.75).

For Korea, the Japanese annexation signalled the beginning of the modernisation period. The colonial regime implemented many social, economic, physical, institutional and political changes. Before that time, the modernisation was slow, and was hampered by the conservative Confucian regime centred around the monarchy. The traditional Confucian and feudal social norms were replaced almost overnight by modern social institutions: commercial and financial institution, transportation infrastructure, a judiciary, education and other forms of state administration (Amsden 1989, p.32).

#### **3.2.1 Export Oriented Agricultural Modernisation and Industrialisation**

The thrust of the Japanese state into Korea in 1909 coincided with Japan's first wave of industrialisation. The initial material context of Japan's expansion into Korea was its drive to secure sufficient supplies of agricultural commodities for its growing urban and industrial population. During the period of colonial rule, agricultural productivity increased greatly due to the implementation of modern practices as well as removing absentee landlords and transforming their agricultural systems into smallholder cultivation (Ho 1978, Mason et al 1980, Henderson and Appelbaum 1993, p.7). Although the agricultural system that the Japanese colonial state imposed upon Korea was not much different from the traditional Korean one it replaced, the

socio-economic effect was quite devastating. The landlord-tenant system still persisted. However, under the new system the peasants had no rights to their land without a tenant's lease. The introduction of market prices stimulated productivity, but it also intensified the exploitation of the tenants to the maximum. As rents continued to escalate due to increased competition for tenants' leases, and with few employment opportunities elsewhere and rising population pressures, the agricultural squeeze was at the tenants' expense (Amsden 1989, pp.53-4). Amsden (1989) show that while output rose<sup>26</sup>, the welfare of the masses, and in particular the tenant farmers declined and income distribution deteriorated. For instance, the index of rice consumption fell from 100 in 1915-19 to only 56 in 1934-38 with a similar trend in the consumption of millet, barley and beans (ibid, p.54). Due to increased production in agricultural products for export, the colonial administration was able to expand its tax collection, and its food supply to the homeland.

In the 1920s and 1930s, due to rising wages in Japan and military needs for the conquest of Manchuria, Japanese companies were encouraged to invest in mining and manufacturing facilities in Korea (Amsden 1989, Henderson and Appelbaum 1993). The first wave of industries in the 1920s was mainly light and mining industries, which exploited the cheap labour and raw material resources. Jones and Sakong (1980) summarised this period as "a rather typical colonial dualism with the periphery providing raw material to the center" (p.23).

During this early colonial industrialisation period, a small group of Korean entrepreneurs were deliberately cultivated for collaboration (Amsden 1989, p.33). The number of wholly Korean owned firms increased from 27 in 1911 to 362 in 1929 (Jones and Sakong 1980, p.24). Compared to the number of Japanese companies, this was small, but it demonstrates the genesis of the Korean capitalists, the *chaebols*<sup>27</sup>. Jones and Sakong (1980) gives an example of how a present day *chaebol*, the Sam Yang Group began in this period - starting as a textile company and diversifying into other areas. It established a newspaper company (Dong-A Ilbo) and also a university (Korea University) (p.24). They also assert that the joint venture companies (of which there were 165 in 1929) must have played a major role in the critical learning process of the period (ibid., p.24).

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<sup>26</sup> Between 1910 and 1941, agricultural output increased at an average annual rate of 2.3 percent (Amsden 1989, p.54).

<sup>27</sup> Chaebols are monopoly capital which have taken the form of diversified business groups in Korea. The scope of their business encompasses construction, electronics, automobile, leisure, retailing and shipbuilding industries.

In the 1930s, the second wave of industrialisation in Korea was led by the heavy and chemical industries in preparation for the war in China and Southeast Asia, based on *Zaibatsu*<sup>28</sup> capital (Amsden 1989, p.34, Jones and Sakong 1980, p.24). Most of the heavy and mining industries were located in the north in order to be near the source of mineral resources and hydroelectric power plants, whilst the new, modern large-scale light industries like food processing and textile industries were situated in the south. The output was to supply the Japanese economy, and the share of exports in total manufacturing increased from roughly one third in 1930 to two-thirds in 1940. The foreign ownership of the modern industrial sector was particularly dominant in the 1940s, with 59 percent of manufacturing firms owned by the Japanese - representing 91 percent of paid-in capital. The split occurred in that virtually all the large-scale factories were Japanese owned whilst small-scale production was in Korean hands (Jones and Sakong 1980, p.25). Although manufacturing averaged an annual growth rate of over 10 percent throughout the three decades (Henderson and Appelbaum 1993, Mason et al 1980, p.75), with forward and backward linkages low, the spread effects of the rapid economic growth were minimal (Jones and Sakong 1980, pp.24-5). The early colonial dualism was extended and intensified in all sectors.

Table 3.2.1 Comparison of Manufacturing Production Between South and North Korea, 1939<sup>a</sup>

	(current million yen)				All Korea	Share of the South in All Korea (%)
	South		North			
Textile	171.0	(24.1)	30.4	(3.9)	201.4	84.9
Metal	13.6	(1.9)	122.5	(15.5)	136.1	10.0
Machinery	38.4	(5.4)	14.8	(1.9)	53.2	72.2
Ceramics	12.1	(1.7)	31.2	(4.0)	43.3	27.9
Chemicals	91.2	(12.9)	410.6	(52.0)	501.8	18.2
Wood products	13.7	(1.9)	7.4	(0.9)	21.1	64.9
Printing and publishing	17.2	(2.4)	2.2	(0.3)	19.4	89.0
Processed foods	213.6	(30.1)	114.8	(14.5)	328.4	65.1
Gas and elec. products	11.1	(1.6)	19.4	(2.5)	30.5	36.4
Miscellaneous	127.5	(18.0)	35.8	(4.5)	163.3	78.1
Total	709.4	(100.0)	789.1	(100.0)	1,498.5	47.4

Source; Zenku Keizai Chosa Kikan Rengokai, Chosen Keizai Nenpo (1942), cited in Mason et al (1980), p.89.

Note: a. The breakdown was based on the production data by province. The breakdown between the south and the north will not be exact because the 38th parallel did not match the provincial boundaries.

<sup>28</sup> Zaibatsu were large diversified business groups in Japan until the end of the Second World War. The six zaibatsu groups accounted for 70% of total Japanese investment in Korea in 1941. (Amsden 1989, p.34)

Between 1910 and 1945, the above mentioned developments saw the creation of an industrial working class. A large number of Koreans gained experience in factories and in other modern institutions, and became familiar with a modern urban existence. There was a considerable expansion in the size of the Korean factory labour force, from 12,000 in 1912 to nearly 440,000 in 1940 (Mason et al 1980, p.77, Jones and Sakong 1980, p.28). Although there were more than 7,000 Korean managers and 28,000 professional and technical workers,<sup>29</sup> in these skilled categories Koreans were discriminated against: in 1943, Japanese held 81 percent of the 'technician and engineer' positions in manufacturing (Jones and Sakong 1980, p.26). Although the formation of an industrial working class became the foundation for post-independence development, the lack of skilled workers such as technicians and engineers was also to prove one of the reasons for a low rate of utilisation of factory capacity during the ISI period.

In order to facilitate industrialisation and export (to Japan) of agricultural produce and manufactured commodities, considerable physical infrastructural projects were undertaken such as the building of railroads, roads and ports, and the provision of electricity, sewerage and piped water to most large urban settlements, this having a great impact on the traditionally rural society (Henderson and Appelbaum 1993, p.7, Mason et al, 1980). As will be seen in Chapter 4, the infrastructural network, particularly the rail system, was extensive. This covered the whole of Korea to expedite the appropriation of agricultural and industrial goods to Japan from Korea and Manchuria.

The legacy of Japanese colonial industrialisation can be summarised as providing a foundation for post-war capitalist industrial development (i.e. formation of both a Korean capitalist class and a working class, physical infrastructure and basic industries), although the developmental process was harsh, especially on the tenant farmers, and also uneven due to colonial dualism and enclave features (Jones and Sakong 1980).

### **3.2.2 Colonial Administration, Regulation and Social change**

The social and institutional changes that took place during this period have often been underestimated as a basis for later means of social regulation, contributing so much in directing post-war economic growth. Establishment of a modern education system, financial system, capitalist social relations and a colonial administrative system, and the abolition of monarchy and the *Yangban* class (social elite), had a profound effect on the society as a whole. Basically, feudal and Confucian traditions and institutions were replaced by 'modern' institutions.

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<sup>29</sup> See Jones and Sakong (1980), pp.26-8, particularly table 5 for Korean employment structure. There were nearly 1,900 Korean technicians and engineers in manufacturing, 1,300 in mining and 2,600 in service sector outside government by 1944.



Of the social changes implemented during the colonial period, the militaristic colonial administrative system and the education system had the most significant impact in the transformation of Korean society (Henderson and Appelbaum 1993, p.7). The former ensured not only the preconditions for Japanese accumulation and expropriation but also promoted the 'Japanisation' of Korean society down to the lowest levels. The colonial bureaucracy was able to transmit the philosophy of military hierarchy with its attendant disciplinary codes and ethos to the colonial society through incorporating Koreans in the educational, military and civil services; there were also direct means such as state coercive tools. The Japanese colonial state used this structure to promote efficient economic development and control. The type of authoritarianism utilised by Park Chung Hee and subsequent political leaders could be attributed to the nature of the Japanese administration of this time (Cumings 1988).

The modern education system replaced the traditional education and national exam system, which was limited to the aristocratic or landed gentry classes, allowing the lower classes access to formal education for the first time in Korea. This helped to supply a well-educated industrial proletariat for the industrialisation process during the colonial period as well as the later stages. 'Investments in education, even at the university level, were unusually high by colonial standards, but they were motivated by policies designed to assimilate Koreans into Japanese society as the lower elements' (Amsden 1989, p.33). This provided literacy, discipline and social homogeneity, which was a particular feature of Japanese and later, Korean education. The formation of 'group-cooperative'<sup>30</sup> social norms became deeply rooted in the society as a whole, and was used quite openly in industry, especially in the large conglomerates as a means to enforce hierarchy and discipline on their workers and staff. The consequences of such a mode of social regulation will be discussed later.

Amsden claimed that the new social system created by Japanese colonialism was "far more successful in smashing old foundations than establishing new ones" and states that "colonialism removed the old blockages to industrialisation but created new ones in its wake" (Amsden 1989, p.33). Whether this view can be substantiated or not, the fact remains that the social institutions and cultural norms that were created by the Japanese gave the Korean state a powerful tool for economic and social regulation.

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<sup>30</sup> This term by Cumings (1981) is to describe the nature of individual psychology of Japanese and Korean society, which emphasises the need of the group over individual needs, and group action, and which makes individuals conform to social norms dictated by the hegemonic group.

### 3.3 The Import Substitution Industrialisation Period (1953-61)

After the defeat of the Japanese army by the Allied forces, Korea was released from the monopoly of Japanese colonial rule only to be locked into a Soviet-American duopoly, which divided the peninsula into two halves at the 38th parallel, north and south. Each set of occupying forces went about establishing a nation in its own image, and in 1948, there took place separate elections, which installed a communist regime in the north and a capitalist regime in the south (Cumings 1981). The interim period between 1945 and 1953 was a time of economic and political turmoil with contending ideologies fighting for hegemony, which eventually led to the Korean War (1950-53). The political events of the interim period are important in that they shaped the political and social forces that continue to play upon the Korean peninsula.

#### *American Occupation and prelude to ISI*

The first few years after liberation could be described as a period of lost opportunities, which was primarily frustrated by the anti-communist stance of the American occupation forces and the opportunist behaviour of Korean politicians. The mistakes made in this period effectively terminated the opportunity that liberation had brought to create a truly independent country and a just society - the aspiration of the Korean people (Cumings 1981).

Political events have repeatedly interrupted the growth of Korea's economy. This was never truer than in the period of 1945-1953. During these early years the economy was disrupted first by the collapse of the 'Japanese Greater East Asia Co-Prosperity Sphere' (Mason et al 1980, p.92) and later, by the arbitrary division of the peninsula into Soviet and American occupation zones. The ensuing war between the two Koreas destroyed much of the urban housing, infrastructure and industries, and devastated the countryside. Due to the Japanese policy of discriminating against Koreans in engineering and managerial positions, the consequent lack of technicians and managerial staff in the industrial sector after the Japanese departure meant that the colonial industrial structure was not able to be sustained. By 1947/1948, the number of manufacturing and construction firms in South Korea had fallen from 10,065 (in 1943) to 4,500; employment had declined by 41 percent in these sectors, and manufacturing output was only 15 percent of the 1939 level. The division of the country at the 38<sup>th</sup> parallel had deprived South Korea of much of the heavy and chemical industries as well as much of the minerals and energy needed for urban and industrial needs. For instance, three quarters of the mining industry was in the north<sup>31</sup>. When the Armistice was signed in 1953, the level of production of the Korean economy was far below that of the early 1940s (Mason et al 1980, p.92, Jones and Sakong 1980).

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<sup>31</sup> See Mason et al, (1980), p.88 for detailed breakdown by industries in table 10.

Many analysts blame mismanagement by the American occupation forces as much as the political conflicts between the myriad Korean political groups for the deterioration of the economic situation (Jones and Sakong 1980, pp.31-2). The American Military Government in Korea refused to recognise the People's Republic, also set up in the South, and in 1946 suppressed the National Council of Korean Labour Unions, *Chon Pyong*,<sup>32</sup> since this organisation was said to have had communist tendencies and Soviet support (Cumings 1981). Instead the American occupation forces chose to work with the most conservative political faction, the Korean Democratic Party (KDP), which had very little grassroots support<sup>33</sup>, in the governing of South Korea (Cumings 1981). Though this party soon lost power, the implication of this partnership was that it safeguarded the survival of the *yangban* class, the civil servants, police and capitalist opportunists, who had collaborated with the Japanese. Although the landlord class disappeared by the end of the 1950s with the implementation of land reform, some of the same individuals who were privileged *yangban* became privileged politicians, government bureaucrats, educators and industrialists. This lent a continuity to postwar change (Amsden 1989, pp. 36-7). The Liberal Party which assumed power during the ISI period relied on much of the same section of society.

### *Land Reform*

During the Japanese colonial period, the social composition of the agricultural population shifted towards tenancy. Tenants accounted for 37.7 percent of the agricultural population in 1918 but for as much as 53.8 percent in 1932. In the late 1930s, less than 3 percent of farm households owned about two thirds of the cultivated land area (Amsden 1989, p.54). Following independence and division of the country, the American and South Korean authorities were confronted by increasing political sensitivity on the subject of land and wealth redistribution, which had been conclusively conducted in the Soviet controlled North: "..... landlordism had disappeared, the land had been redistributed, major industries had been nationalised, radical reform had eliminated the worst abuses of the colonial factory system and had established formal equality for women" (Cumings 1981, p.382).

Tenant farming was formally abolished by the *Land Reform Law* of 1950. In June 1949, a land reform bill was passed by the general assembly but was vetoed by President Rhee. An act more

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<sup>32</sup> This is the shortened title of *Choson nodong chohap chonguk pyonggui-hoe* which was the largest and the only labour organisation in the South until 1946, and which controlled most of the plants which had been Japanese-owned. It supported the radical political group at that time. Although it was reformist in nature, in Korean context at that time, it was seen to be revolutionary and was the object of widespread attempts at suppression. See B. Cumings (1981) for further information.

<sup>33</sup> Bruce Cumings (1981) indicates that KDP is the class party representing the capitalists and collaborators with Japanese rule, KCP (Korean Communist Party) represents the proletariat, but the Peoples Party or the KPR (Korean People's Republic) is a mass party representing all the people, including workers, farmers, small bourgeoisie, capitalists and landlords, excluding only the reactionary and pro-Japanese elements. see p.195. He also claimed that KPG (Korean Provisional Government) in Chungking, had little grassroots support, and was made up of many factional interest groups.

favourable to landlords was passed in March 1950, providing for the distribution of both land purchased from Korean landlords, and that confiscated from the Japanese. This resulted in the reduction of the proportion of tenant farmers from 42.1 percent in 1947 to a mere 5.2 percent in 1964 (Suh 1992, p.10). In addition to abolishing tenant farming, the act also imposed a three hectare limit on land holding for each farm household (Boyer and Ahn 1991, p.74).

Although the land-to-the-tiller programme in Korea never enriched the peasantry or filled out the state coffers, its long term effects were major. Reform redirected idle capital away from land speculation to manufacturing, and uprooted a class that had been unproductive and insulated. It also relieved the bottleneck in food supply, which in turn dampened inflationary pressures, and in the 1960s when labour intensive industries were promoted, the un- and underemployed farmworkers, especially young females, were able to be released to industrial sectors. Although it fell far short of the demands made by the masses, it created a more equitable income distribution, albeit for a short time. Amsden claims that "Finally, it cleared the field for strong centralised state power ....." through the removal of a landed gentry class, which wielded formidable political power (Amsden 1989, p.37).

### **3.3.1 The ISI regime, the State and Private Enterprise**

#### *U.S. Aid, the State and Korean economy*

In 1953 South Korea possessed a backward economy in which agriculture, forestry and fishing accounted for 47 percent of GNP and manufacturing less than 9 percent. Total fixed investment was only 7 percent of GNP, barely enough to cover the depreciation on the existing capital stock (Mason et al 1980, p.93). Furthermore, South Korea depended upon aid from the United States for its reconstruction and survival. Between 1953 and 1961, US aid financed over 70 percent of total imports and 75 percent of total fixed capital formation (Cole 1980, Mason et al 1980, Pu 1961, Steinberg 1989, Haggard, Kim and Moon 1991, p.852), the average annual inflow of US aid excluding military assistance amounted to \$270 million (Amsden 1989, p.39). Since South Korea's independence in 1948, the United States sought to link its foreign assistance to close monitoring of foreign exchange, sound fiscal monetary policies and the privatisation of Japanese properties as well as land reform and building a democratic political institution. While the United states was primarily concerned with stabilisation, the Korean government sought economic self-sufficiency through a rationalised programme of infrastructural development and import-substitution. Thus there were conflicts between client and donor over the differences in the reconstruction and development strategies as well as political issues like normalisation of relations with Tokyo. The Korean state was dissatisfied with the slowness of aid deliveries, the lack of attention given to building industrial infrastructure, and the continued emphasis on imports of consumption goods (such as food and tobacco) and raw materials (such as cotton) for light industry which accounted for about three-quarters of all aid between 1953 and 1960. One

half of the total went to agricultural commodities, with the remaining half going primarily to fertilisers and petroleum products. Of the remaining project-related aid, only 16.5 percent went to manufacturing (Haggard et al 1991, p.852).

In order to maximise aid inflow, the Rhee government implemented macroeconomic policies which featured low interest rates, overvalued and multiple exchange rates, a deficit budget financed by borrowing from the Central Bank when taxes and aid-generated revenues were insufficient, and Central Bank financing of commercial bank credit to the private sector. Such policies inevitably produced an internal financial gap between government and private transactions, and an external financial gap between import demand and foreign exchange supply. The Rhee regime then allocated aid entitlements in exchange for political campaign contributions (Amsden 1989, Haggard et al 1991). The declining political fortunes of the Liberal Party made it rational for Rhee to maximise his dependence on aid, to limit the domain of coherent planning, and to maintain discretionary control over a variety of policy instruments to build political support (Haggard et al 1991, p.850).

The windfall gains from aid provided a basis for the emergence of an altogether new entrepreneurial element, which was far more growth oriented than the conservative small-scale industrial sector. During this period, when patronage was pervasive, political connections led to an uneven distribution of the spoils. Fortunes, therefore, were amassed, the 'gravy-train' starting with sales of Japanese property at below-market prices. Favoured firms were allocated hard currency to import scarce materials - grain and fertilisers - that they then resold on the domestic market at monopoly prices. They were given loans at subsidised interest rates, granted tax exemptions, and were awarded preferential contracts for large-scale government projects. In Amsden's words (1989):

The magnitude of fraud is indicated by the size of the loans that the most favoured firms received, 'loans' on which they paid neither interest nor principal. A Government Audit Report, prepared in 1961 after the First Republic's fall, suggested that the total outstanding equalled about \$140 million (Amsden 1989, p.39).

Despite the impression of sluggish growth under the import substitution regime (Suh 1992), industrial expansion was rapid, albeit from a low base. Although GDP growth only averaged 3.9 percent from 1953-55 to 1960-62, this can be traced largely to the poor performance of agriculture and services. Industry grew at 11.2 percent a year (Amsden 1989, Cole and Lyman 1971, pp.192-3, Haggard et al 1991, p.852). However, economic performance failed to meet the expectation of the Korean people or the aid donors. Annual rates of inflation dropped from 531 percent in 1951 to 25-28 percent in 1953-4, only to rise again in 1955 to 82 percent (Mason et al 1980, p.94).

Due to American pressures, stabilisation measures were adopted from 1956, focussing on curbing inflation and reducing the large government deficit, but pursuance of economic growth through rational planning continued to be of secondary importance (Haggard et al 1991, Mason et al 1908, p.94). The stabilization programs were successful at slowing inflation, but the positive effects on investment and development were not forthcoming. This was the start of the end of the import substitution regime.

### **3.3.2 Exhaustion of the ISI Paradigm**

The economic growth rate in South Korea was not sustainable, and 1958 marked the exhaustion of the import substitution phase. GNP growth peaked at 7.7 percent in 1957, declining to 5.2 percent in 1958, 3.9 percent in 1959 and 1.9 percent in 1960 (Haggard et al 1991, p.853). This decline was due to the exhaustion of the easy import-substitution stage (Cumings 1988), the simultaneous fall in American aid, and the underlying political structure that was distorting the allocation of resources, hampering a more rational planning process, undermining investor confidence and cultivating a class of speculation-driven Korean entrepreneurs (Haggard et al 1991, Amsden 1989).

As Rhee's political power waned in the late 1950s, his rule became more autocratic and defensive. Rhee deliberately avoided rational long-term economic planning which was needed to revive the economy. He used economic instruments for political ends. A complex mix of economic policies such as allocation of foreign exchange, bank credit, import licences and the distribution of state-owned enterprises continued to play a major role in buttressing a waning political base. The environment of windfall profits to a selected section of industrialists for political kick-backs and loyalty was not conducive to raising confidence in the state management of the economy on the part of the general public or the capitalist class as a whole. This culture had created a new breed of entrepreneurs, who were generalist and devoted to moneymaking in whatever industry the opportunity arose. Due to massive subsidies and monopolistic behaviour, they skated over the stage of incremental growth that was characteristic of small-scale enterprise, operated with a different logic of investment from that of traditional textile industries, and formed 'crack troops' to penetrate new industries. Thus the progenitors of large diversified business groups, *chaebol*, were born with state patronage (Amsden 1989). These economic opportunists were disinclined to make investment in periods of stabilisation where opportunities for rent-seeking is reduced. The decline of American aid, and the winding down of the reconstruction boom meant that sources of windfall profits were in short supply.

The legitimacy of the state rested on Rhee's credentials as one of the main actors in the independence movement during the colonial period, and his hegemonic ideology was rooted in anti-Japanese nationalism and anti-communism. However, this hegemony started to wane as

effects of economic growth failed to materialise, and as favouritism and patronage of the government towards certain sections of the private sector became evident. Labour and civil unrest became prevalent. The student-led public demonstration of 19<sup>th</sup> April in 1960 ended with the downfall of Rhee regime and the beginnings of a democratic period. This new democratic era, however, was also marked by political chaos, and continued civil and labour unrest. There were no marked improvements in economic performance or institutional reform of the magnitude reflecting the political revolution that had occurred. The revolutionary hopes of the people were not met by the Second Republic (1960-61) due to the stagnant economy. The continued operation of those capitalists, who had formerly been Japanese collaborators and had benefitted from corruption in the Rhee regime, a source of social resentment, undermined any attempts in forming reconciliation between social groups. The strikes and demonstrations that took place paralysed the economy and effectively prevented anything more than regime maintenance.

The first economic plan under the Second Republic was also import substituting in nature, with exports largely devoted to primary products. The crisis in the accumulation regime and MSR had not been resolved. The political disorder and economic backwardness could not provide a basis for continued accumulation, and social and political polarization during this period prevented any consensus for an effective MSR to be implemented (Haggard et al 1991, Steinberg 1989).

Historically, Koreans had experienced two state structures, both authoritarian but nevertheless quite different from each other; the traditional Yi (dynastic) state and the modern Japanese state. The Yi state had an ostensibly strong central cast to it, but it was in fact a weak state, competing with and hamstrung by a strong landed aristocracy. The aristocracy used state power to preserve and perpetuate privilege over time. It was this state tradition that most characterised the Rhee regime (1948-60), and which helped to account for the revolutionary ferment of the early postwar period, as the landed elite sought to maintain its control of land and its access to bureaucratic power. The great weakness of the Rhee regime which so clearly distinguishes it from the succeeding Park regime, was its inability to conceive of using the state to stimulate the economy in the interest of national wealth and power. It instead put more energy into plundering the existing surplus than producing more, the surplus itself arriving in the alluring form of U.S. aid for war reconstruction (Amsden 1989, 38-9). It was really the Japanese colonial regime, which did understand the role of the state in economic development, that provided a model for the post-1960 Export Oriented Industrialisation (EOI) phase in Korea (Cumings, B. 1988).

### **3.4 Extensive EOI Regimes in Korea (1962-79)**

Korea's regime of accumulation between 1962 and 1979 is based on extensive accumulation. This extensive regime of accumulation can be divided into two periods - what we characterise as the Taylorist regime of the 1960s, which was based on labour intensive industries and the 'Yusin regime' of the 1970s based on capital and technology intensive industries to deepen its industrial structure and escape its dependency relationship with the core industrialised countries. These two periods are grouped together since both periods are seen as examples of extensive accumulation regimes, where the increases in accumulation have been achieved by the expanding basis of accumulation, that is labour, land and/or capital.

In this section, the extensive accumulation period will be investigated to see how and why these regimes were initiated, changed and replaced, and to explain the implications and consequences of these developments.

#### **3.4.1 Political Change and Emergence of the EOI Regime**

During the Second Republic under the leadership of Chang Myon, economic stagnation and social discontent continued. The military saw the social unrest, and continued manipulation of politics for economic advantage by certain sections of capitalist and social elites as a barrier to national development and a threat to national security. Thus, on 16th May 1961, the Chang government was replaced in a coup d'état led by General Park Chung Hee. The rulers saw themselves as progressives, advancing the same reformist causes as the April 19th student revolution, and their early actions were described as 'puritanical' (Haggard et al 1991, p.857). Given that they had only weak social and political connections with the dominant elite, the junta had few reservations in implementing profound political, institutional and economic changes (Steinberg 1989): the government institutions were reorganised, the National Assembly suspended and bureaucrats, politicians and capitalists were prosecuted for illicit accumulation of wealth and corruption (Haggard et al 1991). The concentration of political and economic power in the state achieved during this period gave them and succeeding governments the power to implement sweeping economic changes. Though the nationalising of commercial banks straight after the coup had already given the state the upper-hand in state-capital relations, with the promise of reducing the financial penalty and dropping criminal charges, the junta co-opted the large businesses, which were facing investigation for accumulating illicit wealth, in following government economic policies and directives (Haggard et al 1991).

Due to American pressures, and despite objections within the junta, Park called a general election in 1963, though without giving up the concentrated power in the executive (Haggard et



al 1991, Ogle 1990, Steinberg 1989). Cumings (1988) claims that during 1963 and 1971, the Korean regime could not be called a 'Bureaucratic-Authoritarian Industrialising Regime (BAIR)' since it held relatively free elections in 1963, 1967 and 1971, developed a constitution that sought to disperse power rather than concentrate it, and had a relatively free press during the period (p.262). However, the reality was that the authoritarian power held by the regime was masked by a nominal democratic system.

The new state was able to consolidate its power in the 1960s because of the weakness of the competing social classes. Industrial workers constituted a small percentage of the population, capitalists were dependent on state largesse, the aristocracy was dissolved by land reform and the peasantry was atomised into smallholders (Amsden 1989). It was able to exercise great control over society at large due to its deep penetrating hierarchical institutional structure "like the colonial state, and which is formidable in a way Rhee's state never was" (Steinberg 1989, Cumings 1988, p.263). In addition to the economic control through the nationalisation of banks, formation of the Economic Planning Board and control of private industries through the Federation of Korean Industries, Park also manipulated the leadership of a variety of social and professional bodies, including teachers, doctors, press associations and cultural organisations. The formation of a single, umbrella labour union, monitored by the Korean Central Intelligence Agency, provided the state with almost total control of vital social forces. The exception was the student population (Steinberg 1989). This social regulatory system was the essential backcloth to the pursuit of export-oriented industrialisation.

The Park period (1961-79) saw a very different type of authoritarianism from that of the Rhee period. There were no more protests from the workers and peasantry, or spectacles of youth groups marching and fighting in the streets of the Rhee years. Instead, there was order in the society and vibrancy in the economy. Unlike Rhee, Park understood that economic development would give legitimacy and political power. Due to the lack of legitimacy in obtaining of power and the lack of the political credentials and social background, Park's regime needed to gain legitimacy and popular support through economic performance (Steinberg 1989, Haggard et al 1991). Therefore, the state depended upon the success of its EOI policies and it was forced to take control of the direction and process of economic growth. This state intervention has been described as 'developmentalism'<sup>34</sup> (Amsden 1989, Luedde-Neurath 1988).

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<sup>34</sup> Although Amsden claims that American pressures made the Korean state embark on the developmentalist path, this could be disputed. It may be true that American policies may have forced the Korean state to adopt a particular direction in economic strategy, the main reason for heavy intervention in the economy came from the internal political need for legitimacy. This can be supported by the economic policy changes driven by short-term political concerns (Haggard et al 1991, Bedeski 1994).

When the Park junta took over power, the 'easy' phase of ISI was over, but the need then to begin substitution for durable consumer goods and machinery ran up against the distinct limitations of the Korean economy, such as the small domestic market, limited resource endowment, and lack of large-scale capital required for a new import-substitution phase. Furthermore, a more capital intensive phase would simply exacerbate a prime structural problem in the economy, surplus labour (Kuznets 1977, pp.151-52). The United States, which pursued a vision of an international division of labour on the one hand and aid reduction on the other, was hostile to deepening import-substitution. Due to Park's need for external legitimacy, South Korea, like Taiwan, pursued an export-led programme emphasising light industries in the 1960s, as well as a policy of diversification of foreign assistance (Cumings 1988, pp.261-2, Steinberg 1989).

The influence of the United States did not stop there. It also forced Park's regime to normalise the relationship with Japan, which provoked an outcry in the National Assembly as well as on the streets. This action, which sacrificed legitimacy at home for legitimacy abroad was very much an economic decision, since not only did Korea depend on American markets, but this brought \$800 million in grants, loans and commercial credits over a ten year period, and was a precursor to further \$1.4 billion worth of investment by 1985. Additionally, Japanese economic assistance through to 1982 reached \$4.4 billion (Steinberg 1989, p.131).

### **3.4.2 Accumulation, Dependence and Labour Struggle in the 1960s**

#### *Institutional and Economic Measures for EOI Accumulation*

Under the Park administration (1961-79), most industrial policies were aimed at 'growth maximisation' (Kim and Park 1985) and were sectoral in design, although the emphases changed markedly from time to time (Linge and Hamilton, 1981, p.32-4). The liberal world economic environment and the globalisation of capital in the 1960s provided Korea with the opportunity to pursue export oriented industrialisation. Under the First Five Year Economic Development Plan (1962-66), the essence of the industrialisation strategy was to promote expansion of export oriented labour intensive industries, such as textiles, clothing and footwear, in which Korea had a comparative advantage, derived in part from its low wages. This was also aimed at creating much needed jobs for the surplus labour force which was the source of social unrest in the previous regimes (Park, S. O. 1991).

The two most important features in the promotion of EOI were the monetary arrangements and centralised economic planning instruments. These economic instruments not only controlled the

direction and rate of industrial development, but also made the state the most important institution for directing the mode of social (and economic) regulation, MSR.

Firstly, the economic control functions were centralised and consolidated through institutional changes. The budgetary, regulatory, statistical and planning functions, which were previously under various different ministries, were brought together under a 'superministry', the Economic Planning Board (EPB) (Suh 1992, Haggard et al 1991). This was responsible for the preparation of the 'Five Year Economic Development Plans' (FYEDP), which set the strategies and targets for economic growth. This 'super ministry' not only directed the economy, but also had a great influence over all other ministries' activities through the EPB's budgetary functions. Another institutional set up, which consolidated economic power in the executive was the Export Promotion Council, in which President Park personally took command (Amsden 1989). In order to enhance the effectiveness of the policy planning function in 1970, the government also established various research institutes covering a whole range of economic and social areas<sup>35</sup>.

The First FYEDP (1962-67) prepared by the EPB was the main instrument in the allocation of resources. It was predicated on severe austerity on the part of the consuming public, relying on a high degree of political and ideological coercion and mobilisation. In order to attain an overall goal of economic growth of 41 percent over the plan period, the total investment had to be increased by 137 percent, while total private consumption had to be checked at a minimal total increase of 18 percent, which barely covered the projected population increase of 15 percent during the same period. Also, the plan was based on an overall planning strategy reflecting a "leading-sector approach" emphasising the building of infrastructure and social overhead capital as a framework within which certain key manufacturing industries could thrive under private enterprise. Of the total planned investment of \$2.5 billion (1961 U.S dollars) during the plan period, approximately half was allocated for electric power, transportation and communication, another one third was invested in mining and manufacturing and 17 percent in agriculture, forestry and fisheries (Byun 1983, pp. 175-176, EPB 1967). The underlying philosophy of the Park's regime was "guided capitalism" in which "the principle of free enterprise and respect for the freedom and initiative of private enterprise will be observed," but in which the government will "either directly participate or indirectly render guidance to the basic industries and other

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<sup>35</sup> The research institutes covered most of the social and economic sectors; Korea Development Institute (KDI) and Korea Institute for Industrial Economics and Technology (KIET), under the Ministry of Trade and Industry; Korea Research Institute for Human Settlements (KRIHS), under the Ministry of Construction; Korea Rural Economic Institute (KREI), under the Ministry of Agriculture and Fisheries; Korea Institute of Population and Health (KIPH) and Korea Women's Development Institute (KWDI), under the Ministry of Health and Social Affairs; and Korea Education Development Institute (KEDI), under the Ministry of education. The Korean government also actively supported many research institutes in the field of science and technology. (Suh 1992, p.13)

important fields" (EPB 1967, p.28). Guidance was not limited to macroeconomic or industrial policies, but included itself in wage and retail price restrictions in the private sector.

Secondly, the nationalisation of the financial system by the state immediately after the coup meant that the government was able to regulate and control the direction of private sector industrial activities. The state was able to use the financial arm as both 'carrot and stick' to extort compliance from private industrialists to follow the developmental path set by the FYEDPs, and to reach the necessary output and export targets. Among the financial and tax measures adopted were a halving of the value of the won, introduction of an export-import link system under which exporters were permitted to import on favourable terms, accelerated depreciation allowances, an increase in tax incentives to export, and the provision of export finance at concessional interest rates and government underwriting loans (Haggard et al 1991, Suh 1992, Park, S. O. 1991, p.75). In contrast to the Rhee regime, the government of the Third Republic mobilised savings to finance the export industrialisation programme. To stimulate domestic savings, in 1965 the government raised interest rates on deposits from 12 percent to as high as 26.4 percent. As a result of this reform, for three years in a row after 1965, savings deposits in commercial banks nearly doubled, and the ratio of time and savings deposits to GNP rose from 3.8 percent in 1965 to 21.7 percent in 1969 (Suh 1992, pp.11-2).

#### *Industrial Trajectory and Foreign Trade*

Due to the above mentioned provisions, the economy grew at spectacular rates. Average annual growth of real GNP for the 1963-71 period was 9.5 percent, which was more than double the 1954-62 figure. On a per capita basis, real growth for the period was not less than 6.9 percent, compared with 0.7 percent for 1954-62. Important structural changes also took place in the economy. The mining and manufacturing sectors increased their share of GNP from 16 percent in 1962 to 22.5 percent in 1971, while the share of agriculture, forestry and fisheries decreased from 37 to 26.6 percent. This shift was also reflected in the share of employment by sectors: the employment in the latter sector declined from 63 percent to 48.4 percent of the total, while mining and manufacturing increased its share from 9 percent to 14.2 percent (Suh 1992, pp.13-4). These changes had a negative effect upon the rural areas and contributed to the existing uneven development between sectors, and in income distribution between urban and rural households.

Table 3.4.1 Key Economic Indicators, 1960s

Indicator	1962	1971	Average annual percentage change, 1963-71
Per capita GNP (Dollars)	87	288	14.2
GNP (billions of won)	3,071	6,962	9.5
Exports			
Millions of dollars	55	1,068	39.0
Exports-GNP ratio (percent) <sup>a</sup>	2.40	11.7	
Imports			
Millions of dollars	422	2,394	21.3
Imports-GNP ratio (percent) <sup>a</sup>	18.2	26.5	
Investment rate (percent) <sup>b</sup>	12.8	25.1	n.a
Domestic savings rate (percent) <sup>b</sup>	3.2	14.6	n.a

Note: Won are in 1975 constant prices. Dollars are current U.S. dollars

a. In current U.S. dollars

b. In current prices

Source: Various issues of Korea Statistical Yearbook, compiled by author based on Suh (1992), p.14.

In terms of international trade, exports increased by nearly 40 percent a year; from US\$ 55 million in 1962 to \$1.07 billion in 1971 (Kim and Park 1985, Suh 1992), spurred on by incentives and devaluation, and general expansion of world demand. The remarkable growth in trade was accompanied by a significant change in the composition of export goods. There was a marked drop in exports of primary products (from 73 percent to 14 percent), while industrial products increased by the same rate (from 27 percent to 86 percent). However, imports also grew quickly, from \$422 million in 1962 to \$2.39 billion in 1971, an average annual increase of 21.3 percent (see Table 3.4.1 above). The share of capital goods increasing dramatically from 17 percent in 1962 to 28.65 percent by 1971.

The current account deficit was increasing steadily to 8.4 percent during 1968-71 (Suh 1992, pp.15). This was due to the dependence upon foreign imports for capital and intermediate goods and raw materials needed in the manufacturing process. Even though the import substitution programme was sustained, the deepening of the industrial base was needed to end the dependency.

#### *Taylorisation, Labour Supply and Income Differential*

The disintegration of the vertical organisation of production in the Fordist regimes in the advanced industrialised countries led to the NIDL incorporating the peripheral nation states such as Korea and Taiwan into the international network of production. The 'new international division of labour' imposed Taylorisation upon the peripheral nations, denoting the transfer of

specific and limited segments of labour-intensive branch circuits of central Fordist mass production lines to states with high rates of exploitation (Lipietz 1987). This reformulation of accumulation by the core countries was reorganised into a new regime of international accumulation which aimed to set up the Victorian sweat-shop style system in the Third World, super-exploiting their labour by means of minimising wages and lengthening the working day (Chou 1994).

In Korea, the surplus labour in the rural and urban areas, a source of social unrest in the ISI period, filled the factories of the export-oriented labour-intensive industries. Due to the perception of the inexhaustible supply of labour, there was no concerted policy regarding the reproduction of the labour force. Incomes were basically at subsistence level, and the working conditions as well as living conditions of company accommodation, resembled Victorian workhouses (Ogle 1990). There was a rapid increase in young female workers in the labour-intensive industries such as the textile, clothing and footwear industries due to the fact that females were less valued than male workers on farms. Labour intensive industries favoured women since they were cheaper, more dexterous and more submissive and obedient than their male counterparts. The relatively higher income of rural households meant that male workers were disinclined to join the manufacturing sector. Nearly a third of the total workforce were women aged between 14 and 24 (Bello and Rosenfeld 1990, Ogle 1990). The wage differential between male and female workers was as great as 1:0.5 (Bello and Rosenfeld 1990); the length of the working-week was at record levels - at least 54 hours<sup>36</sup> (Amsden 1989). Thus the Korean economic miracle of the 1960s was based on the super-exploitation of cheap female workers (Ogle 1990, Bello and Rosenfeld 1990).

In the Taylorist period, the state promotion of capital accumulation as the basis for further development at the expense of wages, workers' safety, pensions and job security was responsible for highly exploitative practices. Although relatively democratic in form, the state was able to exercise firm control over the unions through coercion and ideological mobilisation. This low wage policy and anti-union legislation were important in attracting foreign direct investment into the Free Export Zones (Ogle 1990).

Although labour exploitation was severe, income distribution in the 1960s was fairly successful, in that the labour intensive industrial strategies, which increased employment opportunities, were able to raise lower income groups out of absolute poverty. Statistically income equity was significantly improved among the urban households, but there was a growing trend towards

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<sup>36</sup> However, with the encouragement of overtime, the actual hours worked per week was much higher (Ogle 1990, Bello and Rosenfeld 1990).

widening of the urban-rural income gap, which triggered an increased rate of a rural-urban migration as well as discontentment with the small-scale agricultural producers (Suh 1992).

### *Factors Contributing to the Shift in Industrial Trajectory*

While such labour intensive industries experienced rapid export-based growth during the 1960s, there were several issues which made it necessary to change the direction of industrial development. These were, namely, the weakening of comparative advantage due to rapid wage increases and the growing dependency on foreign capital, oil, technology and markets (Cumings 1988, Park, S. O. 1991). The changing international market, which Korea depended on for its outlet of industrial products, destabilised Korea's ability to service its external debt, at a time when recession hit the core countries, especially after the first oil shock. In 1971, the growth rate fell for the first time since 1965, from 9.8 percent to 7.3 percent; the balance of payments suffered and inflation went up. All this could only call into question the wisdom of the export-led programme featuring light industries and linked almost entirely to Japanese and American credits and markets (Cumings 1988, p.267). The Korean dependence on Japanese credit and financing was likened to "Korea's earlier satellite role within the Yen Bloc" (Kuznet 1977, p.85). This meant Korea's dependency problem was comparable to that of its colonial period (Cumings 1988). Consequently, EOI had to shift towards a higher value-added manufacturing, and a deepening of the industrial base became a necessity to reduce dependence upon intermediate and capital goods.

### **3.4.3 Emergence of Yusin Regulation in the 1970s**

Only in the early 1970s did the Korean state sought to escape its dependency through its strong state institutions to provide credit to heavy industries, foster concentration and economies of scale, build the social overhead infrastructure necessary to accommodate the growing economy, and to repress any dissension towards 'climbing up the technological ladder'. The shift in the industrial trajectory in the beginning of the 1970s came up against internal and external opposition. By the early 1970s, a potential mass base for the opposition had come into being, embracing the growing urban working and middle classes, who objected to state actions to control unions and hold down wages and consumption, national business interests that had been hurt by the export-led programme, and regional interests such as the rural Southwest that had been left out of much of the development of the 1960s. It was from this region, and with this base, that Kim Dae Jung<sup>37</sup> emerged and mounted a strong challenge to Park's rule. His platform

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<sup>37</sup> Kim Dae Jung has been one of the leading dissident politician in opposition to the military government since the 1960s. Born in Cholla province, his support base is mainly from people of

was to criticise the export-led strategies and especially the newly developing dependency on Japan. The growing political opposition at the general election coincided with the first year (1971) of weak growth in the economy, thus calling into question the legitimacy of the EOI programme (Cumings 1988, p.266).

The external opposition to 'deepening' of the industrial structure came from the American planners who opposed the programme of heavy industrialisation in Korea in that it would violate an international division of labour and would lead to problems of surplus capacity in the world market. At the same time, a new American administration pursued neo-protectionist instead of liberal trade policies and called into question the position of both South Korea and Taiwan within the hegemonic American security system in Northeast Asia (Cumings 1988, p.267). Cumings argues that instead of internal pressures from Kim Dae Jung, it was the opposition of the American administration to 'deepening', the increasing dependency relationships spawned by light industrial base of EOI and the changing international economic and political climate that led to the setting up of an authoritarian regime in Korea, which tried to forge a more self-reliant political and economic development path, called the *Yusin* system (Korean-style democracy)<sup>38</sup>. The Korean state was anything but democratic, but by using this slogan Park tried to disguise his authoritarianism and centralisation of power. Thus "Park seemed to be more nationalistic at the precise time that he was being more undemocratic" (ibid., pp.267-8).

The adoption of a more authoritarian *Yusin* system spelled out a new mode of social regulation, which resembled a corporatist state<sup>39</sup>. The state intervention became dominant and controlled the direction of capitalist development in Korea. This was achieved mainly by the extensive financial and tax incentive systems to entice heavy industrial development, while starving the rest of the industrial sector of bank loans.

#### **3.4.4 Heavy Industrialisation, State Intervention and the Emergence of *Chaebol* in the 1970s**

In the 1970s the development of heavy and chemical industrial sector and the simultaneous emergence of *chaebol* as the major form of economic power occurred due to the particular industrial strategy of the Park government. This resembles the pattern of heavy industrialisation

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Cholla provinces and he has been the leader of *Minjung* Party representing the so called 'ordinary people' of Korea.

<sup>38</sup> *Yusin* ideology should not be confused with North Korea's *juche* (self-reliance) ideology, although Cumings (1988) claims that the concept of *Yusin* was borrowed from the North (see p.267-8).

<sup>39</sup> The essence of corporatism as an economic system is private ownership and state control (Pahl and Winkler 1974, p.73)



during the Japanese colonial period in the 1930s, when the Japanese state encouraged the *zaibatsu* in heavy and chemical industrialisation. This similarity in strategy may not be a simple coincidence<sup>40</sup>, and marks a contrast to the strategy taken by the Taiwanese state in its deepening of industrial base<sup>41</sup>. In the following discussion, we will look at the industrial policy regarding heavy and chemical industrialisation and its significance on the growth of *chaebol* capital.

Two main objectives underlay the government's drive to develop powerful heavy and chemical industrial sector: development of new strategic export industries and promotion of the import substitution of intermediate and capital goods. Thus, the ISI phase in the 1970s was part of Korea's export-led development, in which steel, autos, ships, and petrochemical industries were favoured (Suh 1992, Cumings, B. 1988). Gold (1986) calls this phase 'export oriented import substitution'. The development of the heavy and chemical industries not only needed large amounts of capital, but also demanded high levels of management skills to deal with increased complexity and scale. The *chaebol* groups were the only private capitals with the two above-mentioned qualities to undertake this task; the state used its financial control mechanisms to attract highly leveraged large business enterprises to invest in these fields. In return for taking on high risk ventures, they were offered subsidised interest rates (in real terms, negative), preferential credit allocation, tax exemptions or incentives and licences to operate in more lucrative domestic markets with almost monopolistic control. The government encouraged large scale projects in these industries to pursue 'scale economies', and a new National Investment Fund channelled employee pensions and private savings to meet the investment requirements (Suh 1992). However, heavy foreign capital borrowing, underwritten by the government, was inevitable.

The large firms which participated in the heavy and chemical industrialisation were able to make huge profits from the negative real interest rates, from state protection against international competition, from rent seeking activities and diversification into lucrative markets. The emergence of huge conglomerates was less to do with entrepreneurial skills, and more do to with exploiting the state nurtured market distortions.

### *Industrial Policies*

The accumulation system based on the heavy and chemical industrial drive depended on large capital investment, economies of scale, protection of the domestic industries and markets,

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<sup>40</sup> It is a well known fact that President Park, who has had a key role in the formulation of economic policies, has been influenced by his education and military training in Japanese institutions, and he must have had pro-Japanese tendencies, if not politically, in following the Japanese model of economic development.

<sup>41</sup> Chou (1994) shows that Taiwanese heavy and chemical industrialisation has been largely achieved by attracting TNCs for foreign direct investment, which formed an important element of Taiwanese industrial structure.

enlarging the industrial infrastructure, low wage labour and extensive markets. The industrial policy centred around the financial, tax and tariff mechanisms to attract investment, and protect the fledgling industries.

The Heavy and Chemical Industry Development Plan (HCIDP), announced in 1973, consolidated the incentive schemes, which previously had been devised individually for each industry in the pre-heavy industrialisation drive. The plan established a single framework of integrated tax incentives, loans at special rates for all industries considered strategic and provided extensive new infrastructure. The industries included were selected with care, and were mainly in the heavy and chemicals sectors - particularly oil refining, petro-chemicals, shipbuilding, machinery, electronics, iron and steel, non-ferrous metals, power-generation, chemical fertilisers, as well as defence and aviation activities (Rhee 1987, Suh 1992).

The HCIDP embraced several tax and tariff incentive schemes. Two tax incentive schemes were the main vehicles to encourage investment in industrial activities. Preferential taxation treatment was given to investments in fix-capital and R&D activities in strategic industries. Among the preferential tariff treatments, tariff deduction and tariff 'drawback' system<sup>42</sup> reduced the tariffs on intermediate goods and raw materials for manufacture for export. The tariff drawback system encouraged import-substituting industries by inducing exporters to use domestically supplied intermediate inputs (Rhee, S. 1987, pp.44-6).

In addition, preferential allocation of low interest loans, both domestic and foreign, made investment in the heavy and chemical industries extremely profitable, particularly in view of the fact that the real interest rates were negative throughout the period. The *chaebol* were not only able to borrow extensively for investment in the strategic industries, but were able to borrow for other industries in their group. The state gave licence to operate in other domestic markets as a sweetener for undertaking risky ventures. The *chaebol* groups continued to increase their debt ratio until 1980 (Rhee 1987, pp.16-7). From Table 3.4.4 (on p.84), we can see the extent of preferential treatment given to strategic industries from the interest rates on loans for facility investment and export sectors.

The HCIDP was complemented by extensive infrastructure development in transport and communications and industrial estate construction, and improvements to existing port facilities (Rhee 1987, Park 1987). Large industrial estates were built primarily in the Southeast region with dedicated new port facilities (see Chapter 4 for more details).

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<sup>42</sup> The tariff 'drawback' system, which allowed the industries to claim back tariff paid on import of primary and intermediate goods when the manufactured products are exported, replaced the existing 'pre-exemption' system, which allowed the industries exemptions from paying any tariff on imported goods.

The examination of HCIDP shows that this period continued to stress the export orientation with only a shift in the industrial trajectory. In conjunction with this shift in paradigm, the government scaled down its support for labour-intensive industries (Suh 1992).

Meanwhile, the labour repression in this period was particularly severe in both labour-intensive and capital-intensive sectors alike. For instance,

"..... in February 1974, one thousand women workers staged a massive sit-in at the Bando Trading Company; in September of that same year 2,500 workers occupied the Hyundai shipyard; and early in 1980, miners took control of the town and mines of Sabuk, which became known as the Sabuk Uprising" (Bello and Rosenfeld 1990, p.36),

and the momentous Chonggye Garment Workers Union struggle faced the legal, ideological and coercive force of the state (ibid.). The private firms were able to super-exploit the labour force relying heavily on the state to control the labour unions. Despite this, wages continued to rise with average increases in the 1970s at 27 percent annually (Suh 1992). However, wage increases were largely confined to white collar and skilled male workers in the larger firms in the strategic industries. The unskilled and basically female workforce suffered deteriorating conditions due to intensifying competitive tendencies in the non-strategic industrial sectors (Bello and Rosenfeld 1990, Amsden 1990, Suh 1992).

Through the implementation of HCIDP and severe labour repression during the 1970s, Korea was able to reduce its reliance on the importation of intermediate goods, especially from Japan. Table 3.4.2 shows the decline in the rate of imports during the 1970s compared to the 1960s. The rate of growth in the mid-1970s was strong: average growth rate of GNP during the 1972-1976 period was 9.7 percent, reaching highs of 14.1 percent in 1973 and 1976 (Hwang, E-G. 1985, p.12). After 1977, which recorded a 12.1 percent rate of growth, the economy started to slow down due to the structural problems that the industrial policies had created.

Table 3.4.2 Annual Growth of Merchandise Trade (percent)

	1960 -1970	1970 - 1982
Exports	34.7	20.2
Imports	19.7	9.8

Source; Economic Planning Board, various publication, cited in Steinberg (1989) p.144.

### *Concentration of Capital in Chaebol Groups*

The accumulation regime favoured the industrial capitals involved in heavy and chemical manufacturing activities at the expense of all other capitals. The concentration of capital in the hands of *chaebol* groups, which dominated the heavy and chemical sectors, was therefore inevitable.

The most crucial advantage of firms in the strategic industries lay in access to domestic and foreign financing at preferential rates. Table 3.4.4 (see p.84) shows that huge profits could be derived from loans on the special interest rates for export financing which were negative in real terms during most of the 1970s. The subsidised interest rates were also huge burden on the state current account deficit. The tax and tariff incentives were used to further reduce financial burdens on *chaebols* investing in facilities, and importing raw materials and technology including foreign technicians. The tariff drawback system encouraged exporters to use intermediate goods produced domestically by the *chaebols*, giving their products a captive market. The granting of licences to expand into additional lucrative sectors allowed the *chaebol* groups to rapidly diversify. As can be seen in Table 3.4.3, the share of GDP in manufacturing by the top 20 *chaebol* groups was over 33 percent in 1978 (Amsden 1989, Sakong 1980, p.6).

Table 3.4.3 Contribution to Gross Domestic Production in the Manufacturing Sector by Chaebol Groups (in percentage)

Number of Chaebols	1973	1975	1978
5 Largest	8.8	12.6	18.4
10 Largest	13.9	18.9	23.4
20 Largest	21.8	28.9	33.2

Source: cited in Sakong, I. (1980), p.6

The structure of inequality was determined not by what the government failed to do (that is, its negligence of the equity question) but by what it did in order to promote rapid economic growth. We can identify three important ways in which the Park government influenced the pattern of social equity in Korea: (1) corporatist control of labour organisations; (2) inflationary financing; and (3) generally regressive tax policies (Koo 1984, p.1032).

### **3.4.5 Agricultural Backwardness, Saemaul Undong and Corporatist Regulation**

Agricultural backwardness in Korea was not remedied by the land reform in the 1950s, and agricultural productivity and rural poverty worsened in the 1960s. The poverty was now in a 'shared and equalised state' (Steinberg 1989, p.145). While the average rural family owned

below subsistence land - only 2.2 acres - 40 percent of all rural families owned less than 1.24 acres (Boyer and Ahn 1991). Urban household incomes, which were as low as rural incomes in 1963, began to rise rapidly by comparison in the 1960s and 1970s. By 1969 rural household income was only 56 percent of urban working class income (ibid., Suh 1992). This was a result of rapid growth in the manufacturing and service industries, matched by a relatively low productivity in subsistence farming in the agricultural sector. During the First FYEDP (1962-66), economic growth was 7.8 percent, but growth in agriculture was 5.3 percent; during the Second FYEDP (1967-1971) the figures were 10.5 percent and only 2.5 percent respectively (Boyer and Ahn 1991, p.32). There was not only growing dissatisfaction in the rural areas with the widening rural-urban income gap, but also severe pressure on housing and employment occurred in the urban areas with the rapid rise of rural-urban migration (Boyer and Ahn 1991, Hwang and Choi 1988). These problems and the sharp increase in grain import prices after the first oil shock, stirred support for rural development and self-sufficiency in major food grains (Suh 1992).

The central reason for the Park government's launch of an integrated rural development (IRD) strategy was the erosion of its hegemony and legitimacy due to the urban-rural income disparities. The state undertook concerted efforts for rural transformation in the 1970s comprising of four elements: 1) rural mobilisation by local government under the strong hierarchical control of the Ministry of Home Affairs; 2) provision of rural credit through 'cooperatives' and the policy of buying high and selling low through the Grain Management Fund; 3) a nationwide 'guidance' system concerned with technical improvements in agricultural production; and 4) the *Saemaul Undong* movement, which became the backbone of the IRD (Steinberg 1989, Bello and Rosenfeld 1990, Boyer and Ahn 1991).

The system of rural development was hierarchical, not only in the system of rural administration: most of the rural development programmes, took a top down approach, with the central government at the apex. An important agency for rural mobilisation was the Agricultural Co-operative Federation, which was closely tied to the state. This monopolised 97 percent of all institutional credit and was the major agent for the purchase of rice and for the distribution of fertilisers (Steinberg 1989).

In order to deal with the rural-urban income differential and raise productivity, the government boosted price support for the major grain crops, particularly rice and barley, provided subsidies for fertilisers and farm machinery, sought to improve the credit system, and introduced high-yielding rice variety, called the *Tong-il* rice. In the period of 1972 - 1975, total government investment in and loans to agriculture amounted to 1.46 trillion won, a 96 percent rise over the 1967-71 period. In 1970 the Grain Management Fund was established to subsidise both the farmers and urban consumers by buying at a high price from the producers and selling at a low

price on the market (Bello and Rosenfeld 1990, Suh 1992). This not only pacified the growing dissent in the rural areas, but it helped to keep the cost of living as low as possible for the industrial workforce, so that capital accumulation and of course the export drive could be maintained. Price support was increased to induce higher production during the self-sufficiency drive after the sharp increase in grain import prices due to the first oil shock in 1971. However, the Grain Management Fund and the Fertiliser Fund, which were jointly responsible for 37 percent of the total growth of money supply during 1976-78, contributed to the chronic government budget deficit and to the inflationary pressures (Suh 1992).

Together with the price support for rice, the 'guidance' system was put in place to raise agricultural productivity. Various technical modernisation measures were introduced: the small paddies were consolidated into larger ones which could be worked by machinery, PVC greenhouses were introduced to produce fruits and vegetables in off-seasons, and so on. To raise rice production, a high yielding miracle rice was introduced. The rice production increased rapidly, not only due to the high yield, but due also to the shift from barley production to rice production.

These efforts brought significant increases in rural household income. By 1974, average rural household income began to catch up with that of the urban working class, reaching parity in 1976. However, the increase in rural household income was offset by the rising cost of production due to increasing dependence on and the rising price of chemical inputs. The *Tong-il* variety demanded high inputs of fertilisers, pesticides and herbicides (Bello and Rosenfeld 1990, Steinberg 1989, p.149). Application of fertilisers increased from 162 kilograms per hectare in 1970 to 299 kilograms per hectare in 1980. Use of pesticide rose even faster, by over 330 percent between 1974 and 1976 (Bello and Rosenfeld 1990, p.83). The high chemical input in growing *Tong-il* left producers with escalating costs and uncertain profit margins; - "in just one year, 1978, the 100 percent rise in outlays for fertilizers[sic] and other chemicals was the highest increase registered in all categories of expenditure of the Korean farming household" (ibid., p.83).

The introduction of the *Tong-il* variety coincided with the heavy and chemical industrialisation phase, in which production of chemical fertilisers and pesticides was one of the strategic industries (Rhee 1987, Suh 1992). The promotion of the use of chemical fertilisers and pesticides meant that it not only raised food production for urban consumption, but also made a marked contribution to heavy and chemical industrialisation and capital accumulation in the *chaebol* groups. This structural dependency led to increasing indebtedness: between 1972 and 1978, a period that marked the height of the *Tong-il* campaign, average liabilities per farm household skyrocketed nearly eight fold (Bello and Rosenfeld 1990). The structure of indebtedness was initially created in the 1950s with the land reform, by which most farmers

owned less than the land needed for subsistence. It intensified in the 1970s through the introduction of *Tong-il* and chemical inputs. The problem was soon to worsen in the 1980s when subsidies to the agricultural sector were dramatically reduced. The dependence on chemical inputs has also led to environmental problems such as the toxification of soil conditions, and increased illnesses among farmworkers. Though the *Tong-il* rice was largely abandoned by most farmers by 1985 due to its susceptibility to disease and unpopularity among the urban consumers, the use of chemical inputs did not decline. The shortage of agricultural labour, and the need to increase output to finance debt, meant that the use of pesticides and herbicides proliferated (Bello and Rosenfeld 1990).

Another element in rural development was the *Saemaul Undong* (New Village Movement). Introduced in 1971, this was a comprehensive rural community development programme with its main focus on improving the rural village environment and living conditions. However, the *Saemaul* ideology was used not only to dismantle the traditional values, which were seen as barriers to rural modernisation, but also as an hegemonic project to mobilise society behind the state. Although top down in its approach, it aimed to foster co-operation, participation and limited democracy at the grassroots level (Boyer and Ahn 1991, Bello and Rosenfeld 1990, Steinberg 1989, Suh 1992, p.16).

In 1972, after the successful conclusion<sup>43</sup> to the first year programme of Village Environmental Improvement, which included reforestation of terrain, broadening village access roads, repairing and improving village dikes, preparation and maintenance of ponds, ditches and gutters and constructing a community well, the second phase was extended only to those villages judged to have good results, that is, the correct '*Saemaul spirit*'. The range of projects widened from general environmental improvements to include house improvements (roofs, bathrooms, kitchens) and beautification and conservation of village environs. Support was also given for village infrastructure projects such as installation of a village telephone and methane gas systems (Bello and Rosenfeld 1990, Boyer and Ahn 1990, Steinberg 1989).

In 1973, *Saemaul Undong* was expanded to encompass urban areas, workplaces and schools until it became a national people's movement for social enlightenment. The ideological indoctrination of so called '*Saemaul spirit*' was suppose to instil in the society new modern values, and to breakdown rural-urban cleavages and class barriers, but was used for expanding the hegemonic bloc. Although participating organisations and areas proliferated and the whole

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<sup>43</sup> After the first year of the Saemaul program, which began modestly with government assistance of mere US\$ 11 million in total for the 33,267 villages, the results were beyond the government's expectations, which yielded improvements valued at US\$ 32.6 million, or three times the government investment (Boyer and Ahn 1991).

populace became the target for self-sacrificing involvement and indoctrination, the 1980s brought destabilisation and ultimately, the demise of the Movement (Boyer and Ahn 1991).

Although the rural development programmes seemed successful in the 1970s, they did not create a prosperous or sustainable agricultural sector. Quite the opposite trend was being formed during this period of outstanding productivity. The cosmetic character of *Saemaul Undong*, the growth of indebtedness due to dependence on artificial inputs and inflationary financing through the Grain Management Fund combined to cancel out what development that took place, and in the pursuing years increased rural underdevelopment (Boyer and Ahn 1991, Steinberg 1989). The self-sufficiency goal of the *Yusin* regime necessitated the extensive exploitation of the agricultural sector to prop up the EOI regime in the 1970s .

### **3.4.6 Exhaustion of the Extensive Accumulation Regime and Political Destabilisation**

State intervention in industrial and rural development led to remarkable growth in exports and in agricultural output. However, the structural problems of state policies started to manifest themselves in the latter half of the 1970s. Combined with a deteriorating world economic environment, this led finally to the collapse of Korea's extensive accumulation regime.

The industrial policy of the 1970s centred on the heavy and chemical industries led to a number of interrelated problems. Due to negative real interest rates, by the late 1970s the private investment in the strategic sector was leading to excess capacity. This meant that by 1980 plants were being utilised at extremely low capacity (Rhee 1987). The rate of growth in output per unit input slowed considerably, from 4.9 percent during 1963-73 to only 1.6 percent during 1972-82. The rapid expansion of the manufacturing and construction sector subsequently led to overheating in the labour market, which caused real wages to grow by 110 percent in the manufacturing sector between 1974/5 and 1979 (Suh 1992, p.20). In contrast to the favoured sectors, the light manufacturing industries were being squeezed by lack of availability of bank credit, rising wages and increased competition from those NICs with lower labour costs. The rise in wages and expansionary monetary policies together led to a high inflation rate, which in turn caused the appreciation of the exchange rate, making exports and external debt financing more difficult. Together with these internal structural problems, the global economic recession in the late 1970s, led to crisis in the extensive accumulation regime.

The consequences of this crisis could be seen in the problems of the state finances, the worsening of income distribution and vulnerability to external shocks. Not only had Korea's external debt grown rapidly reaching US \$20.3 billion in 1979, (a 372 percent increase since 1973), but also the state current account deficit rose from zero in 1977 to 6.76 in 1979 and 8.7



percent in 1980 (Suh 1992) due to its extensive subsidies to both agriculture and heavy industries. The heavy and chemical industrial structure created a new dependency on imported crude oil and external markets, which left Korea vulnerable to external shocks.

At the same time, income distribution in the 1970s worsened considerably, reversing the trend towards the equitable distribution of the 1960s, due to the concentration of capital in the hands of large conglomerates, the widening wage differential among working classes due to sectoral imbalances and high inflation induced speculative investment by businesses and individuals in the 1970s.

Although remedial measures were undertaken from 1977 to stabilise inflation, wages and the government deficit, the economy continued to deteriorate. In 1979, commodity exports declined in real terms by 4 percent and GNP fell to 7 percent for the first time since the beginnings of industrialisation of the early 1960s (Suh 1992). When international interest rates increased after the second oil shock, the wisdom of heavy foreign borrowing of the 1970s was called into question, which in turn led to a legitimisation crisis both for the heavy and chemical industrialisation and for Park's regime itself.

Table 3.4.4 Trends in Financial Incentive Effects

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
Inflation Rate (WPI)	8.7	13.8	6.0	42.1	26.5	12.2	9.0	11.6	18.8	38.9	20.4	4.7
Interest Rate												
General Bank				15.5	15.5	18.0	16.0	19.0	19.0	20.0	17.0	10.0
KDB <sup>1</sup> Facility	12.0	11.0	10.0	10.0	12.0	12.5	13.0	14.0	15.0	21.0	18.5	13.0
Investment												
Export Finance	6.0	6.0	6.5	9.0	8.0	7.5	8.0	8.5	9.0	15.0	15.0	11.0
Curb Market	46.4	39.0	33.3	40.6	41.3	40.5	38.1	41.2	42.4	44.9	35.3	30.6
LIBOR rate <sup>2</sup>	6.5	6.0	10.3	10.1	6.6	5.1	7.3	12.1	15.0	18.1	14.0	9.3
Benefits of Loans <sup>3</sup>												
General Bank				25.1	25.8	22.5	22.1	22.2	23.4	24.9	18.3	20.6
Export Finance	40.4	33.0	26.8	31.6	33.3	33.0	30.1	32.7	33.4	29.9	30.3	19.6
Real Interest Rate <sup>4</sup>												
General Bank				-26.6	-11.0	5.8	7.0	7.4	0.2	-18.9	-3.4	5.3
Export Finance	-2.6	-7.8	0.5	-33.1	-18.5	-4.7	-1.0	-3.1	-9.8	-23.9	-5.4	6.3

Note: 1. Korea Development Bank  
 2. London Interbank  
 3. Curb market interest rate minus interest rate of the loan concerned  
 4. Interest rate of the loan concerned minus WPI

Source: cited in Rhee, S. (1987) page 49.

### **3.5 Peripheral Fordist Regime in Korea (1980-87)**

The term, peripheral Fordism (Lipietz 1987) is used to characterise a regime of accumulation which assembles and exports Fordist consumer goods under an authoritarian state alongside a struggle for democracy, attempting to emulate the Fordist accumulation system in the absence of a corresponding MSR (Tickell and Peck 1992b). This description encapsulates the essence of Korea's accumulation regime during the period 1980 to 1987. The emerging intensive accumulation regime coupled with competitive regulation under the most authoritarian state in postwar Korean history gave rise to increased social inequity, which initiated a powerful pro-democratic movements in the late 1980s. In this section, the development of the peripheral Fordist regime will be traced as will the development of the militant democratic movement in Korea.

#### **3.5.1 Structural Adjustment and Emerging Intensive Accumulation in the Early 1980s**

The general policy direction in the new political and accumulation regime was to respond to the increasing competitive global economic environment and domestic political pressures, especially to the former. Through the new economic policies of liberalisation, which stressed reduced government intervention in the economy, market mechanisms were promoted to enhance competition, to open domestic markets to foreign goods, and to encourage direct foreign investment (Koo and Kim 1992). However, Chun's government was characterised by "economic prioritism" and anti-communist ideology. The purpose was the maintenance of a state marked by economic austerity, political regimentation, and scant responsiveness to the needs of people (Byun, 1983, p.171). Through authoritarian state control, an austere stabilisation policy was pursued to suppress public and private consumption, and urgently pursue the problem of structural adjustment. From the realisation of the changing global economic environment and the Korean position in it, the new regime emphasised competition and improved trade relations with its trading partners for an intensive phase of accumulation (Suh 1992).

In macroeconomic management, price stabilisation was successfully achieved. This broke the chronic inflation of the Korean economy, with a profound impact on all economic activities. Unprecedentedly, prices were stabilised within two or three years: the rampant inflation of 38.9 percent in 1980 fell to 4.7 percent in 1982 and 0.2 percent in 1983, as can be seen from the wholesale price index shown in Table 3.4.4 (Rhee, S. 1987). As prices stabilised, real interest rates soon reached positive levels including those covering export financing. This reduced the attractiveness of bank loans for rent-seeking activities and induced investors to find internal source for financing their projects. In the 1980s, the debt-equity ratio in manufacturing sector

fell as a result. Thus, the most significant impact of price stabilisation was the eradication of rent-seeking activities (Rhee 1987). Also as part of the stabilisation strategy, the overvalued Korean currency was devalued in 1980, which improved the balance of payment position and the competitiveness of Korean products. Although import liberalisation was pursued after the exchange rate devaluation, as Rhee states the government continued to protect the domestic market through tax and tariff barriers<sup>44</sup> (1987, p.60).

The new industrial policy called for a rationalisation of industries to deal with the aftermath of the excessive investments of the heavy-chemical industrial drive of the 1970s, and the phasing out of preferential tax treatment and access to credit by large firms operating in the strategic industries (Rhee 1987). Instead, the government endeavoured to support small and medium-size firms to rectify structural imbalances created by the previous discriminatory investment policy. As a result, loans issued to the top 30 chaebol groups declined sharply: their share of total credit, which amounted to 36 per cent in 1986, fell to 30 per cent in 1987 and 23 per cent in May 1988 (Park, C-J. 1991, p.75-6).

Although the necessity of rationalising industrial capacity was perceived as early as 1979, measures could not be implemented until August 1980 due to a time-lag in policy implementation. However, as can be seen in Table 3.5.1 below, the government took quite heavy-handed steps to realign investments in five major industries: heavy power-generating equipment, motor vehicles, naval diesel engines, electrical transformers, and copper smelting. In the case of oligopolistic market structure in all five industries, firms' voluntary capacity reduction could not be sought. Therefore, the government intervened in the rationalising procedure for capacity reduction, mergers, liquidation and/or division in the area of production among participating firms. Table 3.5.1 indicates the heavy-handed intervention of the government in the rationalisation of the heavy industries by granting firms monopolistic or oligopolistic positions in their industry (Rhee 1987, pp.25-9).

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<sup>44</sup> Rhee, S. (1987) shows that the policy reforms in the early 1980s had the effect of import substitution bias. The effective rate of protection rose significantly during this period from 43.1% in 1978 to 48.9% in 1982, whereas the export subsidisation ratio dropped from 7.6% in 1978 to 6.4% in 1982 due to price stabilisation. It is rather surprising considering the progress in import liberalisation during this period (Rhee, S. 1987, p.60).

Table 3.5.1 Major Steps for Investment Realignment

Industries	Causes	Corrective Measure	Dates
Heavy Power-Generating Equipment	Excessive competition by excess facility	To reduce the number of makers from four to one	20.8.80
Naval Diesel Engines	Excessive supply capacity of three makers	To designate two makers for engine of over and below 6,000 HP, respectively. To allow KHIC to produce diesel engines of over 6,000 HP.	7.10.80 18.8.83
Electric Transformers	Overlapping facility investment by four makers	To reduce the number of makers from four to two.	7.10.80
Motor Vehicles	Inability to achieve economic scale of production with plural makers in the domestic market.	To designate one maker for passenger cars. To designate two makers for passenger cars. To announce in advance the removal of production restriction on specific types of cars.	20.8.80 28.2.81 30.1.85
Smelting of Copper	Excessive supply capacity with a sharp decrease in demand for electro-smelted copper.	Korea Mining and Smelting Co. merged with Onsan Copper Smelting Co.	7.10.80

Source: Data from Economic Planning Board, cited in Rhee, S. (1987) p.28

Preferential tax and tariff institutions were also reshaped to renovate the previous approach of directly supporting specific industries perceived to be strategic into a functional approach of providing incentive measures to any industries in required areas of function such as R&D activities. During this period, the number of industries classified as strategic decreased, leaving naphtha cracking, iron and steel, machinery, electronics, shipbuilding, and aviation industries. Preferential tax and tariff measures changed to indirect forms. The growing dominance of a functional approach over the industry-specific approach reduced distortionary factors in the operation of the price mechanism, which were prevalent in the 1970s (Rhee, S. 1987, p.31-35). The changes reflected the government's requirement for investment from developing basic industrial manufacturing facilities in the 1970s to a more intensive development of new production processes and products in a more competitive mode in the 1980s. As the desired heavy-chemical industrial base had been adequately established for basic import-substitution, the distortionary factors in price mechanisms, which were deliberately created to lure private capital into the new high-risk business areas in the 1970s, were removed. The competitive environment left less room for rent seeking activities, and encouraged investments to promote technological developments and to enhance the industrial structure (ibid., pp.37-40).

The state restructuring of the economy was characterised by a new market-oriented philosophy in the financial institutions on the one hand, and a continuation of heavy handed intervention in the industrial sector. This restructuring of the economy opened the way for the beginning of intensive accumulation under a competitive MSR. Although the formation of an oligopolistic market was initiated by the state, competition between the firms was also promoted. Due to the tight control of the domestic market, competition was limited here but not so in the export

sector. It promoted firms in strengthening their competitiveness through better marketing efforts, improvement of product quality, technological enhancement, localisation of parts and components, enhanced efficiency in production lines, increasing facility investments, development of overseas market and deepening product differentiation. Though import liberalisation forced some industries to undertake structural adjustment, in some cases resulting in closures, the net effect was positive in terms of the policy objectives (Rhee 1987, pp.65-7). As a part of the liberalisation programme, new industries were also opened up to foreign investment from 1981, culminating in the *1984 Foreign Capital Inducement Law*. These changes increased the share of the manufacturing industries open to foreign direct investment to 92.5 percent (Koo and Kim 1992).

#### *Intensive Exploitation in An Intensive Accumulation regime*

New patterns of rational behaviour have emerged in the management of businesses in the 1980s. Emphasis was placed on technological developments and R&D activities instead of the enlargement of industrial capacity. Marketing efforts were reinforced, and production differentiation and new product development became integral to business strategy. Due to the rise in real interest rate and a substantial drop in the size of benefits from credit availability, manufacturing firms tried actively to reduce their debt-equity ratio through internal financing. The debt equity ratio rapidly declined in the manufacturing sector as a whole, from 487.9 per cent in 1980 to 342.7 per cent in 1984. Capital borrowing from overseas was also reduced since interest rates in the international financial markets remained high throughout the 1980s and since the Korean currency was devalued (Rhee, S. 1987, p.51-2).

Additionally, efforts to reduce production costs intensified (Rhee, S. 1987, p. 70). Productivity was sought on the shop-floor. As Amsden (1989) states, the production line tends to be the strategic focus of firms that compete on the basis of borrowed technology in late industrialising countries (p.5). With intensifying competition in the international market, Korean firms sought to optimise efficiency in production, which together with low wages and long working hours enhanced price competitiveness, if not quality. Thus the exploitation of labour also intensified, but the militant labour struggles of the 1970s were not to be seen (Bello and Rosenfeld 1990). The state repression of the labour unions was much more severe during the period of Chun's government (1980-88) than in any other period in Korean history. With the 'purification of labour unions' in 1980, and the revision of labour laws, which though keeping the federation structure for top down control of the unions, isolated them to individual company level for wage bargaining (Koo and Kim 1992, Ogle 1990). The minimal collective bargaining structure, which existed in Park's era, was completely dismantled, weakening the position of labour considerably. Due to high unemployment and severe labour repression by the state during this period, private enterprises were able to increase the intensity and the length of the working day. As Table 3.5.2 shows the length of working hours, which declined during the 1970s, started to increase in the

1980s. Wages were frozen in the name of economic stabilisation during most of the 1980s (Koo and Kim 1992). The militancy of labour struggles in the late 1980s clearly reflected the degree of exploitation of the working classes during that period.

Table 3.5.2 International Comparison of Hours of Work per Week in Manufacturing

	1965	1970	1975	1980	1982	1983
Korea	57.0	52.3	50.5	53.1	53.7	54.1
Japan	44.3	43.3	38.8	41.2	40.9	41.1
Singapore	-	48.7	48.4	48.6	48.3	48.1
U.S.	41.2	39.8	39.5	39.7	38.9	40.1
Taiwan	-	-	-	50.9	48.1	48.1
West Germany	-	-	40.4	40.0	39.1	-

Source: ILO, (1983) *Yearbook of Labour Statistics*, cited in Christian Institute for the Study of Justice and Development (1985), p.50

### 3.5.2 Rapid Export Growth, Trade Surplus and Changing Accumulation Regime

#### *International Market and Export Growth*

With a successful structural adjustment, and an improvement in the international economy, by 1985 the Korean economy was showing a remarkably strong performance. The popularly named 'Three Lows' period of lowered interest rates of major foreign banks, lowered exchange rates for the U.S. dollars against the Japanese yen, and the lower price of crude oil helped Korean exports to the U.S. market (Koo and Kim 1992). GNP growth rates were continuously over the 12 percent level in real terms during 1986-88, while price inflation and unemployment remained quite low. In 1986, the economy grew 12.5 percent in real terms, and more than half a million new jobs were created, reducing the unemployment rate to 3.8 percent from 4.1 percent a year earlier. Consumer prices rose by only 2.8 percent while wholesale prices actually declined by 1.5 percent. National savings surged to exceed domestic investment, making a remarkable departure from the long and heavy reliance on foreign capital. The rapid economic growth in 1986 was driven by a rebound in the export of manufacturing goods and the continued expansion of productive infrastructure in electricity, gas and water. Real gross fixed capital formation increased by 11 percent, while the growth in real consumption remained around 8 percent (Koo and Bark 1989, p.3), which shows that domestic consumption had been suppressed in order to support rapid growth of the export-led economy.

Although both external and domestic demand contributed to the strong economic performance in 1986, the main expansionary force was provided by rising exports of Fordist goods, that is

consumer durables, to North America, Japan and the European countries, returning the Korean economy to its earlier pattern of export-led growth. In 1986, exports of goods and services grew by 26 percent, led by textile and apparel, cars, electric and electronic products, steel products, and footwear (Koo and Bark 1989).

For the first time in history (with the exception of 1977), Korea recorded a sizeable current account surplus for three consecutive years: \$4.6 billion in 1986, \$9.8 billion in 1987 and \$14.2 billion in 1988. Although this improved the balance of payments situation, Korean policymakers believed that the growing trade surplus would produce undesirable structural problems, both domestically and internationally. Domestic investment, which was biased towards exports, obstructed balanced growth of the national economy, and at the same time, the increased money supply caused inflationary pressures and impaired painfully achieved price stability. To avoid trade tension arising from trade surpluses such as pressures to open the domestic market and protectionist measures against Korean products, especially with the United States, in 1987 Korean economic planners devised a comprehensive surplus management programme. In the past, it was believed that export growth and a trade surplus should be welcomed, no matter what the size was. The programme brought about comprehensive changes in the nation's policies on trade, investment and finance<sup>45</sup> (Koo and Bark 1989).

With the turn around in government direction in the economy from export bias to a more balanced growth between exports and the internal economy, and the preparation for the 1988 Olympic Games, growth of the domestic economy was dramatically boosted. The construction industry was a particular beneficiary.

The shift in paradigm spelt a change in the accumulation regime. Public and private consumption were allowed to rise, leading to pressures on wages. The accumulation of earnings from export markets started to be displayed as speculative investments in the property market, and in conspicuous consumption by the capitalist class. Thus, the ideology of self-sacrifice for national development and austere wage and union policies was beginning to wane in the face of the ostentatious display of wealth and speculative activities by the middle and upper classes.

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<sup>45</sup> Firstly, more foreign currency-loans were made available to businesses for imports of capital goods, equipment, raw materials and other investments. Secondly, market opening was accelerated to increase imports and to allow greater market access for foreign goods. The import surveillance list was drastically shortened, and indeed abolished in 1988 (*ibid.*, p.14). Provisions in the numerous special laws that had restricted imports were substantially relaxed. Thirdly, the government undertook measures to restrain exports of low value-added products that increased Korea's export volume without providing substantial benefits for the national economy. Fourthly, public sector investment was expanded to promote a more balanced growth of the economy. Investment in collective consumption goods such as roads, sewers, water supply, housing and medical services were increased as well as investment for agro-industrial complexes and science and technology (Koo and Bark 1989, Rhee, S. 1987).

This prompted student protests and labour struggles in 1987, urging democracy and social justice. The changes in the accumulation regime brought unforeseen social forces which challenged the hegemonic MSR. This was the beginning of the end of peripheral Fordism in Korea.

### **3.5.3 Capital Concentration, Social Disparities and the Exhaustion of the Peripheral Fordist Paradigm**

The changes in the accumulation strategy and the social norms of consumption behaviour during the mid- and late-1980s, signalled the end of the peripheral Fordist accumulation system. The ideological hegemony of austerity and self-sacrifice of *Saemaul Undong*, and of general anti-communism had disintegrated in the face of a boom economy and rising consumerism. Calls for democracy and social justice by the students defied the coercive force of the state, obliging the Presidential candidate of 1988, Rho Tae Woo, to declare political and economic reforms. In this subsection, we will look at the social impact of rapid economic development and the changing accumulation regime which led to the restructuring of the state and mode of development.

#### *Rural Indebtedness and Import Liberalisation*

From the early 1980s, the agricultural squeeze was intensified by the scaling down of the subsidies to the rural areas as a whole. The Grain Management Fund<sup>46</sup> and the Fertiliser Fund were reduced, and the burden of *Saemaul Undong* fell on the shoulders of the people. Under the new market oriented philosophy, the state reduced subsidies not only to lower the government deficit, but also to encourage efficiency and competition in all spheres of production. This was reinforced by pressure from the USA, which was forcing the Korean state to open the domestic agricultural markets.

Dependence on chemical input of agricultural production, which heightened in the 1970s with the introduction of the *Tong-il* rice, created a crisis of indebtedness in the agricultural sector. The cost of production began to exceed the purchase price even during the late 1970s when the government heavily subsidised the agricultural sector (Boyer and Ahn 1991). With the reduction of price supports, credits and low market prices, the problems of indebtedness increased (Bello and Rosenfeld 1990, Boyer and Ahn 1991). From parity in 1975, the height of the rural development programme, average rural household income dropped to around 85 percent of urban household income in the 1980s. Although fluctuations were relatively small, the increases in rural indebtedness were alarming. The number of rural households in debt rose from 76

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<sup>46</sup> Due to pressures from IMF and urban electorates, the subsidies were reduced from the early 1980s. The tactics used were subtle in order to hide its reversal of policy. see Bello and Rosenfeld 1990, p.87.



percent in 1971 to 90 percent in 1983, and to 98 percent in 1985. Between 1975 and 1985, average farm household income increased 6.6 times and farm assets 6.3 times, while farm debt rose by 63 times, or at almost 10 times the rate at which income and assets increased (Bello and Rosenfeld 1990, p.85-6). This was just the beginning of the upward spiral of farmers' indebtedness, which in 1988 jumped 31 percent to a huge 3.1 million won per household (5.72 trillion won in total). Though the government tried to address this problem with the provision of one trillion won in loans in 1987, to allow farmers to refinance their debt with lower bank loans, the effect was temporary since the structural problems of indebtedness was not addressed (Boyer and Ahn 1991). Rural households were caught in a vicious cycle of indebtedness and debt repayment.

The growth of tenant farmers has been another source of social and regional inequality. The land reform had almost totally removed tenant farming in Korea in the 1950s. However, tenant farmers dramatically increased in subsequent years, from 26.4 percent of all South Korean farmers in 1960 to 33.5 percent in 1970, 46.4 percent in 1981, and to 63.2 percent in 1984, a figure approaching the level of tenant farming under Japanese colonial rule. Boyer and Ahn (1991) shows in their survey results that tenant farmers were burdened with exorbitant rents and high production expenses, and were more indebted than non-tenant farmers. Not only did this result in the persistence of rural poverty, it also contributed to social stratification, concentration of capital in the hands of absentee landlords and continued out-migration.

Almost two decades of short-term strategies for rural exploitation for food production and pacification for political support and legitimacy fell apart in the mid-1980s with the corruption charges of various leaders of the rural development programme. The continued widening of the real urban and rural income gap through sectoral policies, social inequalities, agricultural squeeze<sup>47</sup> and uneven infrastructural development has created an alienated rural community. The 1988 farmers' demonstration in front of the National Assembly in Seoul, which turned into a riot, signalled the break down of the hegemonic MSR in rural Korea (Bello and Rosenfeld 1990).

#### *Capital Concentration, Social Disparity and the Student Movement*

Not only did social disparities exist between rural and urban sectors, but the social inequalities within the urban and industrial sector continued to increase. Although the government took action to curb *chaebol* domination of the Korean economy, during the early 1980s the *chaebols* were able to regain their losses, and improve on it as soon as the 'purification' campaign was

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<sup>47</sup> In the 1980s, there was a new dimension to the agricultural sector. It was a 'sacrificial lamb' to ensure the continued viability of EOI regime through opening up of the domestic market to mainly U.S. agricultural surpluses, in exchange for keeping American market open for Korean manufactured goods. (Bello and Rosenfeld 1990)

over (Koo and Kim 1992). For Koo (1984), the concentration of capital in *chaebols* was the cause of social inequalities, and this was due to the government industrial policies of the 1970s and 1980s. The liberalisation of the financial and banking sector, which was to help capital dispersion, was instead used by the *chaebols* through acquiring or setting up financial institutions to further boost their positions (Bedeski 1994). Due to the repression of labour unions and wages by the state, and the improvement in the international market during the 'Three Low Period'<sup>48</sup>, rapid capital accumulation took place in the hand of the *chaebols*. GNP contribution by the top 10 *chaebol* groups rose to over 67 percent in 1984 as can be seen in Table 3.5.3 (Amsden 1989, Kim and Koo 1992). As Amsden (1989) states Korean industry is even more monopoly-ridden than that of Japan: she finds that "Korea has acquired one of the world's most concentrated economies" (p.121) as Table 3.5.4 demonstrates.

Table 3.5.3 Dominance of the Top 10 Chaebols

Year	The Share of Top 10 Chaebols % Sales in GNP
1974	15.1
1977	26.0
1980	48.1
1984	67.4
1987	68.8

Source: Jones and Sakong (1980), p.266; Koo and Kim (1992), p.135.

Table 3.5.4 Comparison of Simple Average Three-Firm Concentration Ratios for Korea, Japan, and Taiwan

Country (year)	Average share (percent) <sup>a</sup>
Korea (1981)	62.0
Japan (1980)	56.3
Taiwan (1981)	49.2

<sup>a</sup> Average share of top three producers in all manufacturing industries.

Source: K. W. Lee, et al (1986) cited in Amsden, A. (1989), p.122.

Table 3.5.5 Household Income Distribution, 1960-80

Income Group	1960	1965	1970	1975	1980	1982	1985
Bottom 40%	-	19.34	19.63	16.85	16.06	18.8	17.7
Top 20 %	-	41.81	41.62	45.34	45.39	43.0	43.7
Gini index	0.448	0.344	0.332	0.391	0.389	0.357	-

Source: Koo 1984, p.1030 and Christian Institute for the Study of Justice and Development 1985, pp.43-4

<sup>48</sup> The three lows refer to low interest rate, low petroleum price and exchange rate of US dollars against the Japanese Yen.

While the middle 40 percent of the population was able to maintain its income share during the two decades of development, the lowest 40 percent of the population saw a fall in their share of income from 19.3 in 1965 to 17.7 in 1985, (see Table 3.5.5) (Bello and Rosenfeld 1990). By international comparison, Korean workers spent more hours working and were paid less than any country in the Western industrialised or the newly industrialising countries (see Tables 3.5.6). The working conditions of Korean workers were another source of social discord. The number of industrial accidents in Korea rose steadily after 1964. Between 1964 and 1984, the total number of deaths from industrial accidents was 18,000, with disablement at 150,000 and injuries at 1,430,000. It is estimated that the total number of industrial accidents victims far exceeded 1,600,000 since not all work places were covered by Industrial Accident Insurance. In 1983 alone, the Ministry of Labour estimated that 317,000 persons were the victims of industrial accidents, amounting to an economic loss of 1,263.9 billion won or 2.4 percent of GNP (Christian Institute for Study of Justice and Development 1987, p.115). The long hours of work, the poor working environment and low wages, which capital was able to enforce only with the help of repressive state force, contributed to the growing dissent within the workplace.

Table 3.5.6 International Comparison of Average Monthly Wages and Wages per Hour in Manufacturing, 1983

Country	Average Monthly Wage	Hours of Work	Exchange Rate (to U.S. \$)	Wage per hour in won	Differential (Korea =100)	Conditions
Korea	W226,790	236.1	W795.50	W936	100.0	Including payment in kind, companies of more than 10 workers.
Japan	Y279,106	178.0	Y237.5	W5,252	546.5	Only wages in cash; companies with more than 30 workers
Taiwan	NT\$12,748	209	NT\$40.06	W1,211	126.0	Only wages in cash; no reference to scale of company
Singapore	S\$191.62*	48.10*	S\$2.113	W1,500	156.1	Only wages in cash; companies of more than 10 workers.

Note: Figures with \* for Singapore are based on average weekly wage and weekly work hours.

Source: Federation of Korea Trade Union (1984) '1985 Federation of Korea Trade Union Wage Guide', p.55.

Table 3.5.7 Annual Increases in Housing Price and Rents

		1987	1988	1989	1990
Nation	Housing Price	7.2	13.1	14.6	8.3*
	Rents <sup>1)</sup>	19.2	13.8	17.6	17.5*
Seoul	Housing Price	2.1	9.1	16.6	9.9*
	Rents <sup>1)</sup>	18.0	7.9	23.7	21.9*

1) Chonseil rents (is where a lump sum is deposited with the landlord, who receives the interest from this money, and at the end of the lease the money is returned.)

\* Increases in price and rent during the 1st quarter of 1990

Source: Re-compiled from Son. J-Y. (1990), p.19.

Table 3.5.8 Concentration of Land-ownership by Individuals

Ownership Category		Percentage of Total Area
	Top 5%	65.2
I	Top 10%	76.9
II	10-20%	10.8
III	20-30%	5.4
IV	30-40%	3.2
V	40-50%	1.9
VI	50-60%	1.0
VII	60-70%	0.5
VIII	70-80%	0.3
IX	80-90%	0.2
X	90-100%	0.0
All individual owners		100.0

Note: 1) As of June 1988

2) All individuals own 66.1%, and corporations own 4.1% of total national land.

Source: KRIHS 1989, cited in Son J-Y. (1990), p.16

Workers' increasing anger at conspicuous consumption was further inflamed by skyrocketing housing costs (see Table 3.5.7), due to a shortage of housing in general as well as a rise in speculative investment by the *chaebol* groups. As private land-holding became concentrated in fewer and fewer hands, owning a home became a distant dream. According to the Korea Research Institute on Human Settlements, 65.2 percent of all land was concentrated in just 5 percent of the population (Table 3.5.8) (Bello and Rosenfeld 1990, Son 1990, p.16).

With conspicuous consumption and speculative investment on the one hand, and worsening wages, working conditions and the rising cost of living on the other hand, labour and student activism were directed at both the state and directly at the *chaebols*. The use of the police force against both labour and student demonstrations escalated the violence. Since the Kwangju massacre in 1980, the student and labour movements had taken a radical turn towards a Marxian philosophy, which saw the Korean state as a lackey of the United States, controlled by corporate capital. Their objective was to overthrow the oppressive state as a precondition to achieving

other goals such as improving the conditions of work and reproduction as well as more equitable wealth distribution. Labour activism was strongest in areas of high concentration of workers such as Ulsan, where 500,000 Hyundai workers were concentrated, in the Masan export zone and the Kurodong industrial estate in Seoul. The student demonstrations were everywhere, but most prolific in Seoul, where they had high impact and visibility. These activities leading up to the 1987 election led to the capitulation of the Chun regime and the end of the authoritarian mode of regulation.

*Breakdown of the Mode of Social Regulation, and Consequent Social Unrest*

The break down of the dominant MSR was thus initiated by the rapid rise in trade surplus and shift in state policies, which boosted domestic consumption. As the working classes were alienated from the rising domestic consumption, and as conspicuous consumption and speculative activities of the new bourgeoisie continued, the hegemonic ideology of self-sacrifice for national development began to dissolve. An increasing awareness of social justice issues began to be widespread, especially among college students. As students took to the streets, the state control of the hegemony bloc started to weaken. Spiralling rural indebtedness and consequent opposition to the Chun government added to the legitimation crisis in 1987. The staging of the 1988 Olympic Games in Seoul put the focus of the world on the Korean state, which was much condemned for its labour repression and human rights abuses. For this reason the state was not able to use the full force of its mighty police. In order to show that state reform was at hand, in 1987 the presidential candidate Rho Tae Woo distanced himself from Chun, with the June 29 declaration of political reform towards democracy. This marked the end of peripheral Fordist regime, and a beginning of Neo-Fordism in Korea.

### **3.6 Neo-Fordist Period (1988-Present)**

This phase of Korean development is termed here as the neo-Fordist regime, since Korea skipped over the period of Fordist accumulation regime with monopolistic social regulation, moving directly into the post-Fordist era of the global economy. Lipietz (1992) claims that in the wake of the crisis of Fordism as a crisis in the productive forces, "Taylorism" and in the rigidity of the national modes of regulation governing the Fordist economy, there arose two types of flexible regimes of accumulation in the core region: a neo-Fordist regime, which aimed to re-establish the flexibility of market relations as well as capital-labour relations, and a post-Fordist regime, which aimed to overcome the limitation of Taylorist model by job qualification, 'just in time' organisation and strategic co-operation between companies. The Korean mode of development can be described as neo-Fordist, in which mass production and mass consumption patterns were established with the continuation of a competitive mode of social regulation and the flexibilisation of production and labour relations.

#### **3.6.1 Political Liberalisation, Militant Labour Struggle and Mass Consumption**

Since the historic June 29th Declaration of Democracy in 1987, Korea has been undergoing rapid democratisation and liberalisation. Though political liberalisation was not quite as widespread as sometimes reported, the repression of labour and student demonstrations became less severe than during the previous regime. In this process, the pent-up discontent of past decades burst out into the open. The grievances stemmed from suppression of the labour movement, from regional disparities in economic development, concentration of economic power in conglomerates, from growth imbalances between manufacturing and agriculture, and from the perception of inequitable income distribution (Koo and Bark 1989). Economically, the most threatening consequence of political liberalisation was the explosion of labour disputes, which increased in number from just 276 in 1986 to 3,749 in 1987 and 1,873 in 1988 (see Table 3.6.1). Although the number of labour disputes in 1989, 1990 and 1991 was far below that of 1987 and 1988, the intensity of the demonstrations and strikes was probably more severe. Work stoppages also became more frequent, longer and more violent. The industries most affected were the car manufacturers and the labour intensive garment and footwear firms (Koo and Bark 1989). As a result, wage increases accelerated dramatically. Through the mid-1980s, annual wage increases were below 10 percent. After the last quarter of 1987, however, wages rose rapidly peaking in 1989 with an increase of 20 percent. For Asia as a whole, 1990 Korean wages were second only to Japan's. Working hours also decreased, while working conditions improved slightly (Bedeski 1994).

Table 3.6.1 Number of Labour Disputes, and Impact on Earning and Working Hours of Workers in the Urban Industrial Sector 1978-1992

	Number of disputes	Workers involved	Working days lost	Average Monthly Earnings in won (% increase)	Average working hours per week
1978	102	10,598	13,230		
1979	105	14,258	16,366		
1980	407	48,970	61,269		53.1 <sup>1</sup>
1981	186	34,586	30,948		53.7 <sup>1</sup>
1982	88	8,967	11,504		53.7 <sup>1</sup>
1983	98	11,100	8,671		54.3 <sup>1</sup>
1984	113	16,515	19,984	296,907	
1985	265	28,658	64,343	324,283 (9)	
1986	276	46,941	72,025	350,966 (8)	57.3
1987	3,749	1,262,285	6,946,935	386,536 (10)	58.5
1988	1,873	293,455	5,400,837	446,370 (15.4)	58.5
1989	1,616	409,134	6,351,443	540,611 (21.1)	56.8
1990	322	133,916	4,487,151	642,309 (18.8)	55.8
1991	234	175,089	3,271,334	754,673 (17.5)	55.0
1992	235	105,034	1,527,612	869,284 (15.2)	53.9

Note: 1. For manufacturing industries only. Cited from the Christian Institute for Study of Justice and Development (1985), p.50.

All other figures for all industries (mining, manufacturing, services and construction) excluding the agricultural sector.

Source: National Statistical Office (1993).

Table 3.6.2 Macro-economic and Industrial Indicators of Korea 1986-1992

Year	GNP Growth (%)	Growth in Manufacturing (%)	Exports (million US dollars)	Growth Rate (%)	Imports (million US dollars)	Growth Rate (%)
1986	12.9	18.3	34,714.5	14.6	31,583.9	1.4
1987	13.0	18.8	47,280.9	36.2	41,019.8	29.9
1988	12.4	13.4	60,696.4	28.4	51,810.6	26.3
1989	6.8	3.7	62,377.2	2.8	61,464.8	18.6
1990	9.3	9.1	65,015.7	4.2	69,843.7	13.6
1991	8.4	8.9	71,870.1	10.5	81,524.9	16.7
1992	4.7	4.8	76,631.5	6.6	81,775.3	0.3

Source: National Statistical Office (1993)

Work stoppages and rapid wage hikes arising from labour disputes along with currency appreciation seriously eroded Korean products' international competitiveness after 1989, and as

Table 3.6.2 shows both growth in manufacturing and in exports declined sharply. As a result, Korean export industries such as footwear, automobile, iron and steel and marine products were hit hardest. Nonetheless, some sectors managed to post robust gains despite the more adverse economic conditions. These include shipbuilding, electric and electronic products, chemical products and general machinery, which grew by over 10 percent during the first half of 1989 (Koo and Bark 1989, pp.27-9).

The economic recession in the core countries from the early 1990s has also made exports difficult, especially due to protectionist measures from the United States and the European Community trade blocs. On the other hand, 1988 saw a 10.0 percent increase in domestic consumption, representing a big surge compared to previous years (Koo and Bark 1989). Domestic consumption, especially private consumption, continued to increase at an average rate of 10 percent between 1988-1991. The value and composition of imports has also undergone rapid change. Imports surged due to the government efforts to reduce tariffs, liberalise imports and appreciate the currency. Koo and Bark (1989) show that increases in imports were mainly for domestic consumption, with consumer goods growing relatively faster than capital or intermediate goods (p.30). The consumption rate, however, dropped to 6.8 percent in 1992 due to the downturn in the economy. This rise in domestic consumption due to the rise in wages from 1987 to 1991 was the main expansionary force and compensated for the slowdown in exports. Thus the Korean manufacturing industries as a whole were sheltered from the full effects of export decline in the global market.

During the Roh administration (1988-1992), the focus of the economy still rested on export sector industries. Existing industries such as semi-conductors, ship building and car manufacturing, and new industries such as naphta-cracking were promoted. In order to restore international competitiveness of Korean products, the Korean government resumed coercive tactics towards labour unions. In 1990, Rho resumed labour repression by declaring the militant Korean Trade Union Congress, *Chonmohyup*, illegal, and deployed 300 intelligence agents into over 70 industrial complexes. "Hundreds were detained in the resulting crackdown, with some 140 unionists jailed indefinitely as of early 1991" (Bello and Rosenfeld 1990, p.45). The momentous victory by labour over capital in the late 1980s was short lived. Although the workers in *chaebol* firms have seen much improvement in their wage, the workers in small and medium firms still suffer from low wages. The export-oriented regime refused to transform its capital-labour relations for an inclusion of labour into the regime of accumulation.

### **3.6.2 Flexibilisation of Production and Internationalisation of Korean Capital**

In order to meet the challenges of an increasingly competitive world economic climate and the rising domestic wages and labour disputes, Korean manufacturing industries sought to flexibilise



production processes as well as labour relations. Flexibilisation of production through subcontracting and multiple sourcing, particularly in the electronics and automobile industries have been slowly introduced to raise productivity, reduce production cost and divide labour unions (Lee, Y-S. 1993). This, however, has not been enough to raise the competitiveness of Korean products in the international markets. With one of the highest wages in East Asia, but lacking the advanced technologies of the core industrialised countries, Korean capital was forced to look for cheaper labour sources offshore.

Liberalisation of government regulation of private offshore capital investment allowed some of the manufacturing industries to find alternative sources of cheap labour. The most labour intensive industries such as the garment and footwear manufacturers were the first to locate plants offshore in the Southeast Asian countries, the second generation Asian NICs (Bedeski 1994). This trend has increased rapidly during the last three years in many other industries (Koo and Bark 1989, FEER 1996, 20th June). This relocation of manufacturing plants was not only to export to Fordist (or post-Fordist) regimes in the core region, but also to expand markets in the growing economies of Southeast Asia. Korean exports to this region have been growing steadily (Koo and Bark 1989) whereas exports to North American markets have been stagnant. The recent trade and diplomatic links with mainland China and some former communist countries have opened new opportunities for offshore locations close to home with the added advantages of a large market. Also investments in North American and European trade blocs were pursued, such as in Canada (Bedeski 1994), Mexico (FEER 1996, 20 June) and the United Kingdom<sup>49</sup>, to get a foothold in these regions.

The scale of the globalisation drive has been massive (FEER 1996, 20 June). To take the electronic industries for example, since the beginning of the globalisation drive in the early 1990s Daewoo invested US\$1.1 billion in 20 factories (15 since 1993) in order to generate 60 percent of total production outside South Korea, Lucky Goldstar (LG), US\$543 million in 22 factories offshore and Samsung, US\$200 million in Tijuana, Mexico alone. Samsung plans to invest a further US\$580 million in the same area between 1996 and the turn of the century. The Korean investments in offshore locations are not just in assembly lines, but aim to replicate a miniature version of their complex, vertically integrated operations (ibid., pp.48-9). The automobile industries affected by rising domestic costs, also started to invest heavily in offshore locations. Daewoo Motors sought sites in eastern Europe and the former Soviet Union, and Hyundai is planning to locate its operation into countries like Turkey, Egypt and Botswana (Financial Times 17 June 1996, p.19).

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<sup>49</sup> In 1996, Lucky-Goldstar electronics has established a manufacturing base in South Wales and Hyundai electronics announced plans to build one in Scotland's silicon glen.

With an increasing trend towards Korean industrial capital locating production offshore, the balance between capital and labour has been tilting. Under this situation, not only was the bargaining power of labour weakened, but there was growth of structural unemployment. The concentration of capital and inequity in distribution of wealth will be heightened as Seoul becomes the centre of international monetary capital influx in Korea.

### 3.6.3 The Changing Relationship of Capital, State and Society

#### *Relationship Between State and Capital*

Although the Korean state under the Rho (1988-1992) and Kim (1992-1996) leaderships have increased social welfare expenditures, the dominant mode of regulation has remained competitive. With the state deregulation of offshore investments, which has allowed capital to restore its profit margins and its power over labour, the beginning of a flexible mode of development has been signalled. Due to increased inflation from high wage settlements and high domestic consumption, and transnationalisation of Korean manufacturing firms, the increases in wages and the occurrence of labour disputes slowed down substantially after 1993. An intensive mode of accumulation has been firmly established in Korea with the absence of monopolistic regulation. This means that the market mechanism has been reimposed on capital-labour relations without substantial changes in the 'Taylorist' mode of production.

After the late-1980s, the state tried to end its two decades of partnership with the *chaebols* in order to re-establish its legitimacy, and to promote small and medium-sized capital to balance the economic power of the *chaebols*. The Rho government announced measures to regulate the *chaebol* groups and discipline them for their inefficiency and uncompetitiveness in the international market, for their diversification into small and medium business and for their speculative activities (Bedeski 1994, p.87-8). The state was also trying to regain its power over the dominant segment of capital, at the same time as pacifying public disquiet. The Rho government started using indirect instruments of control such as interest rates and tax policy, but it was difficult to accomplish significant reform in the heavily regimented economy. The government ordered banks to grant 35 per cent of all loans to small and middle-sized businesses, in part to deflect growing public resentment against *chaebols*. Despite government prodding, small companies were not emerging as they had in Taiwan (*ibid.*, pp.84-85). These reforms, however, failed due to the economic recession of the early 1990s. The state-*chaebol* partnership continued during the early 1990s in order to restore the EOI mode of development in which the *chaebols* accounted for more than 70 percent of the Korean economy (Bedeski 1994). The economic power was well demonstrated by the participation of the chairman of Hyundai, Chung Ju Young, as a candidate in the 1992 presidential election. In contrast to the early days of economic development, when *chaebols* were firmly under state directions and control, by the

1990s they had grown to hold the upperhand in state-capital relations. Although the state had depended on capital to sustain its legitimacy and hegemony in the past, it was able to exercise considerable power over the *chaebols*. However, the power balance began to change after the mid-1980s when *chaebols* started to dominate the Korean economy.

When Kim Young Sam came to power in 1992, he pursued liberalisation of the protected domestic markets, which allowed the *chaebols* to maintain monopoly control over domestic markets an easy means of capital accumulation<sup>50</sup>. The state has announced many new plans to open up domestic markets and to curb the power of the *chaebols*. The *1993 Financial Liberalisation and Market Opening Plan* (better known as the 'Blueprint') is designed to change much of the archaic practices of *chaebol* companies which dominate all sectors of industry. This will not only have a significant impact on the profits of domestic industries as foreign competitors enter Korean market. This plan is to address the imbalances in the industrial structure, particularly of the dominance of *chaebol* groups and the relatively weak small and medium sized industries. The liberalisation of the financial sector and the phasing out of preferential access and rates of credit to *chaebol* groups is seen as a means to building a more balanced industrial growth. However, it is expected to have profound implications for the country's industrial structure and practices. As *chaebols'* activities are restricted and regulated, Korean exports are forecast to fall to below 5 percent and the GDP to fall below 7.5 percent from 1997 (FEER 1996, 20 June, p.45).

Speculative activities by the handful of *chaebol* groups and by the elite classes have increased social tension and inequity. As the public outcry over land prices continued in the early 1990s, the government extended its regulation, in which *chaebols* were ordered to sell off real estate properties. The Kim administration tried to address corruption and illicit wealth accumulation by politicians and government officials by implementing 'real name transactions' in financial and real estate dealings in 1994 and 1995 respectively.

#### *Social Justice, Housing and Workfare*

With the intensification of competition in social relations, the polarisation of wealth has increased between social groups, and between those in stable employment and those in the marginal labour market. Although Kim has striven to eradicate corruption and reduce the domination of *chaebol* firms in the economy, social welfare reforms have been rather less significant. Particularly, the accelerated housing provision and the establishment of social security and health services have been implemented using market mechanisms. The state pursued a construction-led economic recovery in 1993. New town schemes were implemented to address

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<sup>50</sup> The liberalisation of domestic markets has stemmed both from pressures from Korea's trading partners, notably the U.S. and the desire by the Korean government to become a member of the OECD.

the housing shortages in Seoul and its surrounding area. This was to help reinvigorate the economy, and at the same time improve the housing situation. The shortage of housing has been increasing during the past three decades, especially in Seoul (Byun 1984). The figure for households without their own dwellings was 56 percent in 1980, decreasing slightly to 50.8 percent by 1993. However, there was no provision of affordable housing for the urban poor. Even with price controls for new apartments, they proved to be too expensive for those former residents evicted due to redevelopment. The government did not provide cheap rental housing for the urban poor until 1990, and the quantity was woefully inadequate; locations were often unsuitable. Although housing prices started to stabilise and decrease in Seoul in 1994, house prices remained too high even for many middle class families. The accelerated programme of housing provision could not be seen as establishing a broader base for social welfare. Its purpose was mainly to stimulate the economy and to stave off a legitimisation crisis.

The establishment of a national pension scheme and health insurance scheme have also been under the market mechanism, driving a wedge between the more established working classes and the unemployed or casually employed urban poor. The national pension scheme introduced in 1991 only benefited those in full time employment or self-employed, rather than those unemployed or working in the informal sector. The effect was to institutionalise the *workfare state* in Korea. This not only increased competition for jobs, but in the period of flexibilisation of labour relations, was also a means of labour control in that pension benefit would be lost if jobs were lost. In addition, the national health insurance was an extension of private provision of medical insurance, albeit at a lower rate and managed by the state. This was also not universal, and the access to medical care, especially in rural areas was restricted due to the lack of medical facilities.

The market approach to social welfare arose due to the competitive MSR and the ideology of a free market philosophy. The current mode of regulation has thus institutionalised the *workfare state*. As more manufacturing firms moved their production lines offshore and the country is opened up to competitive global forces, the proportion of the population falling outside the workfare state is likely to increase in the late 1990s, threatening social cohesion.

## **3.7 Summary and Conclusions**

### **3.7.1 Summary of Economic Development in Korea**

The road to Korean capitalist industrialisation started with Japanese occupation. The Japanese colonial regime not only subjected the Korean people to harsh political, economic and social conditions, but also set up an exploitative system of social and economic regulation that was, in later regimes, manipulated for its own ends. The relationship between state and capital, and the role of large business groups in this period became the model of capitalist development for the postwar regimes from 1961.

Political events have repeatedly interrupted the growth of Korea's economy since independence. During these early years the economy was disrupted first by the collapse of Japan's 'Greater East Asia Co-Prosperty Sphere' (Mason et al 1980) and later the arbitrary division of the peninsula into Soviet and American occupation zones. The mismanagement of politics by the U.S occupation forces and economy by the Rhee administration allowed the continuation of the old social hierarchy and social system which became the basis of accumulation, and the source of much social resentment and political unrest.

The ISI regime between 1948 and 1960 was dominated by mismanagement of the economy stemming from the lack of macroeconomic planning, from U.S. Aid maximisation and outright corruption. The ISI paradigm was exhausted very quickly when easy substitution was accomplished and owing to the structural features of the Korean economy at that time, deepening of import substitution could not be pursued. With the fall of the Rhee and Chang governments due to the erosion of the hegemonic bloc stemming from economic disarray and state collusion with certain fractions of capital, the EOI regime was established through a coup d'état. The EOI regime in the 1960s was based on an extensive regime of accumulation and a competitive mode of social regulation. Although this mode of development raised the country out of absolute poverty, it was not able to escape from the dependency relationship with core countries. Rapid industrial development caused many social problems as well as regional disparities due to an imbalance in sectoral development.

In order to escape from the dependency on foreign capital and intermediate inputs for the manufacturing of export goods and on labour intensive low value-added exports, industrialisation centred on heavy and chemical sectors was established both as an import substitution of capital and intermediate goods and as a new strategic export industry. The extensive accumulation regime based on high capital and technology input was complemented by a corporatist mode of social regulation. The corporatist labour regulation and rural development strategy was able to further the development of Korean heavy and chemical

industries in the hands of *chaebols*. Economic performance was spectacular in the mid- to late-1970s. However, due to the industrial policy adopted there was much rent seeking activity by the *chaebols*, who were maximising profits through tax and tariff incentives, loans at special rates and monopolistic control of the domestic market. This led to over-capacity in production, and eventually to the exhaustion of the extensive accumulation regime. The structural crisis led to the restructuring of both the mode of development and the state itself.

Economic restructuring produced an intensive accumulation system coupled with a competitive MSR under an authoritarian state. The intensive EOI regime was in response to the changing international economic climate as well as rising labour costs in Korea. The foundation laid during Park's presidency became the basis for the rapid growth in the mid-1980s, which put Korea firmly in the ranks of the most buoyant NICs. As the economy boomed in the mid-1980s, with rising consumption by the middle and upper classes, the authoritarian state experienced an increase in labour disputes and student demonstrations challenging its legitimacy. The competitive MSR and the hegemonic ideology of self-sacrifice were under pressure from the inequitable distribution of income and the rising consumerism of the middle classes.

The 1990s' neo-Fordist phase of Korean development is characterised by a growing tendency towards a flexible accumulation regime with a competitive MSR. This tendency was initiated by the political and economic liberalisation during the beginning of the sixth republic (1988-present). The militant labour struggles under a more liberal political regime led to the rapid increases in wages, which made Korean export goods relatively uncompetitive in overseas markets. The rising cost of production for exports coincided with the downturn of the global economy, devastating Korean export performance in the late 1980s and early 1990s. But rising wages led to the increase in domestic consumption, which shielded Korean industries from the full effects of the global recession. However, Korean capital as well as Foreign MNCs tried to restore rates of profit and improve export activity by locating labour intensive activities in areas of abundant low cost labour, particularly in Southeast Asian countries, China and Mexico. The relaxing of state regulations for offshore investment by Korean capital has not only promoted a more flexible mode of development, but also led to the reimposition of market forces in capital-labour relations.

Table 3.7.1 Phases of Korean Regimes of Accumulation, Regulation and Industrial Trajectory in the Twentieth Century.

	1909-45	1945-60	1960-70	1971-79	1980-87	1988-Present
Regime of Accumulation	Extensive	Extensive	Extensive (Taylorist)	Extensive ( <i>Yusin</i> Phase)	Emerging Intensive (peripheral Fordist)	Intensive - Emerging Flexible (Neo-Fordist)
Mode of Regulation	Colonial	Corporatist	Competitive	Corporatist	Competitive	Neo-Competitive
Industrial Trajectory	-	Import Substitution Industrialisation	Labour Intensive EOI (Light industries and OEM <sup>1</sup> Assembly)	Deepening EOISI (Heavy and Chemical Industries)	Capital and Technology Intensive EOI	High-Technology based strategy

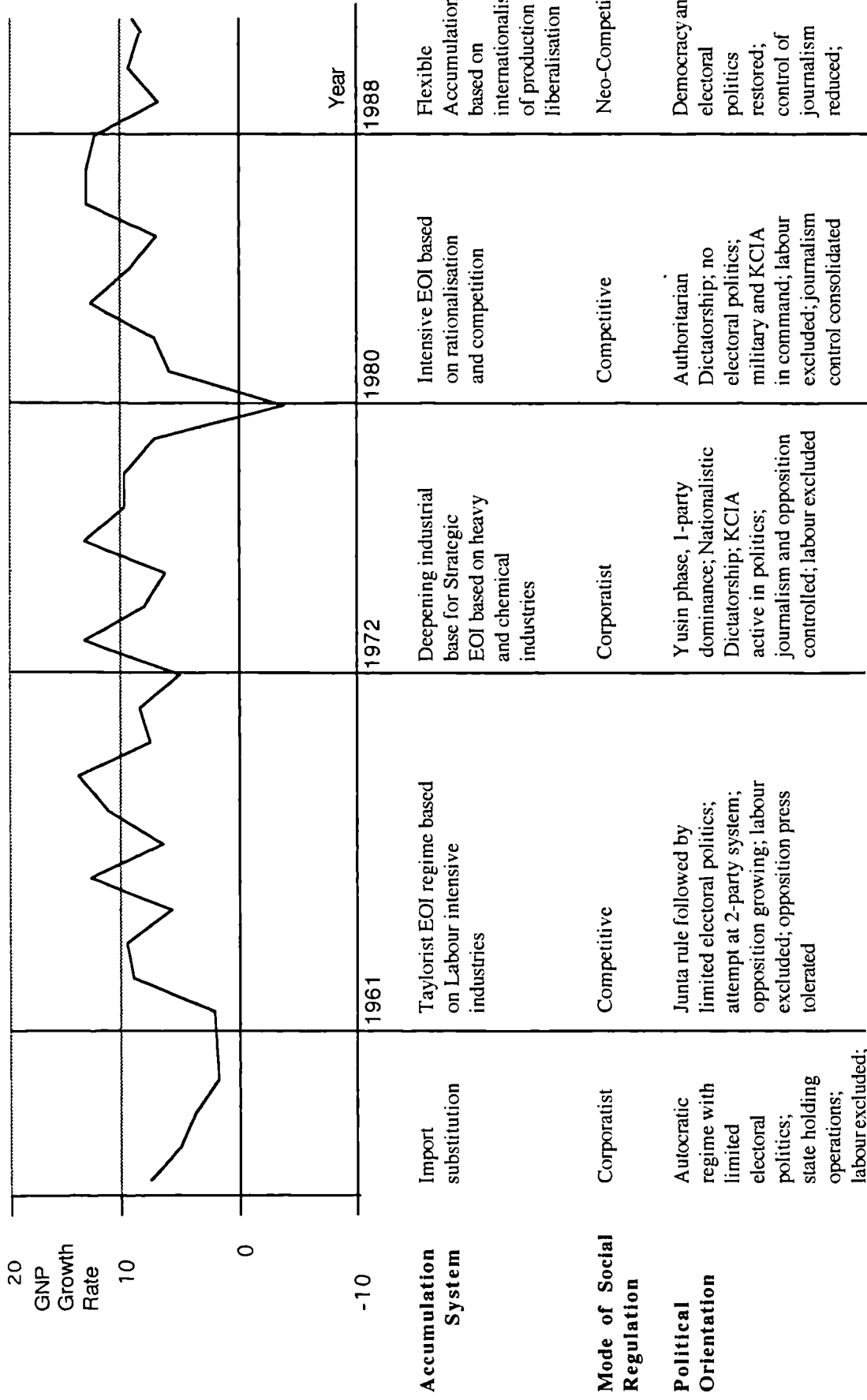
Note: 1. Own-name Export Manufacturing

Source: Compiled by author

The economic change and political restructuring in the postwar period must be understood in terms of a dialectical process. The dominant position of the state in social regulation, and its direct intervention in the formation of the accumulation system did not allow it to overcome structural crises without calling its own legitimacy into question. Due to the inflexibility of the state stemming from its impermeability to economic and political changes, political restructuring was a precondition for economic restructuring. Thus state transformation coincided with economic restructuring.

A central feature of accumulation dynamics in Korea has been the concentration of capital in the hands of *chaebols*. The EOI mode of development in Korea was based on monopoly capital as the main dynamic force in accumulation, not just in the manufacturing sector but also in property and the financial sector. The *chaebols* have been able to diversify operations into many profitable sectors due to their economic power and close ties with the state bureaucracy. Due to their unequal access to credit facilities and speculative ventures, small and medium sized industries have not been able to flourish as in the case of Taiwan.

Figure 3.7.1 GNP Growth Rate, Regime of Accumulation and Political Regulation



Source: compiled by author (based on Figure 12.1 by Bruce Cumings (1988), p.255 and NSO (1992))



### 3.7.2 Conclusion

As summarised above, Korean capitalist development in the postwar period can be divided into five distinct phases. The transformation of each accumulation regime to the next was due to the exhaustion of some or all of the structural features in the mode of development, accumulation regime, MSR and industrial trajectory. In the Korean economic development process, we can identify distinct features: reliance on *chaebols* as the main economic agents and on the centralised power and mode of intervention of the state. Particularly important has been the role of the state as the guarantor of the accumulation regime and stabiliser of the MSR. The manipulation of the financial sector, repression of labour and other opposition to EOI, control of monopoly capital, separation of production and consumption and the successful implementation of state accumulation strategies have been the key features of state regulation. However, heavy intervention by the state was not able to avert crises occurring in the accumulation system. As we have seen, the sources of crises came from both internal and external forces, and were different for each regime. The transformation of the accumulation regime-MSR coupling was made possible through the restructuring of the state, through hegemonic ideology, industrial trajectory and various institutional forms such as financial arrangement, wage relations and the mode of international integration.

Through the deepening of the industrial trajectory and the intensification of accumulation strategies, Korea has been able to achieve rapid economic growth. However, this has been accompanied by severe social and environmental problems. Although general living standards have risen dramatically, abolishing absolute poverty that existed in the early 1950s, income distribution in Korea has worsened over the years. Although wages have increased significantly, particularly since 1987, capital concentration and wealth distribution have become serious sources of social antagonism. The low wages of the working classes, the concentration of capital and real estate in the hands of *chaebols* and a small group of private individuals have been at the root of social inequity. In addition, corruption and speculation activities only heightened the anger of the alienated classes.

The discrimination of state intervention between production and consumption has been a major factor in growing social and environmental problems. The export-oriented mode of development meant that while industrial production was prioritised, social consumption was seen as a burden. Thus, the provision of social and physical infrastructure was geared towards education and training, transport and communication networks, power-generation and industrial estate development, which were seen as productive infrastructure. On the other hand, social consumption infrastructure such as sanitation, social welfare and medical provision was largely ignored or left to the market. Provision of housing in particular has been left to private capital as

another means of capital accumulation. Limited public housing and medical schemes appeared only in the 1990s in the wake of democratic reforms and political pressure.

The state promotion of export-oriented industrialisation also led first to the neglect, then to the exploitation and finally to the sacrifice of the agricultural sector in Korea. In the 1960s, the rural sector was neglected through the state's bias towards labour intensive industries in urban areas. In the 1970s, the systematic exploitation of the agricultural sector to promote food production through integrated rural development programmes led to dependence on chemical inputs which in turn led to a rural debt crisis. In 1980s, the rural sector was abandoned in the name of stabilisation, and then sacrificed to keep the American market open for Korean exports. In the late 1980s, rural indebtedness reached crisis proportions, but the remedial steps taken by the government were merely cosmetic.

In addition to general social inequity and rural underdevelopment, the impact of the EOI upon the environment has been extremely large. As will be seen in Chapter 5, the effects on the natural ecosystem by industrial pollution and private consumption have reached crisis proportions. This can be attributed to the competitive MSR and high growth accumulation strategies. As we will see in subsequent chapters, the impact of the EOI mode of development on space and environment has been extreme. From housing to degradation of nature, the changes in industrial trajectory, accumulation regime and MSR have brought about a complex set of environmental problems. These have been spatially differentiated due to the particular locations of particular types of production and consumption activities. The spatial transformation of Korea is now examined in Chapter 4.

## **Chapter 4**

### **The Spatial Structuration of Capitalist Accumulation in Korea**

Chapter 3 examined the political and economic development of Korea, establishing the profound influence of global political and economic conditions and state industrial and financial policies upon the speed of economic growth. Income distribution, social welfare and rural development were deleteriously affected as the state-dominated MSR and accumulation regime prioritised rapid EOI accumulation.

In this chapter, Korea's spatial transformation is considered in terms of the impact of economic transformation. The manner in which the resultant spatial form has brought about differentiated environmental problems in Korea is also a focus. The first section examines the transformation of space in Korea during the colonial period, laying the ground work for the examination of the historical transformation of space in the post-war period (section 4.2). Subsequently, the processes, determinants and the character of uneven spatial development are discussed.

#### **4.1 Introduction**

Axiomatically, space is central to the reproduction of capital and accumulation. The tendency towards spatial equalisation and or differentiation in the capitalist mode of development often creates patterns of uneven or combined development (O'Connor 1988, Smith 1984). In this section we will investigate this tendency and see what influence the state (spatial) policy has had on the spatial distribution of industrial activities and population in Korea.

We will see that the phases of spatial transformation correspond quite closely with the political-economic periods set out in Chapter 3: at the core lie changes in the mode of social regulation. Korea's spatial development from the beginning of industrialisation is thus presented according to the six phases identified: Japanese colonial, an interim phase, Taylorist, Yusin, Peripheral Fordist, and Neo-Fordist.

Here, the historical background to post-war spatial development is presented. This will consider the physical conditions of the Korean peninsula, and spatial development in the Yi dynasty and during the Japanese colonial period. Historical precedents to the post-war spatial developments may be observed.

#### 4.1.1 Introduction; Spatial Development during the Japanese Colonial Period

##### *Japanese Mercantilist Phase*

The spatial development until the end of the Yi Dynasty (1392-1910) was extremely slow and stable due to the lack of modern modes of transport and the absence of forces for urbanisation. Through centuries of Korean history, minimal urbanisation occurred with the growth of a modest number of administrative towns and military garrisons. Seoul, then named Hansung, the capital of the Yi Dynasty, was the biggest city. Its population in 1789 was 190,000, or 21.4 percent of the total urban population. The second largest city was Kaesung (28,000) and the third was Pyongyang (22,000). Other cities with a population of more than 10,000 were Sangju, Jeonju, Taegu, Chungju, Euiju and Jinju. The country was predominantly rural and the urbanisation ratio was very low (Hwang and Choi 1988, p.38).

It is of interest to note the hierarchical urban structure of Korea, especially between Seoul and other cities. Seoul was almost seven times larger than the second largest city and larger than the sum of the population of the 2nd to 14th largest urban centres. "This high degree of primacy reflects three factors: Seoul was the capital city where most of the privileged upper class people lived; it was possible to sustain a large population because of abundant and fertile agricultural land close to Seoul; and Seoul was the nodal centre for all major transportation routes" (Hwang and Choi 1988, pp.39). It is noted that as postwar capitalist development progressed, the primacy of Seoul reappeared. In subsequent sections, we will see that the above mentioned conditions continued to act as centralising forces.

The spatial transformation during the Japanese colonial period was particularly striking if compared to the patterns of migration or urbanisation rate in the Yi dynasty and before. The virtually stable migration and urbanisation pattern was broken in 1876 by the opening of the ports to foreign ships. Between 1876 and 1920, urban growth mainly centred around the coastal ports, increasing the number and size of cities. Pusan, Incheon and Nampo developed as major port cities of 20,000-80,000 inhabitants, and Hamhung, Mokpo, Haeju, Kunsan, Songrim, Shineuiju and Chongjin grew to within the range 10,000-20,000 inhabitants (Kwon, Y-W 1991, Hwang and Choi 1988).

The main force for urbanisation was increased trade with foreign countries aided by modern sailing and steam-powered ships. After Korea's annexation in 1910, these ports were used to export agricultural and mineral commodities to Japan, and as a base for Japanese immigrants and trading firms. Thus the agglomeration of capital, population and commodities occurred in Korea at these coastal cities. The number of Japanese residents in Korea rose from a mere 54 in 1876 to 12,203 in 1895, 42,460 in 1905 and 347,550 in 1920. However, almost 80 percent of these

Japanese residents in Korea remained in the ports and in the capital, Seoul, and only one fifth ventured inland (Kwon, Y-W 1991).

#### *Colonial Agricultural Policy and Spatial Development*

A significant change in spatial development occurred from the 1920s. The major forces of urban growth in the 1920s were the development of the railway network, and colonial agricultural policy. Urban development, which was restricted to port areas until this time, started to spread inland with the construction of the rail network, giving rise to the agglomeration of people and commodities at railway nodal points. The policy of turning Korea into an agricultural hinterland for Japan necessitated the development of rail transportation infrastructure, which became the means to a faster urbanisation and to migration patterns to the interior. From the opening of the first railway line in 1899 to 1914, major ports (Pusan, Incheon, Shineuiju, Nampo, Kunsan, Mokpo) were linked to the capital Seoul, and to Pyongyang and Daejeon, capitals of regions. In the 1920s and 1930s, major rice growing regions of south and north Korea were penetrated by the rail transportation network in order to expedite the export of rice to Japan. New urban areas, which served as regional collection and warehousing points of rice, sprang up such as Jeonju, Kwangju, Sariwon and Jinju, and they were connected to major rice exporting ports such as Mokpo, Kunsan, Suncheon, Yeosu, Choongmu, Masan and Haeju, which grew to house 20,000-30,000 inhabitants, and Shineuiju, Hamhung, Wonsan, Chongju and Chaeju developed to 30,000-50,000 inhabitant cities (Kwon, Y-W 1991, Hwang and Choi 1988, pp.39-40).

#### *Heavy Industrialisation Phase*

As Japan penetrated into Manchuria in the early 1930s, Korea became a base for continental expansion, and as a result the urban and industrial transformation of Korea was intensified. The fast-growing cities in this period were mining and manufacturing centres in the North (such as Aoji, Haeryeong, Pyongyang, Nampo and Sariwon) and transportation and commercial centres in the South (such as Seoul, Daejeon, Jinju and Masan) (Hwang and Choi 1988, pp.39-40).

In the 1930s, the heavy industrialisation drive was implemented to supply industrial goods for the Japanese imperialistic ventures in Manchuria, China and Southeast Asia. The rail network was extended to incorporate those areas where mineral extraction, energy production and heavy manufacturing took place. With improvements in transportation and job opportunities in the developing industrial sector, urbanisation occurred at an even greater rate. Most of the industrial and urban growth in this period took place in the north-central and north-eastern regions of Korea, where most of the minerals and electricity generation were concentrated. The north-eastern coastal cities also grew as a result of increasing trade between Japan and its industrialised inland. With the development of hydroelectricity generation, and with plentiful mineral and fishery resources, the north-western region was also incorporated into the new industrial space. It acted as the main transportation artery between the rest of Korea and Manchuria, which led to

greater development of the region and its cities. These new developments complemented the already established agricultural sector, to produce a highly productive and developed areas in Korea. Shineuiju and Haeju grew into 100,000 inhabitant cities (Kwon, Y-W 1991).

Although most of the heavy industries were located in the north, the middle and southern parts of the peninsula continued to develop with their agricultural and light manufacturing industries. By 1940 southern cities like Kwangju, Daejeon, Mokpo, Cheonju, Kunsan, Masan and Jinju grew into cities of 50,000-100,000 inhabitants, and Seoul developed into a city of one million. The growth of Seoul was due to its enhanced role as the centre of administration, communication and consumption as well as production. Much of the migration during the latter years of colonial period was mainly to large urban areas by rural population under pressure of the continued agricultural squeeze. The growth of slum areas in Seoul, Pusan and other major regional cities in this period testifies to the in-migration of the poverty-stricken rural and coastal population (Kwon, Y-W 1991).

Table 4.1.1 Urbanisation During the Colonial Period (Unit: 1000s)

	1910		1926		1935		1941	
	Person	%	Person	%	Person	%	Person	%
Total Population	12,934	100.0	19,103	100.0	21,891	100.0	24,703	100.0
Number of People in Urban Areas								
Over 100,000	341	2.6	527	2.8	863	3.9	2,428	9.8
Over 50,000	596	4.6	658	3.4	1,325	6.1	3,163	12.8
Over 20,000	752	5.8	1,378	7.2	1,908	8.7	4,672	18.9

Source: Mills and Song (1979), p.58. Chosen Sotokufu Tokei Nenpo, 1910, 1926, 1935, 1941. Mason et al, (1980), p.80.

Table 4.1.2 Number of Cities and Urban Population, 1789-1944

Year	Number	Urban Population ('000)	Urbanisation Level (%)
1789	3	239	3.3
1907	5	288	2.2
1909	6	380	2.9
1914	7	467	2.9
1920	8	563	3.2
1925	19	1,059	5.7
1930	30	1,606	7.9
1935	41	2,234	10.2
1941	65	4,659	18.9
1944	74	5,067	19.6

Source; Kwon, Y-W (1977), p.64, cited in Hwang and Choi (1988), p.40.

The colonial period (1909-1945) not only saw the introduction of capitalist social relations in agricultural production and the development of both light and heavy industrial structures, but also a great increase in the number of urban centres. Especially during the 1930-1945 period, when industrialisation intensified, most of the transportation and communication centres grew into small- and medium-sized urban centres, which helped to form a network of urban centres. This can be described as the period when the urban structure was established in Korea. However, due to the colonial export-oriented strategies, and locational considerations such as the sources of mineral extraction and energy resources a biased locational structure of manufacturing industries was imposed. Most industrial centres were located on the northern and southeastern coastal areas near major ports, efficiently connecting them with Japan. The few inland industrial locations were confined to textiles and some basic consumer goods industries (Choe and Song 1984, p.78). The separation of the agricultural south from the relatively well-developed heavy manufacturing of the north also contributed to the economic imbalances of the postwar period.

## 4.2 Spatial Impact of Capitalist Accumulation in the Postwar Period

The spatial development of Korea underwent considerable changes after the country's liberation in 1945. As seen above, during the Japanese colonial period there was significant urbanisation and industrialisation throughout the country. However, the level of urbanisation in the postwar era has been even more rapid and centralised. By 1990 Korea's official urbanisation level reached 79 percent.

In this section, we will look at the historical pattern of spatial change and the forces that have affected such changes. It is clear that the spatial restructuring of Korea corresponds closely to changes in the mode of development, resulting also in the uneven development of national space.

### 4.2.1 Interim Period: Independence, War and ISI regime (1945-60)

#### *Independence, Korean War and Migration*

This 'interim' period is characterised by changes in population migration and industrial structure due to liberation from Japanese rule, division of the peninsula and the Korean War. The growth of cities after World War II until 1960 was largely determined by the external political situation, such as the partition of the South and North, the Korean War (1950-53) and postwar rehabilitation. In this period, urbanisation was strongly influenced by the massive refugee movements and the population dislocation associated with the war. (Kwon 1991, Choe and Song 1984, Chon 1993, Hwang and Choi 1988)

Between 1945 and 1955, migration of refugees was the major cause of changes in urban size. After independence in 1945, there was the first influx of immigrants from China, Manchuria, Japan and the USA. Korean labourers and soldiers forcibly mobilised by the Japanese colonial administration for its war efforts made a rapid return, as did other exiled Koreans. Alongside this, there was a huge migration from north of the 38<sup>th</sup> parallel, especially around 1949 when the border was threatened with closure. By 1949, South Korea's increase in population due to migration is estimated to be 3.32 million.<sup>51</sup> In this period, Seoul and the other large administrative centres (e.g. Pusan, Taegu, Kwangju and Daejeon), where the benefits of post-war relief activities were more readily available, grew rapidly with the influx of refugees and repatriates (Hwang and Choi 1988, pp.40-1). During the turmoil of the Korean War, there was a further increase in refugees from the North, and a general migration

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<sup>51</sup> The population of South Korea was 20.04 million in 1949. The total increase in population of South Korea between 1944 to 1949 was 4.16 million. The increase in population due to migration from the north and from overseas was 3.32 million, and the remainder of population increase was natural (Kwon 1991, p.79).



towards the southeastern regions. In 1955, the population rose to 21.5 million compared to 20.04 million in 1949. Much of the population concentration occurred in South Kyongsang and Kangwon provinces. Especially during the war, Pusan, which was the provisional capital, grew rapidly to contain over a million residents and migrants, and Wonju and Jinhae, which were military strongholds, developed into cities of 60,000-80,000 inhabitants. While Seoul, Taegu, Masan, Daejeon and Kwangju grew quite rapidly, the smaller cities originally developed as commercial ports or as agricultural assembly points during the colonial period, such as Kunsan, Mokpo, Pohang and Jinju, which received much war damage and/or were hit hard by the termination of trade with Japan, grew very slowly or stagnated (Kwon 1991, Hwang and Choi 1988, pp.41)

#### *Reconstruction and the ISI regime of Accumulation*

The 1950s urban and industrial development featured reconstruction and rehabilitation. The reconstruction of war devastation was centred around Seoul, Incheon and the southeastern region. The light manufacturing industries of Pusan were largely unscathed by the war, but the industries in other areas needed to be totally rebuilt. In order to rebuild the primary sector, during the ISI period (1955-62), three industrial rail lines opened which linked up the mining areas. The Kangwon mining region, the northeast region of North Chungchong and northern region of North Kyongsang province were new areas of population settlement and industrialisation. Most of the increase in numbers of urban centres in other areas was due to the enlargement of city and township boundaries. The postwar baby-boom contributed to the rapid increase in urban population which rose at an annual rate of 7.9 percent compared to a 1 percent rate in rural areas (Kwon 1991).

During the Japanese occupation, Pusan had the advantage of being the major Korean port close to Japan. Pusan not only served as the major exporting port, but also as the major light manufacturing centre of Korea during this time. During the Korean War, as the only part of South Korea not largely destroyed by the war and occupied by the Communists, South Kyongsang province drew the majority of refugees. Consequently, there was a massive transfer of wealth from the rest of the country. Following the war, the two Kyongsang provinces received the second largest share of infrastructure investment and reconstruction aid from the United Nations Korea Reconstruction Agency (UNKRA). This stood at 17.3 percent of the total, which was second only to Seoul's 19.8 percent. (Chon 1992, pp.164)

Throughout the 1950s no specific locational policy could be highlighted except the reconstruction of industrial establishments and the establishment of two new fertiliser plants in Chungju and Naju, as well as two cement plants in Munhyong and Danyang. The locational decision for these plants, built by the government or with strong government endorsement, was made to minimise distribution costs - that is, with the consideration of

consumer proximity and of raw material source. The locational decisions regarding government and monopolistic enterprises showed a different pattern from those of small- and medium-sized private establishments. While competitive private enterprises could hardly dominate national markets, government and monopolistic enterprises like cement and fertiliser industries tended to divide the nation into a few large markets in order to minimise distribution cost (Choe and Song 1984, 79). The urbanisation rate was low during this period.

#### **4.2.2 Taylorist Accumulation and Migration (1961-72)**

##### *Efficiency, Scale Economy and Industrial Concentration*

After the coup d'état of 1960, EOI based on labour intensive industries was established. Due to the lack of intermediate industries in Korea, most of the raw materials and intermediate goods were imported. For Korea to compete with other NICs in the world market for labour-intensive low value products, it was essential to locate export industries near ports and along the major transportation arteries connected to ports, thus reducing transportation costs. Because of the importance of access to waterborne transportation, the location of existing ports largely determined the location of industries in Korea.<sup>52</sup> Developing a new port infrastructure would have been a huge risk to the national economy at this early stage of the EOI development. The ports of Pusan and Incheon, developed during the Japanese colonial period, became the main import and export sea-ports of the 1960s industrialisation (Chon 1992, pp.159-63).

Thus industrial concentration was pursued by the government centered around these two ports. The government's main thrust of industrial development and locational policies for the First Five Year Economic Development Plan (1962-66) was the construction of industrial estates under the provisions of the *Export Industrial Estate Development Promotion Law* 1964 (Kwon 1991, Choe and Song 1984). The first Export Industrial Estate import duty free zone was created in Kuro-dong District of Seoul. Other export industrial estates were set up in Pusan and Incheon. The government sold the state-owned land on preferential terms and provided the basic infrastructural necessities like water and access roads. Policy instruments adopted by the 1964 Act were not very impressive in terms of financial incentives, but were

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<sup>52</sup> In general, the east coast of Korea has favourable physical geography for deep seaports so that large ships can dock. Not only does the east coast have great water depth offshore, but also the tidal differences are a minimal 50cm compared to tides of 1000cm on the west coast. For this reason, the major exporting ports are highly concentrated on the east and southeast coasts of Korea. On the west coast, Seoul's Incheon port has been the only major cargo and container exporting port. Although Mukho, Pohang, Ulsan, Masan and Kwangyang, developed during the colonial period existed on the southeast and east coasts, these ports were not fully developed or utilised until the 1970s heavy chemical drive.(Chon 1992, pp.159)

largely confined to infrastructural provision (Choe and Song 1984, p.79). Industrial agglomeration and population growth in Seoul, during the 1960s were partly related to the construction of export industrial estates in Seoul and Incheon (Park 1991, pp.83).

The transport infrastructure development led to the initial concentration of population and industries in Seoul and other large cities in the 1960s. There was also a shift of emphasis in the mode of transportation. In the First Plan (1962-66), priority was given to modernisation of the rail system, but in the Second Plan, the emphasis changed to the national road system with 655 kilometres of expressways built during the Second Plan (1967-71)(Richardson and Baek 1988, p.155). In the early 1960s, no fewer than 31 new railways lines were opened, which linked many of the mining areas and regional industrial centres<sup>53</sup>. In the late 1960s, implementation of the Second Economic Plan saw the opening of express highways which led to the huge expansion of automobile transportation. From the mid-1960s, the share of passenger transportation by motorised vehicle rose to 80-90 percent, while the share of rail and marine transportation declined to less than 20 percent. The share of commodity transportation by automobile also rose to more than 50 percent with increasing rate (Kwon 1991). Thus, in the 1960s and in subsequent periods, the automobile played an increasing role in economic development as well as in the concentration of population as the use of rail decreased. The implication of increased use of automobiles in the late 1960s was that the speed of migration had increased due to the flexibility and affordability of buses and coaches. Those cities at major transport nodal points (main coach terminals) grew quickly. Daejeon expanded to a city of 900,000 (Kwon 1991). However, due to the lack of job opportunities in the small and medium sized cities, the final destination for migrants was often the larger metropolitan cities, Seoul and Pusan. The construction of expressways resulted in raising the tempo of immigration to the two metropolitan cities at each end. The consequence of transport development tended to stimulate at the end-point locations (Richardson and Baek 1988, p.152).

#### *Population Concentration in Metropolitan Cities*

Urbanisation in the postwar era has been closely associated with industrialisation. Especially in the 1960s, the rapid growth of urban population was largely in response to the rapid and concentrated growth of labour-intensive EOI industries in large urban centres. However, what is notable regarding this period is the high degree of concentration in a few large urban centres, particularly Seoul (Hwang and Choi 1988, pp.41). During the 1966-70 period the population of Seoul expanded at a record-breaking rate of 9.4 percent per annum, an absolute

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<sup>53</sup> Industrial lines included No.3 Fertiliser line, No.4 Fertiliser line, Cheonju Industrial Estate line, Pohang Industrial Estate line, etc. Doubling of existing main lines such as the Seoul-Incheon Dual railway line, and the building of mining industrial lines to Taebaek Mountain range. (Kwon 1991)

growth of 1.7 million equivalent to 77 percent of the total national population increase. Net migration accounted for more than 80 percent of the increase, with Seoul absorbing 60 percent of national total net migration. Of the immigrants to Seoul, two-thirds came from rural areas. The major provinces sending migrants to Seoul were Kyonggi, South Chungchong and South Cholla provinces (Hwang and Choi 1988, p.44). The population of Seoul more than doubled from 2.6 million in 1960 to 5.5 million in 1970.

Table 4.2.1 Population Distribution by Administrative Boundaries (unit: Thousand)

		1960	1970	1980	1985	1990
Eup (Rural Towns)	Number	85	91	169	201	176*
	Pop. (%)	2,259 (9.0)	2,850 (9.1)	4,537 (12.1)	4,821 (11.9)	-
	Av. Pop. Size	27	31	27	24	-
Myon (Rural Districts)	Number	1,400	1,376	1,256	1,241	1,252*
	Pop. (%)	15,734 (63.0)	15,654 (49.8)	11,461 (30.6)	9,188 (22.7)	-
	Av. Pop. Size	11	11	9	7	-
Gun <sup>2</sup> (Counties)	Number	140	140	141	142	137*
	Population (%)	17,992 (72.0)	18,506 (58.9)	16,002 <sup>1</sup> (42.8)	14,006 <sup>1</sup> (34.6)	11,102 <sup>1</sup> (25.6)
	Av. Pop. Size	129	132	113	99	81
Shi	Number	27	32	40	50	70*
	Population (%)	6,997 (28.0)	12,929 (41.1)	21,434 <sup>1</sup> (57.2)	26,443 <sup>1</sup> (65.4)	32,309 <sup>1</sup> (74.4)
	Av. Pop. Size	259	404	535	529	462
Whole Country	Total Pop. (%)	24,989 (100.0)	31,435 (100.0)	37,436 <sup>1</sup> (100.0)	40,448 <sup>1</sup> (100.0)	43,411 <sup>1</sup> (100.0)

Note: \* data from Seoul Metro. Government, *Comparative Statistics of Major Cities*, 1989, 1990, 1991

1. 1990 data from National Statistical Office, *Korea Statistical Yearbook*, 1993. Also 1980, and 1985 data by Hwang and Choi (1988) have been amended.

2. Gun, considered as rural, consists of Eups and Myons.

Source: Amended from Hwang and Choi (1988), p.42

Table 4.2.1 above shows the changes in population distribution in major urban and rural administrative areas. It reveals that the population shift occurred from the *Myons*<sup>54</sup>, which recorded a absolute decline of its population, to the *Shis*<sup>55</sup>, which grew at a rapid pace. However, this rapid urban growth was not equally distributed among all city size classes. In

<sup>54</sup> *Myons* are rural administrative districts and centres.

<sup>55</sup> *Shis* are administratively defined cities.

the 1960s, the larger the size of a city, the faster the population growth. The relationship between city size and growth rates is clearly established in the Table 4.2.2 below. On the other hand, small cities and towns, *Eups*<sup>56</sup> grew much more slowly than the large cities, and in many cases more slowly than the national population (Hwang and Choi 1988, p.43). Table 4.2.2 clearly shows that the rate of migration increased dramatically during the 1966-70 period, and it is related to the size of cities: most rapid for the largest, and slowest for the smallest. This explicitly shows the concentration of population in the larger cities, particularly Seoul and Pusan. Seoul's share of the national population increased from 7.3 percent in 1955 to 23.8 percent in 1985, at more than 9.6 million (with millions more in the Seoul Metropolitan Area (SMA) as a whole).

Table 4.2.2 Population Increase Rate of Urban Centres by Size Class, 1960-70 within the 1970 Constant Boundaries

Administrative Areas (1970 Population)	Annual Intercensal Increase Rate (%)	
	1960-66	1966-70
Seoul (5,536,000)	6.53	9.37
Pusan (1,881,000)	2.90	6.85
Taegu (1,083,000)	5.10	6.12
Other <i>Shis</i> ;		
500,000-999,999	5.18	5.20
100,000-499,999	3.01	4.85
Less than 100,000	2.80	3.02
All <i>Eups</i>	2.03	2.01
All <i>Myon</i>	1.47	-1.69

Source: cited in Hwang and Choi (1988), p.43.

The rapid urbanisation, particularly in Seoul and Pusan has been due to three main factors. The first was the booming economy based on labour intensive manufacturing industries, which were largely based in the two cities, Seoul and Pusan. Between 1966 and 1970, for example, more than 45 percent of the total increase in national secondary and tertiary employment took place in Seoul. The concentration of industries and job opportunities was very much responsible for the rapid increase in immigration. However, the second reason was related to the rising urban-rural income gap. While urban industrial wages were increasing rapidly, the subsistence farming agricultural sector was stagnating. Thus the push of rural poverty and pull of urban industrial wages were responsible for the high urbanisation rate

<sup>56</sup> *Eups* are defined as towns, normally centres of counties.

(Hwang and Choi 1988, p.44). The dominance of the Seoul economy over the rest of the country was reinforced by the circular and cumulative causation process of urban growth, and the concentration of labour. The job opportunities and higher income prospects in Seoul compared to rural areas gave rise to increased migration, and due to labour concentration and infrastructural provisions the industries continued to concentrate (Kwon 1988b, pp.106-8). The third reason for rapid migration was the improvement of the transportation system, that is, the construction of the national express highways, able to bring more people to the cities at lower cost.

The rate of in-migration was much faster than the increases in employment opportunity. Many of the rural migrants could not compete in the urban labour market and became a growing class of urban poor, underemployed or unemployed. The growing number and concentration of the alienated urban poor in the metropolitan cities led to a huge growth of squatter settlements and all the consequent social tension. The concentration of industries and population, which was the basis of labour intensive industrialisation, became by the mid-1960s a barrier to further economic development. The competition for land led to skyrocketing prices, inhibiting large scale developments. Surplus labour in the large urban centres was increasingly seen as a threat rather than as an opportunity for driving down wages. After 1964, reducing the degree of population concentration in Seoul has been the most pressing spatial policy issues for the government. The government responded to the perceived unfavourable consequences of having one very dominant city, and a battery of strong policy measures was introduced<sup>57</sup>. These did not take full effect until the 1970s (Kwon 1988b, pp.106-8).

### **4.2.3 Industrial Restructuring and A New Spatial Order (1972-1980)**

By the late 1960s, the Park regime faced major economic and social problems that were undermining its legitimacy. On the economic front, the labour intensive EOI strategy of the 1960s was failing due to its dependency on changing export markets, the rising import costs

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<sup>57</sup> One of the policy measures was the relocation of secondary government functions out of Seoul. However, this was only implemented in 1983 with the construction of Kwacheon New Town and the '2nd Government Office Complex'. Its effectiveness in reducing migration into Seoul was achieved in as much as it reduced congestion in the Seoul's CBD. Another policy was the introduction of the Resident Tax in 1973 as a control measure to slow down the inflow of people to Seoul. This poll tax was initially applied only to metropolitan residents, but it was subsequently adopted in other cities. This happened because the Ministry of Home Affairs accepted its value as an irresistible revenue source for local government. Even though the tax rate was higher in Seoul, the difference was not wide enough to affect individual household location decisions (Kwon 1988b, p.130-1).

of intermediate goods and changing geopolitics. On the social side, industrial developments centred around large cities were not only increasing the urban and rural household income gap, but the rapid rural-urban migration of the late 1960s had led to growing squatter settlements and a large class of urban poor, who had little prospect of employment due their lack of skills. Economic and social problems were threatening not only the preconditions of accumulation but also political stability. In addition, the growing concentration of industries and population in Seoul was leading to urban diseconomies, pollution and national security problems<sup>58</sup>. The distorted spatial arrangement resulting from Seoul's dominance in the national urban system has contributed to interregional inequity as well as the perception of Seoul as a separate entity which has been referred to as the "Seoul Republic". The diseconomies of Seoul and Pusan were threatening the national economy (Kwon 1988b, p.108).

In 1972, therefore the government undertook a significant policy change to restructure both economy and spatial structure. The economic policies sought to reduce import dependence by import substitution industrialisation for intermediate goods, at the same time promoting capital and technology-intensive industries for exports to the changing global market. The spatial policies were an extension of the economic policies in that they were designed to restructure industrial space for the changing requirements of the new industrial drive, particularly providing industrial and transport infrastructure for decentralisation and spatial expansion. They also sought to implement a population decentralisation policy to reduce the urban socio-economic problems due to the population concentration trend of the 1960s.

#### *Industrial Decentralisation and the State*

The spatial strategies to deal with growing industrial and population concentration started in 1964, when the government introduced "Special Measures for the Restriction of Population Growth in the Seoul Metropolitan Area" (KRIHS 1984). Various policy options were set out including the relocation of government offices to other regions, the construction of new towns and new industrial cities, and restrictions on the expansion and construction of industrial and higher educational facilities in Seoul (Kim and Masser 1990, pp.34-5). Although such spatial policies were not implemented until the 1970s, they had a long term influence on later developments.

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<sup>58</sup> Rapid population growth resulted in many severe urban problems such as traffic congestion, land speculation, housing shortages, pollution, which were threatening the capital accumulation process as well as raising social tensions. The issue of national security at this time centred around anti-communist sentiments, where the threat was seen as both external as well as internal. The location of this very large agglomeration of population and industries within range of North Korean artillery was obviously highly risky. Additionally, the spatial concentration of low-income groups was believed to increase the risks of mass social unrest (MoC 1972, Kwon 1988b, p.108).

The government introduced the First Comprehensive National Land Development Plan (1972-81), which was a national framework for spatial restructuring and physical development, intended to address regional disparities and the trends in spatially imbalanced national economic growth (Kwon 1988b). The plan also emphasised 'efficiency maximisation' and 'self-sufficiency' (MoC 1971). It included a number of policy objectives focusing on issues such as population decentralisation away from the Seoul Region, industrial distribution and infrastructure development. It introduced the concept of the 'planning region' (Kwon 1988b, p.111). The plan divided the country into 8 sub-regions according to their 'characteristics' to *maximise* their contribution to economic development, rather than to achieve balanced regional development. It defined five categories of function to enhance the efficiency of land use and management, classifying regions into functional zones. These were the agricultural, forestry, urban, natural and cultural conservation and continental shelf zones (MOC 1971, p.14). The zoning of national space and the application of zoning control was partly responsible for uneven development in terms of industrial location and the composition of the regional economy since it tried to concentrate production in terms of regional characteristics. That is, the Southeastern regions were seen as suitable for heavy and chemical industrialisation, while the Southwestern regions were designated for agricultural production.

Other important elements of the plan included the continued utilisation of agglomeration as the most efficient way for development. It identified 'developed' areas or regions which had basic levels of infrastructure and skilled labour, aiming to concentrate industries in these areas. In the 1970s, the state provided a large proportion of industrial infrastructure and estates, which were able to induce spatial dispersal of manufacturing firms and plants. In conjunction with the industrial redistribution strategy, the plan offered a framework for physical development by providing public utility and resource development such as reservoirs for water supply and power generation for those new industrial areas (MOC 1971) as well as national land conservation, - for instance, designation of greenbelts<sup>59</sup> and national parks (Kwon 1988b, p.111-2).

Under this overall national framework, the state introduced various items of legislation to aid the spatial dispersal of industries and population: the *Industrial Site Development Law* 1973,

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<sup>59</sup> In order to control urban sprawl, to prevent the merging of urban areas, and to discourage emerging speculation on urban fringe land, the first greenbelt (143.4 Km<sup>2</sup>) was established around Seoul in 1971. Later, 13 other major urban areas adopted this same measure of land use control. As of 1984, a total of 5,397 Km<sup>2</sup> were designated as greenbelts, i.e. 5.4 percent of Korea's total land area (Kwon 1988b, p.126-7).



the *Local Industrial Development Law (LIDL)* 1970, the *Free Export Zone Establishment Law* 1970, and the *Industrial Distribution Law (IDL)* 1977.

The government's sectoral policy of heavy and chemical industrialisation was implemented in conjunction with the 1973 *Industrial Site Development Promotion Law*, which resulted in establishing such industries in the Southeastern Region through the construction of large industrial parks in the region's coastal areas. For example, between 1972 and 1976, 74 percent of total expenditure on constructing industrial estates for heavy and chemical industries was allocated to the Southeastern Region (KRIHS 1982). At this time, they accounted for about 70 percent of the total area of industrial estates in Korea (Park 1991, pp.83-5). Not only did the Southeastern Region receive the bulk of the industrial estates, but it also received the largest amount of transport infrastructure investment outside the Capital Region such as port facilities and road network development. Korea's largest shipbuilding yard was located in Ulsan with steel making plant in Pohang, to mention just a few developments. Thus there was a rapid growth of new industrial cities in this region.

Industrial dispersal from Seoul was more difficult and several strong measures were promulgated. Under the 1970 *Free Export Zone Establishment Law*, export industrial estates were built in Masan and Iri to induce foreign investment outside the Capital Region. In order to promote local industrial development, the 1970 LIDL programmes included site provision, development of infrastructure such as access to roads, water and energy supply, and tax exemptions and subsidies to new industries. In addition, a "standard land price" system was adopted as an innovative policy tool for purchasing land for industrial uses. This system froze the price of land required by the government for public purposes to inhibit land speculation (Kwon 1988b, p.121-5). During the early 1970s under the LIDL, ten small to medium size industrial estates were developed at Cheonju, Taegu, Chongju, Kwangju, Daejeon, Chunchon, Kumi, Mokpo, Iri and Wonju; since then, more than a dozen others have been planned. However, the financial incentives to attract plants to these designated areas proved insufficient to overcome the costs of relocation (Park 1991, pp.83-5). Many of the local industrial estates remained empty or operating with less than 20 percent capacity.<sup>60</sup> This caused much financial difficulty for local governments and led to the declining provision of local basic social needs. The local industrial estates programme failed in its aims of dispersing industrial activities and developing the economies of depressed areas (Choe and Song 1984, 79-81).

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<sup>60</sup> See Choe and Song (1984) for detailed information of local industrial estate development, p.79-81. See also Table on p.80. Many of the unsuccessful estates are in the depressed areas.

Table 4.2.3 Regional Share of Mining and Manufacturing GNP, 1968-76 (%)

	1968	1970	1972	1974	1976
Seoul	28.7	28.9	28.9	26.4	23.5
Pusan	15.0	13.7	14.0	14.1	13.1
Kyonggi	10.0	11.2	15.2	16.5	19.5
Kangwon	7.6	5.7	5.0	4.5	3.6
North Chungchong	3.9	3.8	2.7	2.9	2.9
South Chungchong	6.4	6.8	5.8	4.3	3.9
North Cholla	4.0	3.7	3.0	2.8	2.4
South Cholla	4.2	5.6	5.4	5.5	5.6
North Kyongsang	9.4	8.6	8.0	8.2	10.5
South Kyongsang	10.7	11.7	11.8	14.6	14.9
Chaeju	0.4	0.4	0.2	0.2	0.9
Total	100.0	100.0	100.0	100.0	100.0
Total Amount <sup>1</sup>	869	1,240	1,642	2,433	3,328

Note: GRP based on 1975 constant prices (unit; billion won)

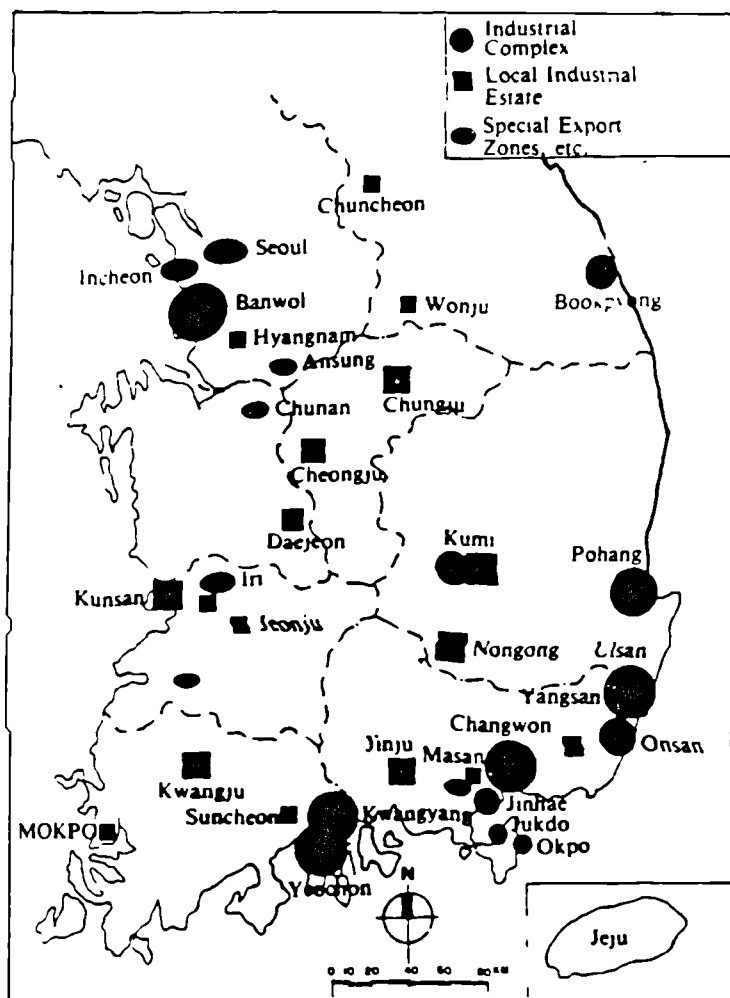
Source: Kim, Y-J. (1993), p.23.

As Table 4.2.3 shows the dispersal of industries from Seoul was very slow until 1976 due to the weakness of the decentralisation policies. In order to speed up the process, in 1977 the government enacted the *Industrial Distribution Law*, which was largely modelled on the UK's Industrial Development Certificate scheme introduced in 1947 and on Japan's *Industrial Relocation Law* 1972. The legislation divided the country into three areas: (a) a dispersal zone including Seoul and its northern vicinity from which relocation of industrial plants was to be encouraged; (b) a status quo zone, encompassing Pusan, its vicinity and also Seoul's satellite cities, where industrial expansion was to be discouraged; and (c) an inducement zone comprising the rest of the country where industrial development was to be further encouraged (Park 1991, pp.83-5).

The policy instruments of the IDL were both stronger and more diversified than those introduced by the LIDL. They offered the same range of positive incentives as the LIDL but in addition provided loans for relocating industrial premises. Their most significant policy instruments, however, were the issuing of relocation orders and the restriction of on-site expansion in the dispersal zone. The Act empowered the government to issue compulsory relocation orders, to exercise discretion in the location of manufacturing plants and to

enforce specific measures such as requiring the factories to invest in pollution mitigating facilities (Kwon 1988b, p.121-5).<sup>61</sup>

Figure 4.2.1 Location of Industrial Estates in Korea



Source: Kwon (1988b), p.123

Such controls had a considerable impact on industrial decentralisation from Seoul. For example, in a survey to identify the major reasons for locating in Banweol industrial estate (in Kyonggi Province), more than 60 percent of the surveyed firms had been served with relocation orders to move from zones in which they did not meet legal or anti-pollution

<sup>61</sup> One important problem of implementation stemmed from the need to determine which manufacturing industries would be required to move out of the dispersal zone. First, the government issued relocation orders to establishments in non-conforming land uses according to city zoning ordinances. Second, several polluting industries as defined by the *Environmental Conservation Act* (1977) were forced to move to Banweol, a new industrial town located 35 Km southwest of Seoul. Third, exceptions were made for selected urban service industries such as printing and for food manufacturers producing items of daily urban consumption (Kwon 1988b).

requirements (Choe and Song 1984, p.99). The re-zoning of industrial land to other uses, and rising land prices were responsible for gradually reducing the concentration of manufacturing industries in Seoul. Between 1966 and 1983, Seoul's share of manufacturing in terms of value added fell from 32 to 16 percent, this paralleled by its dwindling share of manufacturing employment (Kwon 1988b, p.121-5, see Figure 4.2.7 below on p.142). Though locational policies had a considerable impact on the level of industrial suburbanisation from Seoul into the surrounding areas of the Capital Region, it stimulated only limited dispersal from Seoul to developing areas. Only 2.5 percent of the plants relocated from Seoul were in operation outside the Capital Region, reflecting the fact that the relocation of plants had only limited impact on the interregional distribution of industry. Overall, the comparative weakness of financial incentives in the 1970s meant that industrial decentralisation was limited to the Capital and Southeast regions and balanced spatial development was not achieved (Park 1991, pp.83-5). The concentration of industries in the Capital and Southeastern regions and the limited development of secondary cities such as Daejeon, Kwangju, Chongju and Taegu resulted in a 'bi-polar' development of the metropolitan regions of Pusan and Seoul (Chon 1992, Kwon 1988b, Richardson and Hwang 1988). Polarisation reversal was largely limited, (Douglass 1993) due to the centralised economic and political functions of the state and the competitive mode of regulation<sup>62</sup>. Access to and competition for loans and other economic and social amenities meant that concentration of businesses and population continued to occur in Seoul.

#### *Corporatist Regulation, Division of Labour and a New Spatial Relationship*

The decentralisation of manufacturing industries in the 1970s led to a reorganisation in the production processes and relations giving rise to a 'new division of labour'. As was the case in the core countries, Korean manufacturing capital underwent a vertical disintegration of the Fordist labour process. This disintegration of labour functions led to the beginnings of the formation of a new spatial structure. The central decision making function, R&D and general administrative and managerial functions remained in the Capital or in the large urban centres, while the manufacturing and assembly plants moved out to peripheral regional sites. By the late 1970s, distinct spatial patterns were observable. While the provincial regions of Seoul and Pusan established themselves as the new industrial space, the city of Seoul became de-industrialised and established itself as a financial, cultural, administrative and control centre of the nation.

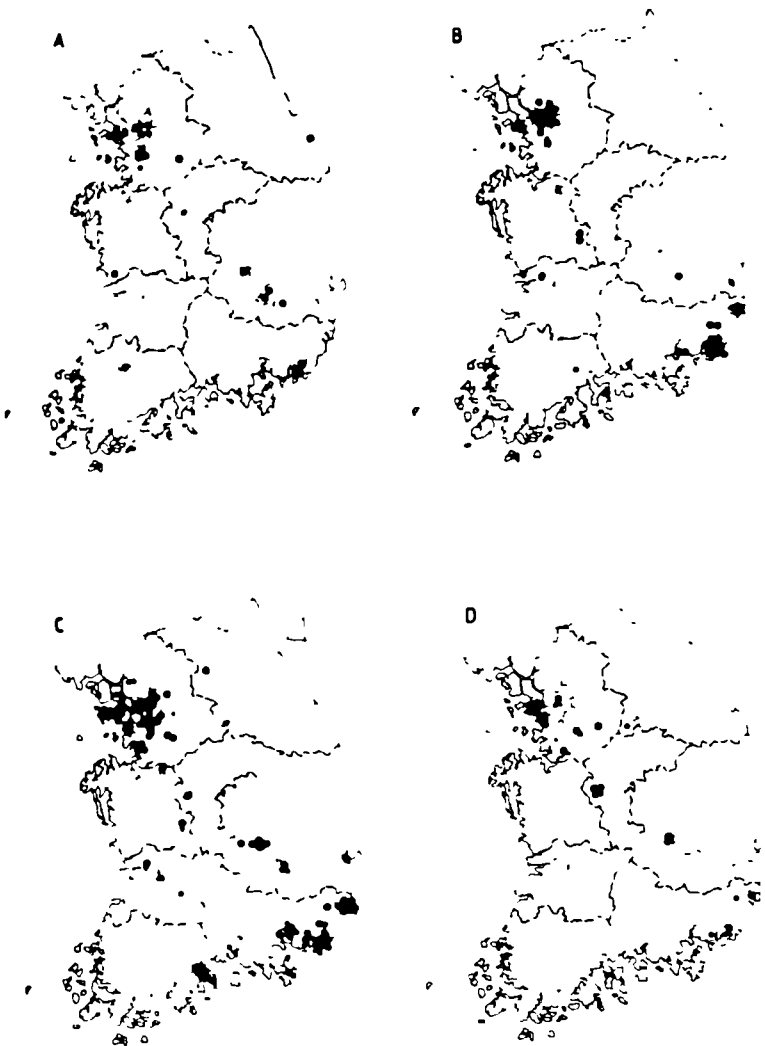
The study by Park (1986) shows clearly the trend of manufacturing decentralisation while corporate headquarters remained in Seoul and Pusan. Park revealed that this trend of

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<sup>62</sup> Although, this phase of development is characterised by 'corporatist MSR', this was restricted to the *chaebol* groups and strategic industries, and other sector of industries and society were subject to competitive regulation.

*production* unit decentralisation was led by the *chaebol* groups, which were involved in the heavy and chemical industries. The main reasons for the regionalisation of manufacturing units lay in scale-economies, cheaper labour costs and state incentives. On the other hand, the trend towards concentration of headquarter locations was determined by the need to be close to economic agencies of the state which had much control over financial institutions, which were also mainly located in Seoul (Kim and Masser 1990, pp.19-21). Thus, the spatial extent of the dispersal of industries on the whole was rather limited. Though much of the heavy and chemical industries were located in the Southeast Region, the dominant trend of other sectors of industry was to agglomerate in the southern region of Seoul (Park 1987). By 1982, 85 percent of the headquarters controlling spatially separated plants were in Seoul.

Figure 4.2.2 Locations of New Company HQs by Year



Note: A. Before 1960, B. 1960-1969, C. 1970-1979, D. 1980-1984, May.

Source: Park (1986), p.321

This new spatial arrangement had social as well as spatial implications. First, the dominance of Seoul over other regions was strengthened. The authority of decision making over investments in new manufacturing plant, facility relocation or expansion, marketing strategies, specialist labour recruitment, investment for R&D and even other general material supplies for plants remained with the company headquarters in Seoul. Decision making authority at plant level was negligible (Park 1986). The spatial concentration of firms and group headquarters in Seoul has meant that control over the Korean space-economy from the capital city remained unchallenged through the period of rapid industrial expansion (Douglass 1993, pp.159).

Table 4.2.4 Concentration Ratio in Seoul

Ratio*	Indicators	Year	Indicators	Year
1° - 19°	Area (0.63)	1970	Area (0.63)	1980
			Value added in manufacturing (18.5)	1980
20°	Total population (17.6)	1970	Employees in manufacturing (22.1)	1980
	Number of manufacturing firms (23.7)	1970	Total population (22.3)	1980
30°	National wealth (26.3)	1968	Number of manufacturing firms (24.8)	1980
	Gross Regional Product (26.5)	1970	Gross Regional Product (29.3)	1980
	Employees in manufacturing (28.2)	1970	Revenues (33.3)	1978
	Revenues (32.3)		Mail transaction (33.9)	1980
	Retail and wholesale trade volume (32.3)	1970	National tax collection (34.2)	
	Construction workers (32.3)	1971	National wealth (34.5)	1977
	Value added in manufacturing (34.7)	1976		
35°				
40°	Mail transaction (38.1)	1970	Retail and wholesale trade volume (36.5)	1979
	Urban population (42.4)	1970	Telephones (37.0)	1980
	Telephones (42.9)	1970	Urban population (39.0)	1980
50°	Employment in finance and insurance (46.6)	1976	College and university students (43.9)	1980
	Automobiles (49.9)	1970	Employment in finance and insurance (47.7)	
	National tax collection (50.1)	1970	Construction workers (56.5)	
	Bank loans (54.4)		Automobiles (57.9)	1980
60°	Bank deposits (63.4)	1970	Bank loans (63.9)	1980
	College and university students (66.6)		Bank deposits (64.9)	1980
	Managerial jobs (77.0)	1975		
>80°			Managerial jobs (81.0)	1979

Note: \* Ratio means Seoul's share in comparison with the national total.

Source: Kwon (1988b), p.109.

Second, the vertical disintegration of Fordist production processes and the decentralisation of manufacturing also implies that Seoul's economic structure underwent a transformation to a post-industrial stage. By the end of the 1970s, Seoul's economy had become dominated by financial, retail, and other services, by international trade, corporate managerial and state administrative functions. Table 4.2.4 shows that while white-collar managerial jobs increased, manufacturing blue-collar jobs declined rapidly. It also shows the increasing consumption orientation due to the growing middle and capitalist classes in Seoul. Furthermore, due to promotion opportunities which are decided in the group HQs, and the concentration of social amenities such as high quality education in Seoul, most senior and middle managers are reluctant to reside in peripheral areas. In the case of plants located in the suburbs of Seoul (Kyonggi Province), most staff commute from Seoul. If the plants are further away, managers generally live alone in company accommodation, while their family live in Seoul in order to take advantage of social and educational facilities (Park 1986, pp.329-331). The concentration of control functions, and preference of white-collar workers to live in Seoul have created a spatial division of class between Seoul and Korea's other industrial cities.

Thirdly, the possibility of real regionalisation and decentralisation has now become much more remote, with regional disparities actually growing further. The spatial division of labour and the concentration of corporate headquarters have also meant that the surplus value created in the non-core regions does not return to them but concentrates in Seoul. This enhances the economic power of Seoul over the rest of the nation. The employment impacts of a plant on the local area is likely to be limited to only low level jobs, and accordingly the monetary flow impacts on the local area are minimal. Forward and backward material linkages within a local area by a plant of a *chaebol* group are also negligible. Plants located in the provincial areas may, of course, perform better than the average total industry in terms of wages, employment size and employment growth. However, as long as the units located in provincial areas have little autonomy, as in the present circumstances in Korea, their contribution to regional development will remain low (Park 1986, p.331). The lack of ties with the local areas and the lack of incentives for firms to invest in social and environmental facilities for the workers and residents, causes manufacturing centres like Ulsan, Pohang and Kumi to have poor environmental qualities. These places are regarded as 'pollution poles'.

#### *Population Distribution and New Spatial Structure*

Due to the industrial decentralisation strategies, the distribution of population during the 1970s has changed markedly to that of the 1960s. Figure 4.2.3 shows the cities and counties that gained population during the intercensal period (1970-80). During the 1970s, there were three distinct features: firstly, with the forced relocation of manufacturing industries from

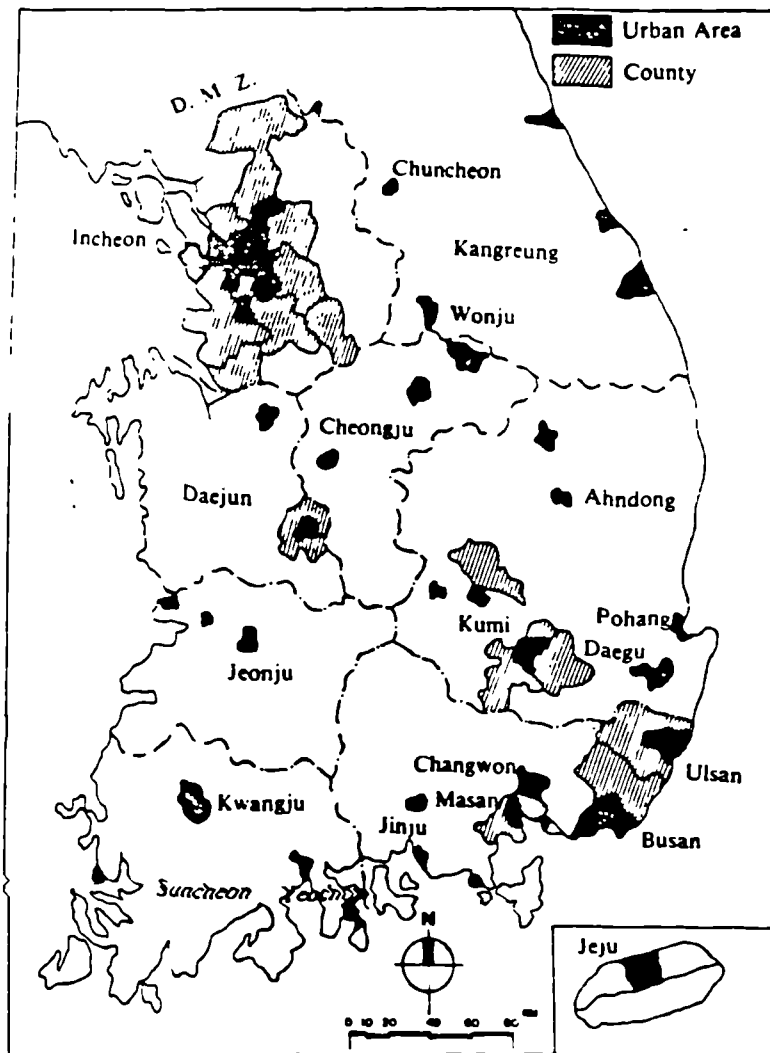
Seoul, the rate of in-migration to Seoul has dropped significantly from its peak rate of 9.4 percent in the late 1960s to 4.4 percent and 3.9 percent in the 1970-75 and 1975-80 periods respectively (Hwang and Choi 1988, p.45). There has also been a trend towards outmigration from Seoul. In 1979-80 about 3 percent of the city's households (about 50,000) moved out to the suburban areas, with 25,000 household heads commuting back to Seoul.

Secondly, the major increases in population occurred in the new industrial spaces of the Capital and Southeast Regions. The rapid population growth of counties in Kyonggi seems to correlate with the industrial dispersal from Seoul to its satellite cities. As can be seen in Figure 4.2.3, out of 20 growing counties, ten were located inside the Capital Region, and most of the others were near to large industrial towns in the Southeast. The population increases occurred in the planned new industrial cities (Changwon, Ulsan, Pohang, Kumi and Ansan) in the southeastern regions and satellite cities (Seongnam, Bucheon and Anyang) around Seoul. The growth of cities such as Bucheon and Anyang in the Capital Region was particularly fast, at 14.2 percent and 12.6 percent respectively. This was due to functional interdependence with Seoul and industrial relocation (Hwang and Choi 1988, p.45). Although other regional centres such as Taegu, Kwangju and Daejeon have also experienced substantial growth, they were not able to redress the 'bipolar' pattern of spatial development in Korea (Hwang and Choi 1988, p.47).

Lastly, the peripheral regions which received little industrial development experienced a decline in population unlike in the 1960s, when even with higher rural-urban migration, they had positive population growth due to high fertility rate. Even Yecheon industrial town in the Southwest region failed to grow, and became a 'pollution pole' (Kwon 1988b, p.121-5).



Figure 4.2.3 Population Shift by Cities and Counties (1970-80)



Source: Kwon (1988b), p.125

During the Yusin phase of accumulation, there was a tendency towards the spatial dispersal of industries and population to the provincial cities of the Capital and Southeast Regions due mainly to the state industrial and spatial policies. The pursuit of H-C industrialisation was responsible for the spatial development of the Southeast Region while the 1977 *Industrial Distribution Law* was mainly responsible for the suburbanisation of industries in the Capital Region. This spatial dispersal of industries to the provincial areas has not only led to their growth in population, but also to the de-industrialisation of Seoul. The new spatial division of labour reflected the disintegration of Fordist production processes. The spatial restructuring during the 1970s was very much state initiated, but such policies had limited success due to the constraints imposed by the pre-existing spatial form of the 1960s. In addition, the mode of social regulation necessitated proximity between business elites and state institution (Kim and Masser 1990, pp.19-21). The consequence of spatial development

in the 1970s was 'bi-polar development' - underdevelopment of peripheral regions and spatial differentiation of classes.

With national land use zoning, which segregated rural activities from industrial and urban functions, all this led to the beginnings of a tripartite spatial structure, where each zone was characterised by differing economic functions and by the composition of classes.

#### **4.2.4 Intensive Accumulation, Competitive Regulation and Megapolisation (1980 - 1988)**

In 1980, the structural crisis stemming from external shocks and domestic inefficiencies led to the transformation of both the accumulation regime and the MSR. The new regime emphasised new types of industries related to high-tech and consumer durable products; it also stressed productivity and product development, signifying that an extensive accumulation regime had been replaced by an intensive one. The new competitive MSR reinforced the intensive regime of accumulation in order to reduce the dependence of Korean capital on state financial incentives, and on protection from international competition, introducing more competitive labour relations. The state changed its policy of sectoral bias of the 1970s favouring heavy and chemical industries to a more 'balanced' industrial policy *emphasising international competitiveness through rationalisation and competition among all domestic industries*. Chun's regime (1980-1988), although pressing competition and a free market philosophy, did not relinquish its control over the financial sector, and thus over the economy as a whole. This resulted in a heightened concentration of industrial activities in the Seoul Metropolitan Region, as access to bank loans and capital borrowing depended on the proximity to and personal relations with political and bureaucratic power, which remained firmly in Seoul (Kim and Masser 1990). Together with a change in the MSR, there was an alteration in the basic philosophy regarding spatial strategy, and after 1980, this promoted a rapid agglomeration of industrial activity in the Capital Region.

##### *Interregional Equity vs Intraregional Balance*

Because of the growing regional disparities of the 1970s, in the 1980s state spatial strategies endeavored on the one hand to address the interregional equity issue, but on the other hand, to aid intraregional efficiency. Problems arose from these dual goals, which amounted to competing policies. While the state advocated interregional development through the Second Ten Year Comprehensive National Physical Development Plan (1982-1991), it also accommodated the growth of the Capital Region through the Metropolitan Growth Management Plan, through the development of New Towns and through the intraregional transportation system.

The interregional spatial strategy relied on the provisions of the *Second Comprehensive National Physical Development Plan*. The basic goals of this plan were; 1) inducement of population settlement in local areas, 2) nation-wide expansion of development potential, 3) advancement of people's welfare and 4) conservation of the environment (MoC 1982, pp.3-17). The Plan promoted 'growth centres' rather than the 'growth poles' of the 1960s and 1970s, which had resulted in the 'bi-polar' development. The growth centres strategy tried to establish local 'population dams' to restrict population migration to the large cities. The planning of Integrated Regional Settlement Areas (IRSA) designated growth centres, which aimed to correct regional disparities and encourage people to stay in their local areas. This was to be achieved by providing employment opportunities and enhancing a range of amenities to satisfy citizens and make them self-sufficient within their region. According to the Ministry of Construction (1982), "The IRSA is a regional unit which combines a regional central city with its hinterland farming areas in which productive, living and natural environments will be developed on an integrated basis" (p.18). This policy was based on a 'decentralised concentration strategy' providing substantial investment in service provision as well as economic infrastructure and promoting sizeable provincial cities as points of attraction for migrants who would otherwise go to Seoul (MOC 1982, Kwon 1988b, pp.112-3). The country was divided into 28 IRSAs<sup>63</sup>, in three categories according to each IRSA's particularities and the size of the central city. There were five large city IRSAs, 17 local city IRSAs and six rural town IRSAs (MoC 1982, pp.18-20). Of the 28 IRSAs, only 15 cities and towns were designated as growth centres, and more than half of these centres were located in the depressed areas (Kangwon, North Chungchong, and North and South Cholla provinces), all of which had stagnant population growth in the 1970s (Kim and Masser 1990, Kwon 1988b, MOC 1982).

Planning measures for implementing the growth centre policy included:

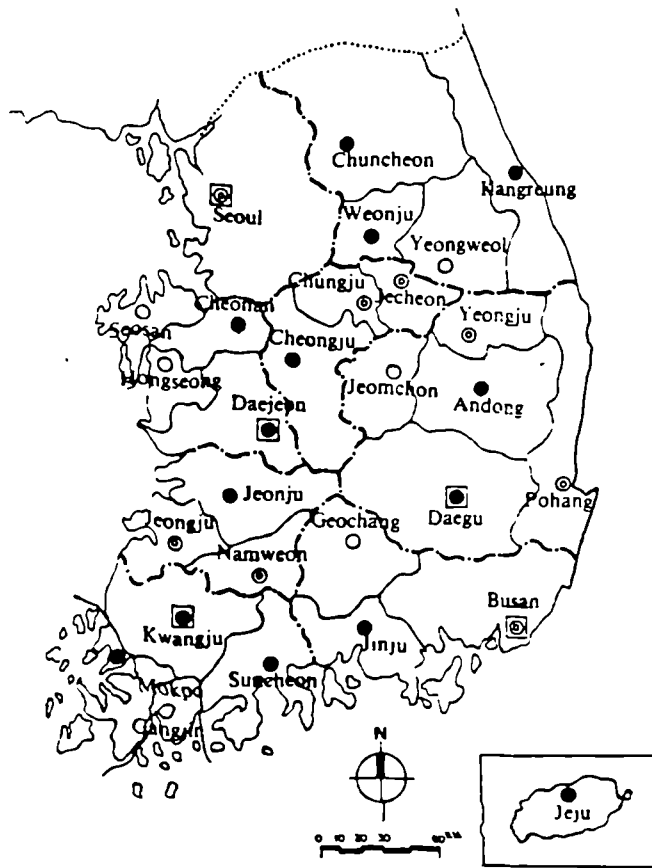
- i) incentives for labour-intensive manufacturing establishments, for example, the expansion of local industrial estates and tax exemptions;
- ii) provision of sites for universities and research organisations relocated from Seoul;
- iii) improving of the transportation network among growth centres and between each growth centre and its hinterland;
- iv) delegation of administrative power to local governments;
- v) enactment of the Growth Centre Promotion Law to finance its implementation.

(Kwon 1988b, p.114)

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<sup>63</sup> The IRSA was demarcated at a scale appropriate for planning and development on the basis of geographical features, spatial homogeneity of river basins, functional linkage of transportation and communication, and socio-economic interdependency considering the peculiar characters and development status of a given region (Kwon 1988b).

Figure 4.2.4 Growth Centres and Integrated Regional Settlement Areas



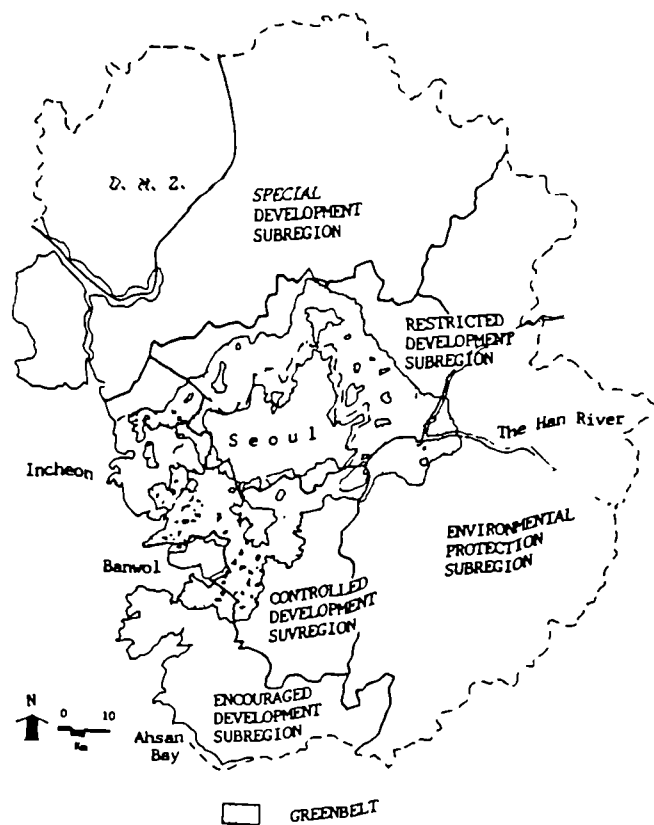
Key: Growth Centres

Source: Kwon (1988b), p.137

In order to expedite the development of growth centres, rural industrial activities were also fostered under the terms of the *Farm Household Income Source Development Law* 1983. In addition to incentives available under the IDL, the legislation provided special low interest loans to cover part of the costs of plant operation and facilities. Since the mid 1980s, small industrial estates (33,000 to 66,000 sq.m.) have been built in and around some small cities to provide off-farm jobs for rural people. Eighty rural industrial zones were designated between 1984 and 1988. Between 1985 and 1987, 13 rural industrial estates were built and another 35 were under construction in 1987, and by mid-1988 twenty-seven had plants in operation (Kim and Masser 1990, Park 1991, pp.85-6). Approximately 50 percent of these rural industrial estates were concentrated in the North and South Chungchong Provinces which adjoin the Seoul Metropolitan Region (Kim and Masser 1990, pp.36). This scheme has been responsible for the spatial decentralisation to peripheral regions of labour intensive low value added industries.

Intraregional spatial strategies to alleviate growing diseconomies and to control the industrial and urban developments in the Capital Region centred around the *Growth Control and Management Plan for the Capital Region (1982-91)*, which involved maintaining the greenbelt and subdividing the region into five subregions reflecting different degrees of land use control (special development, restricted development, controlled development, environmental protection and encouraged development). Each of these involves a different and discriminating implementation of programmes for the Region (see Figure 4.2.5 and Appendix 4, Table 3.1) (Richardson and Hwang 1988, Kwon 1988b, p.116-7). The basic strategy was to reserve the Special Development and Environmental Protection Subregions as open space for future use and for national security purposes, and to develop extensively the southwestern part of the Capital Region to absorb the population and industries dispersed from the Restricted and Controlled Development Subregions (Kwon 1988b, p.116-7). Other elements included deconcentration of central managerial functions to satellite cities, developing small-scale industrial complexes in the Ahsan Bay area and Banwol in the southwest, establishment of university campus towns and other service centres in the southeast, and construction of a second international airport and an expressway in the west coast (Richardson and Hwang 1988, pp.17-8, Kwon 1988b, p.120).

Figure 4.2.5 Land-use Control in the Growth Control and Management Plan for the Capital Region (1982-91)



Source: Kwon (1988b), p.188

The Growth Management Plan's promotion of industrial development in the southern part of the Capital Region and the accommodation of population in the new towns seemed to clash with the interregional decentralisation policies laid out in the National Physical Development Plan. It would be very difficult to induce industrial decentralisation to the regional cities if there were an active promotion of industrial location policy within the Capital Region. Due to the macro-economic and sectoral policies in operation, agglomeration in the Capital Region could not be mitigated without more prohibitive locational policies. The preoccupation of intraregional balanced development by the state intensified concentration. The trend of suburban concentration of industries and population can therefore be attributed to the policy contradictions in the two plans. This trend has continued to intensify in the 1990s due to the continuation of the policy structure.

Another policy instrument which had significant spatial impact was the Five Year Economic Development Plans implemented after 1962. They not only had a highly significant influence on the growth of the Korean economy, but also had unforeseen impacts on spatial development. Due to the significant spatial impact they had had in the preceding two decades, the *Sixth Five-Year Economic and Social Development Plan (1987-91)* for the first time included "balanced regional development" as one of its policy goal. The concepts were vague and encompassed much the same goals as the other two spatial plans (the Second Comprehensive National Physical Development Plan and the Growth Management Plan for the Capital Region). The main strategy of regional balanced development in the Sixth Plan was to be met through the provision of social and physical infrastructure in the small urban and rural areas in the depressed regions. However, due to the strength of non-spatial economic policies such as the changes in the financial institutions and incentives to promote industrial development, the new competitive mode regulation counteracted the loose decentralisation policies (Kwon 1988b, Richardson and Hwang 1988, pp.14-15). In the conflict between interregional balanced development and relieving diseconomies in the metropolitan regions, the government preoccupation with rapid economic growth meant that relieving of metropolitan diseconomies through demand-led supply of infrastructure was prioritised. This has undermined the government goal of equitable distribution of infrastructure between regions intended to produce balanced development.

The more equitable distribution of infrastructure investment and social services outlined in the Sixth Plan and the Second National Physical Development Plan did not materialise. Due to the demand-led supply programme, the areas with highest demand received the highest

investment. Here, the Capital Region was in the lead. The 'regional bias'<sup>64</sup> in the National Land Development policies has been clearly demonstrated in the study done by Kim, Y-J (1993). For example, the Second Ten Year National Physical Development Plan invested a total of 87,604.6 billion won (1985 constant price) between 1982 and 1988, of which the Seoul, Incheon and Kyonggi Region received 38.9 percent and the Southeast Region received 27 percent. The two regions received 66 percent of the total investment sum. On the other hand, the Central Region received 9.5 percent, the Southwest Region 13.4 percent and other Regions (Kangwon and Chaeju) saw 3.7 percent of the national investment (7.5 percent of the expenditure was invested in non-regional-specific schemes)<sup>65</sup>. The investment priority considerations were mainly according to the functional requirements of the regional economic structure, and were not based on the size of population or region. Thus, it can be said that the huge differences in investment between regions was responsible for regional economic growth disparities since industrial location has been very much influenced by the level of infrastructure provision (Kim, Y-J 1993, p.49). The cycle of greater industrial concentration leading to higher infrastructural investment in the Capital Region increased during the 1980s, with the neo-liberal market orientation of the state.

#### *Intensive Accumulation and Industrial Agglomeration in the Capital Region*

Due to the contradictory goals within spatial strategies and the strength of sectoral policies and competitive regulation, the shift in the distribution of industries in the 1980s shows a marked concentration in the Capital region. Figure 4.2.6 shows the distribution of manufacturing employment by regions throughout the rapid industrialisation period and Figure 4.2.7 shows the intraregional distribution of manufacturing employment in Capital Region. As these two graphs indicate, the 1960s with its Seoul based labour intensive industrialisation saw a rapid rise in manufacturing jobs in Seoul, while in the 1970s heavy chemical industrialisation period, the Southeast Region increased its share of manufacturing employment very rapidly. The Capital Region saw its share decline slightly, but throughout the two decades (1960s and 1970s) the peripheral regions, and especially the Southwest Region saw a rapid decline in their share. Figure 4.2.6 also shows very clearly the huge gap between the developed regions and the underdeveloped regions in the share of manufacturing employment and hence, the share of overall industrial development. In the 1980s, there was a reverse trend; the Capital Region increased its share of manufacturing employment, while the Southeast Region saw a decline. The peripheral regions' share continued to be steady but at a very low level. This clearly demonstrates that the 1980s marked the end of the heavy

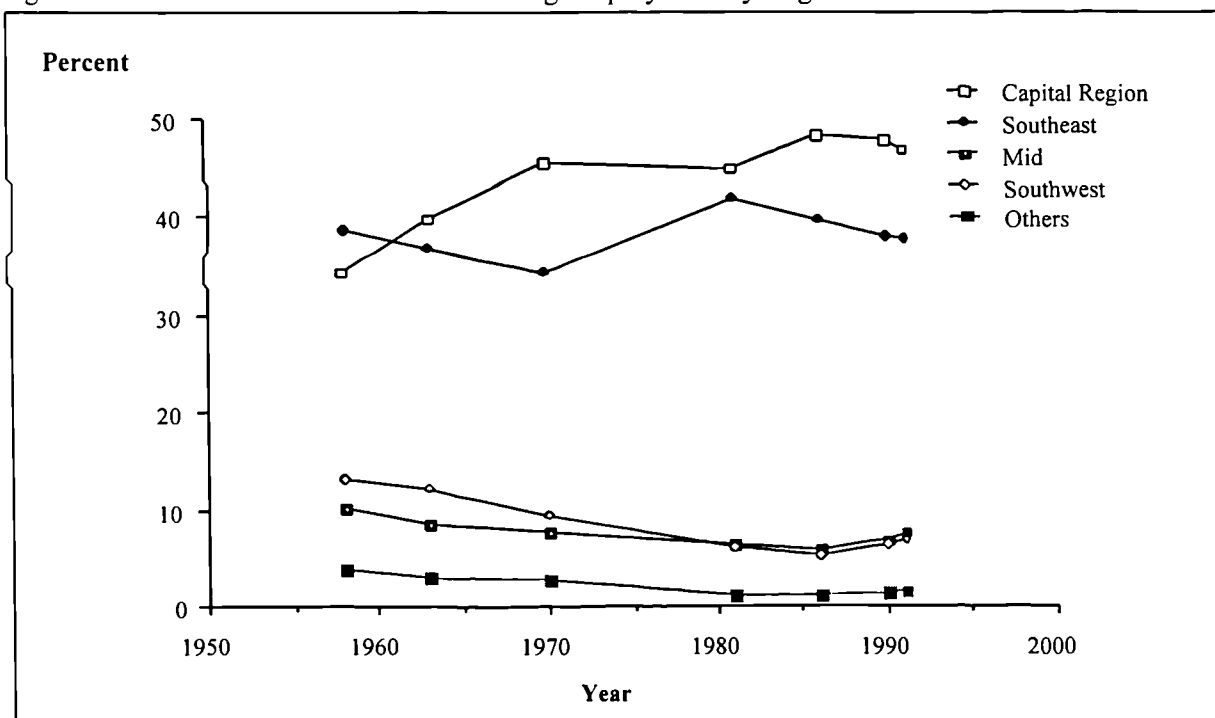
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<sup>64</sup> Regional bias thesis by Kim, Y-J (1993) is based on the urban bias theory of underdevelopment by Lipton (1976), who claimed that the urban/rural disparities in the Third World were due to urban bias regional development policies by the urban power groups through unequal distribution of social and economic resources in favour of certain urban areas.

<sup>65</sup> For biased infrastructure investment over the years (1965 - 1985), see Appendix 4, Table 2.2

chemical industrial drive based largely on the Southeast Region, and there was a clear trend towards industrial concentration in the Capital Region. Figure 4.2.7 shows that industrial concentration occurred in the Kyonggi province rather than in Seoul, which continued to rapidly lose manufacturing employment. The building of the Ahsan industrial complex at the southern edge of the Capital Region in the late 1970s, and its operation in the 1980s meant that even the heavy chemical industrial output was dominated by the Capital Region.

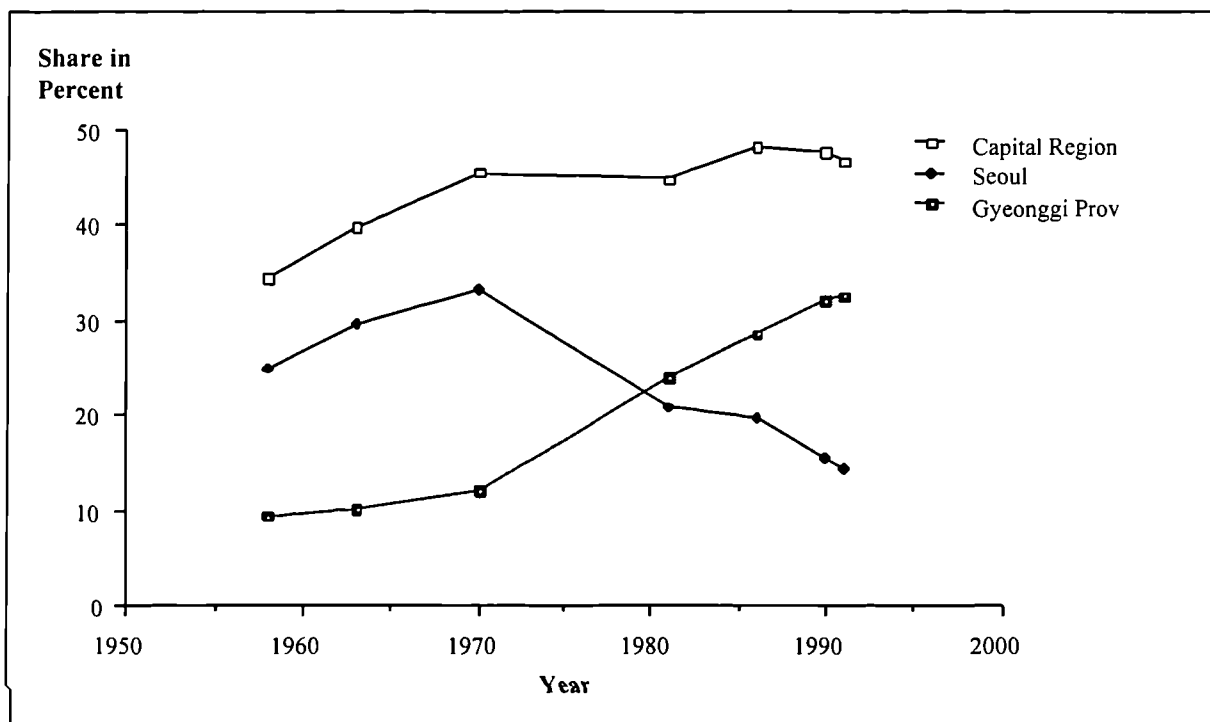
Figure 4.2.6 Distribution of Manufacturing Employment by Regions 1958-1991



Source: data from Park (1991), p.83, N.S.O, Korea Statistical Yearbook, 1993



Figure 4.2.7 Distribution of Manufacturing Employment in the Capital Region and Seoul 1958-1991



Note: 'Capital Region' includes Seoul and its metropolitan areas.

'Seoul' represents Seoul City only.

'Kyonggi Province' represents the suburban areas of Seoul only.

Source: data from Park (1991), p.83, N.S.O, Korea Statistical Yearbook, 1993

Table 4.2.5 Increase of Workers in Manufacturing Industry by Region

	1970-80	%	1980-85	%
Capital Region	650,023	47.3	216,982	53.2
Pusan Region*	382,070	27.8	117,427	28.8
Other Regions	343,207	24.9	73,721	18.0

Note: \* Pusan Region includes Pusan and South Kyongsang Province.

Source: Ministry of Labour, Survey Report on Establishment Labour Conditions, 1970, 1980, 1985, cited in Kwon (1988), p.60.

Table 4.2.5 clearly shows the trend of concentration of new industrial activities and employment opportunities in the Seoul Metropolitan Region in the 1980s. While the peripheral regions such as North and South Cholla provinces, Kangwon province and North and South Chungchong provinces saw the rate of increase of manufacturing workers drop in the 1980-85 period compared to the 1970-1980 period, the Capital Region saw a rate of increase of over 6 percent in the same period. Over half of the new manufacturing jobs for 1980-85 were in the Capital Region, whereas the peripheral areas received only 18 percent of

the new manufacturing jobs. The Southeast Region gained slightly compared to previous period. This confirms the tendency of reconcentration of manufacturing jobs in the Capital Region in the Peripheral Fordist Regime.

The distribution of types of industries and the spatial structure of industries have changed since the 1970s and the 1960s. The distribution of industries reveal more spatially differentiated patterns of location between types of industries. The trend in the 1980s was towards a concentration of precision engineering and high-tech industries in the developed industrialised areas, and the dispersal of declining and labour-intensive industries to the less developed peripheral regions (Chon 1992, Park 1993, Kim and Masser 1990, Douglass 1993).

The heavy and chemical industries continued to exist and agglomerate in the Southeastern Region as well as in the new industrial complexes in the periphery. South Cholla's share of the chemical industry has been significant, since the second largest oil refinery and petrochemical complex in Korea was located in Yeosu in that province (Chon 1992, pp.158-9). Due to the relatively high industrialisation of Southeast Region, land prices increased to a level which was not conducive to new developments. Therefore, large industrial estates started to form in the still underdeveloped southern edge of the Capital Region. For example, Ahsan Bay industrial complex was located on the border between Kyonggi and South Chungchong Provinces in 1979. This has also had a significant impact on the distribution of heavy and chemical industries due to its large size.

The concentration of machinery, metals and electronics industries, which the government started to promote aggressively from 1973 around Seoul and Pusan has been very pronounced. The Seoul and Pusan areas accounted for 76.7 percent of the total employment in these industries in 1970. During the decentralisation period of 1970-80, the dispersal of these precision industries was limited to the suburban counties of Seoul and Pusan. In 1984, the Seoul-Kyonggi area and the Pusan-Kyongsang area had a total of more than 96.1 percent of the employment in precision machinery. On the other hand, the share of precision machinery manufacturing employment in North Chungchong, South Chungchong, North and South Cholla and Kangwon provinces remained the same - changing slightly from a meagre 3.8 percent in 1970 to 3.6 percent in 1984. Similar patterns can be discerned in fabricated metal industries, electrical machinery industries and general machinery industries (Chon 1992).

The high-technology<sup>66</sup> firms and plants have favoured the Capital Region above any other region, showing a concentration of over 75 percent in the that Region in 1988 (Park 1987 p.23, Kim and Masser 1990, pp.34, Park 1993). This is a much higher concentration ratio if compared to the manufacturing industries as a whole, which was 58 percent in 1988 (Park 1993). Also the Capital Region's share of the whole nation's shipping value was about 66 percent for high-tech industries and 44 percent in total manufacturing, indicating that high-tech industries were far more concentrated in the Capital region than was manufacturing as a whole. The Capital Region's overwhelming share of high-tech industries is the result of continuous concentration of these industries during the late 1970s and the 1980s (Park 1991). Park (1993) claims that this agglomeration of high-tech industries has stimulated the reconcentration of manufacturing as a whole in the Capital Region, which is a trend that contrasts with the slight industrial dispersal from the Capital region to the rest of the country in the late 1970s (p.87).

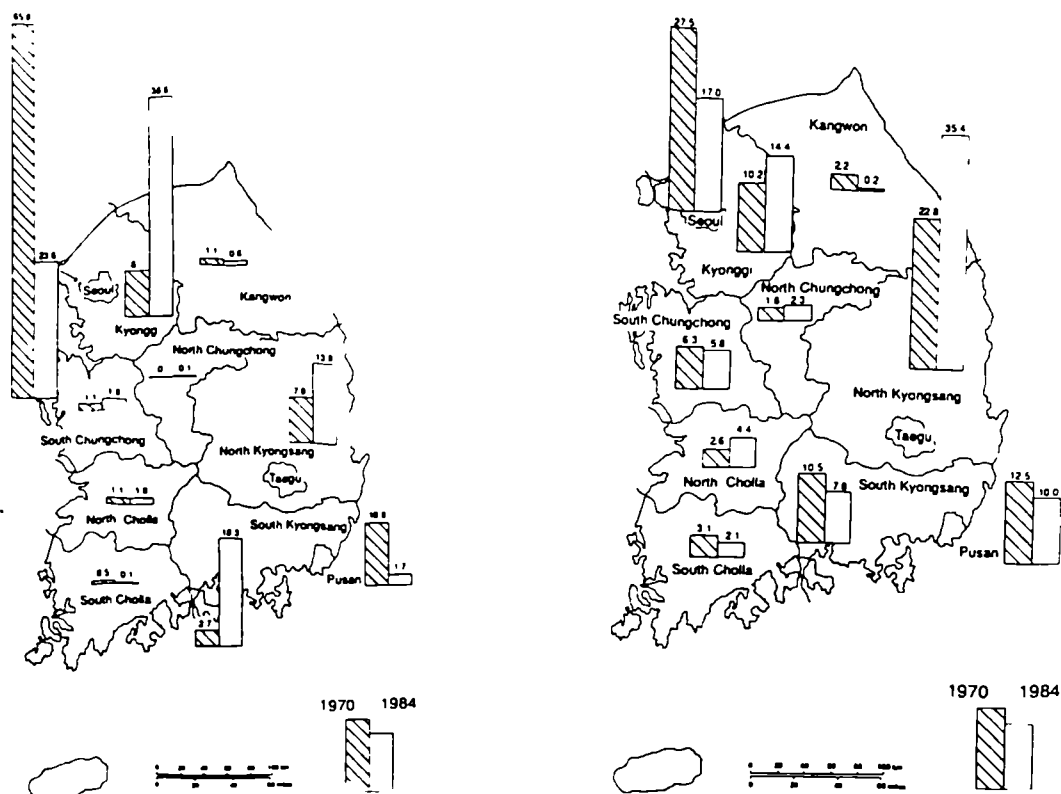
In contrast to the continued concentration of technology-intensive industries, labour intensive low value-added manufacturing showed a slight dispersal tendency towards peripheral regions. Figure 4.2.8 demonstrates the changing patterns of industrial location and structure of Korea. The Capital Region changed significantly with a substantial increase in the share of fabricated metals, machinery, and transportation equipment industries, and a decrease in textiles and apparel industries (Park 1993, p.85; Chon 1992). The agglomeration of high-tech industries has been due to the concentration of highly skilled labour and R&D activities in the Capital Region<sup>67</sup>. Here, the declining textiles, apparel and food processing industries moved to less developed regions, away from the port areas in order to take advantage of low land values and cheaper labour costs (Chon 1992). These changes in industrial structure between regions show that sectoral spatial differentiation has been very marked in Korea (Kim and Masser 1990, pp.33-4).

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<sup>66</sup> The definition of high-technology industries referred here consists of semi-conductors, new plastics and optics, telecommunication equipment and other high tech parts manufacturing as opposed to relatively simple and conventional manufacturing processes and industries such as metal fabrication, car manufacturing and computer assembly.

<sup>67</sup> No fewer than 464 out of 674 enterprise research institutes are in the Capital Region, as well as 13 out of 24 government institutions, 39 out of 40 research associations, and 47 out of the 104 universities and colleges existing in South Korea (Anon 1990, Castells and Hall 1994, p.63).

Figure 4.2.8 Distribution of Employment in the Precision Machine Tools and Textile Industries in Korea (1970 and 1984)



Distribution of Precision Machine Tools Employment

Distribution of Textiles Employment

Source: Korea Educational Development Institute (1988), p.348, 358 cited in Chon (1992), p.160, 161

Table 4.2.6 Distribution of Service Sector employees in Seoul and Kyonggi region (1981 - 1986) (%)

Year	Wholesale		Banking & Financial		Insurance		Real Estate		Business Services	
	1981	1986	1981	1986	1981	1986	1981	1986	1981	1986
Seoul	53.8	53.3	50.8	49.8	46.5	36.9	64.5	56.5	48.2	52.2
Kyonggi	6.1	7.6	7.9	8.6	8.1	11.4	9.9	16.8	11.3	10.0

Source: EPB, (1981, 1986); Korean Federation of Trade and Industry (1990), p.32<sup>68</sup>

The concentration of company and conglomerate headquarters in Seoul and its suburban centres also increased during the 1980s. Approximately 80 percent of the headquarters of

<sup>68</sup> Korean Federation of Trade and Industry (1990) Sudokwon kaebal Haprihwa-rul wihan Sanop-ijji-jeongchaekbang-an [Industrial Location Policy Direction for the Justification of the Development of the Capital Region]

large conglomerates and 60 percent of their branch firms were concentrated in the Seoul Metropolitan Area (Park 1986, p.316; Kim and Masser 1990, pp.34). During the 1980s, however, there was a trend towards suburbanisation of secondary clerical and R&D functions to the surrounding districts of Seoul. This was partly a result of government policies as well as rising land prices in Seoul. This gave rise to the suburbanisation of white collar jobs, and residences. Table 4.2.6 shows a slight trend towards suburbanisation of white collar jobs.

The implementation of an intensive accumulation regime based on the competitive mode of regulation was responsible for the increased tendency towards 're-concentration' of industries in the Capital region. In the 1980s, takeovers, mergers and high business failure rates resulted in the increasing centralisation of both capital and industry in Seoul's suburban region. The structural changes in the accumulation regime caused technology-intensive industries to favour the Seoul metropolitan region, where almost all R&D was taking place (Castells and Hall 1994, p.63). During the 1981-84 period studied by Park (1986), most medium-size cities and rural counties outside the Capital region experienced more plant closures than new start-ups. Whereas the share of manufacturing in the southeastern Pusan-South Kyongsang region remained more or less constant in the 1970s and 1980s, the share accruing to the mega-urban region of Seoul continued to increase at a precipitous pace. Other regions of the country witnessed falling shares (Douglass 1993, pp.159). In this respect the Korean experience supports Massey's (1979) view that a hierarchical spatial division of labour reinforces regional inequalities. Massey (1979) also suggests that the central metropolis enjoys relative economic advantage as a result of the presence of control functions, research, design and development and managerial and technical strata while peripheral regions tend to be handicapped by less skilled and less sophisticated production processes and job opportunities (ibid., pp.237-8, Kim and Masser 1990, pp.34). Thus, as can be seen in Table 4.2.7, while the Capital Region continued to increase its share of GDP, all other regions show a falling share.

Table 4.2.7 Regional share of Gross Domestic Product in Korea (%)

	1985	1986	1987	1988	1989	1990	1991
Capital Region	42.6	43.5	43.8	44.2	45.1	45.5	45.7
Central Region	9.4	9.1	9.0	8.9	8.9	9.0	9.1
Southeastern Region	31.8	31.8	31.7	31.4	30.8	30.1	29.8
Southwestern Region	11.5	11.2	11.1	11.3	11.0	11.2	11.2
Other Regions	4.7	4.4	4.5	4.2	4.2	4.0	4.0
Whole Country	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: N.S.O, (1993) *Korea Statistical Yearbook*.

Although the state acknowledged the importance of balanced spatial development, due to the government's reliance on the market mechanism, which led to demand-led infrastructure provision, it did not use the dispersal mechanism as ruthlessly as the previous regime, and instead tried to manage the concentration of industries and population in the Capital Region. Thus the spatial strategies in the 1980s were mainly used as controlling how and where industrial development occurred in the Capital Region. Thus, there was a trend towards industrial and population agglomeration where high levels of infrastructure were available. The sustained expansion of the Seoul Metropolitan Region crossed a new threshold in 1988 when its population surpassed that of the combined population of all other provinces outside the Southeast Region (Douglass and Digregorio 1991, Douglass 1993, pp.160).

Spatial development in the 1980s was, therefore, characterised by the concentration of high-tech industries, R&D activities and skilled workers in the Capital Region and the dispersal of low value-added labour intensive industries to the less developed regions. The tight control of finances, the differential infrastructural investment and the accommodatory spatial policies of the state as well as the more intensive and competitive economic environment is found to be the main factors. The combination of government policies and the competitive mode of regulation has reversed the trend of spatial decentralisation of the 1970s to stimulate re-concentration into the Capital Region, resulting in an unbalanced regional development.

#### **4.2.5 Globalisation and the Neo-Fordist Regime (1989-95)**

The accumulation regime of Korea in the late 1980s and 1990s has been embedded in a strategy of globalisation. This has been due to external pressures, growing trade and current account surpluses, changing regional geopolitics, the formation of economic blocs and rising wages in Korea. Therefore, the domestic economy has slowly opened up to foreign capital and products, and at the same time, Korean industrial capital has moved its production line offshore to penetrate protected markets and to exploit cheap labour sources abroad. Thus, the Korean state has tried to restore capital accumulation through attracting global capital on the one hand, and freeing national monopoly capitals from existing constraints, - that is, restriction of capital outflow and high labour costs.

In internal spatial development terms, there have been two major trends; 1) the growing primacy of Seoul and its immediate metropolitan area (SMA) through the concentration of capital in Seoul and suburbanisation, and 2) industrial expansion to the West Coast Region.

The Korean state has also been trying to attract more foreign capital into the domestic economy and market. It sees itself playing a greater role in the global economy by

integration and liberalisation. Due to the shift in global economic activity to the Asian Pacific Region, the Korean state has attempted to make Seoul into a regional economic hub, as well as into a global mega-city to compete with the newly emerging world cities like Osaka, Singapore, Hong Kong and Shanghai. To this end, the state has concentrated its infrastructural investments in the SMA to improve international connections with the global capital, particularly in terms of communications and transportation. Thus, in the 1990s the government has concentrated a significant proportion of infrastructure in the SMR as demonstrated in Table 4.2.8. Recent processes of structural change toward services, particularly information technology and international finance and business, have accentuated the trend towards increasing the primacy of Seoul over the rest of the country in terms of population and capital concentration (Lee 1990, Douglass 1993, pp.159).

Table 4.2.8 Infrastructure Investment by Area 1992 (unit: million won, %)

Area	Infrastructure Investment	Percentage
Seoul	1,153,924	10.02
Incheon	349,166	3.03
Kyonggi Province	2,413,630	20.97
<b>Capital Region</b>		25.01
Pusan	310,478	2.70
Taegu	203,262	1.77
South Kyongsang Prov.	127,945	1.11
North Kyongsang Prov.	796,935	6.92
<b>Southeast Region</b>		12.50
Kwangju-South Cholla Prov	1,033,461	8.97
North Cholla Prov.	463,804	4.03
<b>Southwest Region</b>		13.00
Daejeon-North Chungchong Prov.	612,854	5.32
South Chungchong Prov.	1,115,159	9.69
<b>Central Region</b>		15.01
Kangwon Prov.	480,008	4.17
Cheju	72,016	0.63
<b>Other Region</b>		4.80
Non-Specific	1,,230960	10.69
<b>Total</b>	11,511,602	100.00 %

Note: Area by cities and provinces. Subtotal for each region.

Source: N.S.O (1993), pp.212-3. compiled by author.

However, the industrial drive in the manufacturing sector has not been abandoned. The industrial trajectory of Korea in the late 1980s and 1990s has not only stressed high-tech industries, but has renewed its drive in strategic petro-chemical industries such as naphtha cracking<sup>69</sup>. The ever increasing demand for industrial land and the opening up of China has led to the expansion of industrial and infrastructure investment into peripheral regions, particularly into western coastal regions (South Chungchong, South and North Cholla provinces), which had previously been ear-marked for fisheries and agricultural production. Huge state investments in land reclamation and construction of industrial estates, and tax concessions and financial incentives to private capital have given opportunities for easy profits. As Table 4.2.8 shows, in 1992 particularly high investment has been made in South Chungchong and South Cholla provinces. These were previously underdeveloped coastal areas. It also reveals that previous investment disparities between developed and underdeveloped region has disappeared. Instead, the disparity is seen between the Capital Region and the rest of the nation, although the gap is smaller<sup>70</sup>.

#### *Transport Development, World Mega City Seoul, and Uneven Development*

The regional disparities in infrastructural investment have already been mentioned in section 4.2.4, and we have seen how these have led to the concentration of population and industries in the 1980s. The new pattern of infrastructure investment, particularly in transportation and communications in the 1990s is expected to have considerable spatial impact. As Table 4.2.8 has already shown the disparity in Southeast, Southwest and Central Regions' infrastructure investment has been small. Only the Capital Region received a higher share and 'Other Regions' (Kangwon and Cheju provinces) continued to receive disproportionately smaller shares.

The transportation sector has played an increasingly important role in the development of the Korean economy. The investment in transportation already accounted for a very substantial share (24 percent) of gross domestic capital formation in 1971 and rose to almost 32 percent by 1985 (Eum 1986, p.1). This massive allocation of capital resources to transportation in each development plan has influenced the spatial development (urban and industrial development along the Seoul-Pusan Highway or the suburbanisation in the SMA) and helped to alleviate economic bottlenecks (Richardson and Baek 1988).

In the 1960s, the reliance on existing port facilities in Incheon and Pusan had led to the concentration of industries and population in Seoul and around Pusan. It has been noted earlier that the increase in highway investment in the Second Plan had increased the rate of

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<sup>69</sup> See FEER (1990, 12 July), p.69-70

<sup>70</sup> See Appendix 4 Table 2.2 and Figure 2.3 for regional disparity in infrastructure investment for previous years.



migration to the two end points of the major expressway, Seoul and Pusan, in the late 1960s. In the 1970s, in order to promote industrial decentralisation into the Capital and Southeast Regions, high levels of new port and road networks were put into these regions, and investment in railways was cut drastically during this period. During the 1980s, in order to alleviate the diseconomies of industrial and population concentration in the Capital Region, high levels of investment were put into the intraregional road and subway network (see Figure 4.2.9). The impact on the suburbanisation of the Capital Region has been particularly important. In the 1970s and 1980s, population suburbanisation occurred in cities with good transport links with Seoul such as Incheon, Suwon and Bucheon. The expansion of housing estates in the outlying areas within the Seoul boundary could not have been possible without the expansion of the subway network and the rising car ownership. It was not until the rise of private automobile ownership in the late 1980s and 1990s that there was significant rapid development of satellite cities and new towns (Kwon 1988b, Richardson and Baek 1988).

In the 1990s, the transportation and communication infrastructure developments have been utilised to promote Seoul as a global financial centre and to expand industrial development into the West Coast Region. In the case of the former, two goals were articulated to relieve urban diseconomies, and to increase international linkage. Thus, major road building programmes have been implemented to reduce congestion in Seoul and its metropolitan area, and a second international airport has been planned at Yeongjongdo to increase air transport capacity.

The Korean government's aim to turn Seoul into a Pacific Asia regional centre and indeed a global centre, for international business has led to a concentrated investment programme to attract global capital. Air traffic was expected to grow briskly into the next century at growth rates of 9.5 percent for international passengers<sup>71</sup> and 11.9 percent for international freight (Richardson and Baek 1988, p.162). The demand for international air travel was concentrated in Seoul due to its agglomeration of international trade and finance. The major planned project for air traffic is a second international airport at Yeongjongdo<sup>72</sup> to serve Seoul in addition to Kimpo. This would not only further concentrate air traffic (currently Kimpo airport handles over 90 percent of all domestic and international air passengers, who in 1991 totalled 22.6 million), but would mean the construction of more highways and rail

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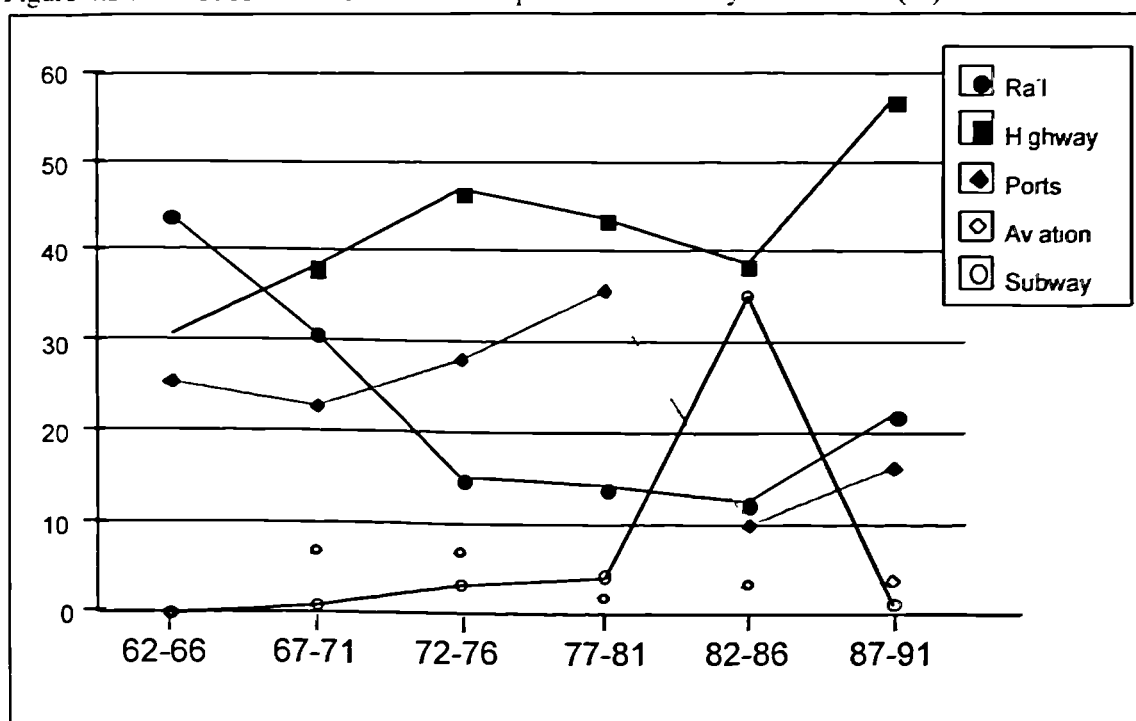
<sup>71</sup> Another source states that the average annual growth rate for domestic traffic is expected to slow to 9.2% in the current decade from 22.3% in the 1980-90 period. Average annual growth for international traffic is forecast to drop to 10.8% from 12.7% (Far Eastern Economic Review, 1991, 10 Sept., p.70)

<sup>72</sup> In December 1990, decision was taken to build the new airport at Yeongjongdo, about 50 km from Seoul, near the port of Incheon. Costing Won 3.5 trillion, the airport's first phase with one runway and an annual capacity of 27 million passengers is to be ready in 1997, according to current plans. By year 2020, the airport should have its fourth and final runway and be capable of handling 100 million passengers a year. (Far Eastern Economic Review, 1992, 10 Sept., p.70)

networks to link the airport and the cities in the SMA (FEER 1992, 10 Sept., p.70). The concentration of international air transport capacity in Seoul is expected to stimulate international business, but it will aggravate congestion problems as well as intensify the disparity between Seoul and the rest of the country. The domination and primacy of Seoul is expected to increase, therefore, as globalisation proceeds.

In the case of the latter, in conjunction with large industrial estate development, large port facilities and the West Coast Highway have been under construction since the late 1980s to relieve the backlogs and congestion in the ports of Incheon and Pusan. The increase in port investment in the 1987-91 period has been due to the construction of the mega-projects of Ahsan and Kunsan as major container and cargo terminals, the result of changing regional geopolitics, and potential for increased trade with China and the rapidly growing Southeast Asian economies. These are to serve as major exporting ports for the ever-concentrating industries in the Capital and West Coast Regions.

Figure 4.2.9 Subsectoral share of Transport Investment by Plan Period (%)



Source: data from Richardson and Hwang (1988), p.156

In conjunction with the above mentioned spatial development, there has been a trend towards suburbanisation of white collar jobs and population into the satellite cities and new towns in the SMA. Increasing real estate prices and improvement in transport links and mobility (rising car ownership) have been the main factors (Richard and Baek 1988, p 155-9) This in

effect has widened the spatial boundary of Seoul's white collar jobs and middle class housing displacing manufacturing industries and the working classes. The development of new towns and satellite cities in the SMA absorbed much of the population migration to the Capital Region and has been able to slow down migration into Seoul. Despite industrial expansion to the peripheral regions, the concentration of population into the Capital Region and SMA continued to grow. In 1990, the population concentration in the Capital Region stood at 42.8 percent of total national population. Migration patterns in the 1990s show that in the Capital Region, Seoul has seen signs of out-migration while SMA cities saw a rapid rise in in-migration due to suburbanisation and industrialisation. Most of the out-migration continues to be from underdeveloped rural areas of Kangwon and North and South Cholla provinces. The other provinces have shown a stabilisation of population movement (based on data from N.S.O. 1993, p.37 and pp.65-7).

The result is the megalopolisation of Seoul, where Seoul and its outlying satellite cities and new towns are now merging into a single urban area, with the exception of a sliver of greenbelt area. The spatial issue in the 1990s has not been one of regional balance but one of disparity between the Capital Region and the rest of the nation. In the 1990s, the concentration of national and international finance and trade, control and R&D functions, social and cultural amenities, service industries, government and political functions and consumption in Seoul and of high-tech industries in the Capital Region has created a gulf between the Capital Region and the rest of the nation. The dominance of Capital Region has overshadowed the rivalry between Kyongsang province and Cholla Province. The influx of global capital into Seoul as the Korean economy opens up will increase the gap between Seoul and other regions.

While industrial expansion has reduced regional disparities, there has been a growing disparity between the industrial and non-industrial sectors. The agricultural sector has been under growing pressures from import liberalisation of agricultural products, while it has been handicapped by the constraint of land reform in the 1950s which imposed small-holder farming. The small-scale farming, siphoning off of rural labour to industrial sector and dependence on chemical inputs have been the cause of structural underdevelopment in the agricultural sector.

Thus, there has been a trend towards spatial differentiation between sectors: an increasing spatial split between business and consumption services, industrial and agricultural production. The tripartite spatial division of labour due to vertical disintegration of the Fordist labour process in the 1970s have been firmly imbedded in the spatial structure through continued efficiency-oriented sectoral strategy. This has given rise to a core consumption zone (CCZ), where there is a high concentration of business and consumption

service industries, a semiperipheral industrial zone (SIZ), where manufacturing industries dominate the space economy, and a peripheral rural zone (PRZ), where agricultural production and leisure industries are predominant.

### **4.3 Uneven Development**

Historical analysis of spatial development in Korea has revealed the tendency towards spatial differentiation, equalisation and re-differentiation with changing accumulation regimes, MSR and industrial trajectory. In this section, we will try to determine the main forces behind Korea's spatial dynamics.

#### **4.3.1 Overview of Spatial Development**

The urban structure of Korea came to reflect Japanese policy which aimed to exploit Korea to meet the consumption and industrial needs of the colonising power. This shaped the settlement pattern of Korea in the 1910-45 period. Cities grew as administrative centres for colonial exploitation, as assembly points of agricultural products for export to Japan, and as production sites for raw materials and cheap manufacturing goods for Japanese factories and consumers (Hwang and Choi 1988, p.48).

Postwar spatial development was manipulated by the state economic and spatial policies and infrastructural provisions. During the 1950s, the ISI regime of accumulation, the dominance of regional capital and low transportation infrastructure meant that there was a wide distribution of industrial activities. In the 1960s, with the implementation of the labour intensive EOI regime, the state promoted centralisation of labour intensive industries in the large urban centres by concentrating infrastructural development primarily in Seoul and Pusan. This decision was to utilise and build on the existing port facilities. The competitive MSR and the centralisation of state functions reinforced the concentration tendency of population in the large metropolitan cities. The rapid concentration of industries and population not only caused many urban problems but also increased economic bottlenecks. In the 1970s, the state restructured industrial space in accordance with the restructuring of the regime of accumulation. The state also intervened to redistribute population to the regions by implementing many spatial strategies. A barrage of spatial and industrial regulations and incentives were implemented throughout the 1970s, only to achieve a bi-polar spatial development centred around Pusan and Seoul due to the government's sectoral and zonal policies. In the 1980s with the re-establishment of a competitive regulation along with an intensive accumulation regime, there was a concentration of capital, industries and population mainly in the Capital Region. Due to the state's contradictory aims to achieve both balanced interregional and intraregional development, industrial concentration continued to grow in the Capital region. There were two spatial tendencies: one was a hierarchical differentiation of industries with high-value added technology intensive industries concentrating in prime industrial areas, and low-value added labour intensive industries being pushed out to peripheral areas; on the other hand, there was the suburbanisation of population in the SMA. In the 1990s, the state's pursuit of a globalisation strategy, and of industrial

decentralisation, reinforced the polarisation between the SMA and the rest of the country. The promotion of Seoul as a world economic centre through massive infrastructure development has increased the concentration of international business functions and capital, widening the gap with other regions. On the other hand, due to changes in global regional geopolitics in the late 1980s and the pressures for industrial expansion in the Capital Region, the state has implemented huge infrastructural development in underdeveloped areas, bringing about the industrialisation of the West Coast Region.

All this demonstrates a dual spatial dynamic in Korea's postwar mode of development:

1. A continual concentration and decentralisation of industrial development. However, while the tendency towards concentration has stemmed from the inherent dynamics of accumulation and the state sectoral policies, the decentralisation of industries had to be aided by stronger state intervention;
2. Intra-regional suburbanisation of population, particularly in the SMA, although initiated by the dispersal of industries in the 1970s, has been largely caused by developments of population concentration and intraregional transportation networks.

A summary examination of the spatial dynamic and the resultant spatial structure reveals that the major underlying factors are as follows:

1. Natural physical characteristics;
2. the colonial legacy;
3. The dynamics of capital accumulation and the centralisation of capital;
4. Centralisation of the state structure and power;
5. Unbalanced infrastructural investment and efficiency oriented spatial and sectoral policies of the state;
6. Dependence upon and openness to the global economic system, for example, markets, global capital;
7. Technological developments, production processes and the division of labour;
8. Social and cultural values.

Particularly important in the determination of spatial development has been the role played by Seoul. The historical legacy of Seoul as the seat of government and as the centre for business and social and cultural activities has been a major factor in the centralisation of population and capital, and thus, in uneven spatial development. The centralisation of economic control in the state has centralised capital in Seoul. Despite the de-industrialisation of the 1970s, it has since emerged as the national centre for finance, international trade and business, service industries, education, social and cultural activities, consumption, administration and R&D. The vertical disintegration of the Fordist production process has been due to the necessity to keep corporate headquarters in Seoul while spatially decentralising production lines. As Richardson (1982)

argues, the spatial concentration of manufacturing firms' headquarters in Seoul has been designed to gain maximum access to government, the prime distributor of scarce resources through various policy instruments including incentive taxes and financial systems (p.99). The division of labour within the company also led to the dispersal of working classes to the semi-periphery. In the 1990s' strategy of 'globalisation' of the Korean economy, Seoul has become the main interface with global capital since it alone has the necessary business and physical infrastructure to attract and accommodate global capital. The concentration of business functions, education facilities, international transport linkage, government offices and financial institutions has created a huge regional disparity with the rest of the country.

Table 4.3.1 Concentration Ratio of Central Managerial Functions in Seoul 1985 (%)

	Seoul	Large Regional Centres			
		Pusan	Daegu	Kwangju	Daejeon
Central Government Bodies & Agencies	83.8	0.9	0.0	0.0	2.4
Manufacturing Head Offices	69.2	6.3	2.1	0.7	0.9
International Trade	96.3	3.2	0.1	0.0	0.0
Higher Education	47.2	11.2	9.9	7.0	5.1
Commodity Dealing	69.0	9.7	7.8	1.6	3.2
Business Information	78.1	3.2	3.6	2.3	4.8
Business Finance	47.7	8.0	7.3	4.1	3.9
Population (1985)	23.8	8.7	5.0	2.2	2.1

Source: Korea Research Institute for Human Settlements, cited in Kwon (1988), p.63

Another important factor has been the role of the state in spatial structuration. Apart from its location in Seoul, which promoted concentration of capital, the government's sectoral and spatial policies were central to the differentiation of space. In the pursuit of an EOI regime the Korean government not only had to mediate between global forces through tariff barriers and financial subsidies to protect and promote the national capital in its attempt to accumulate capital in the world market, but also intervened in the structuring of the national space in order to remove any spatial barriers to accumulation. It pursued efficiency-oriented spatial policies, which promoted economies of scale and agglomeration on the one hand and on the other hand, demand-led infrastructural investment to relieve any diseconomies (Park 1986, p.40). The 'see-sawing' between concentration and decentralisation of infrastructural developments has been governed by the drive for efficiency and rapid growth.

weakness of the urban economy in the lagging regions that has led to the interregional migration of the underemployed and unemployed population to seek jobs in the fast growing cities of the industrialised regions.

Although the above factors have shaped the transformation of spatial structure through the restructuring of accumulation regime and changes in the MSR, spatial development has been also constrained by the pre-existing spatial form of the previous accumulation regime. The old spatial forms do not simply dissolve, but new spatial arrangements are formed through the interaction of new spatial dynamics with the existing structure. The dialectical transformation of and sedimentation of spatial arrangement have resulted in the primacy of the SMA, the suburbanisation and regional concentration of manufacturing industries and the regionalisation of urban/rural disparities. The sedimentation of new spatial forms upon old ones has resulted in tripartite uneven spatial development.

The uneven economic, social and spatial development in Korea was an outcome of the state's role in the provision of the preconditions of capital accumulation, in the mediation between global forces and domestic capital needs and in the maintenance of social cohesion. The means by which this was achieved was the utilisation of sectoral and spatial policies to structure and restructure industrial space in order to displace the crisis tendency through space. Thus the uneven development is an inevitable outcome of an EOI regime of accumulation, in which the state suppresses the needs of equitable social development to meet the needs of capital accumulation.

#### **4.3.2 Tripartite Uneven Spatial Development**

From the analysis of spatial and urban developments in Korea, it has been revealed that there is a huge difference between regions in the level and structure of economic development, in the provision of infrastructure and in class composition. Combined and uneven development in Korea has caused a differentiation of national space into three quite distinct zones of development. The size and location of each of these zones has been continually shifting as economic and spatial development has taken place. These spaces can be categorised as core consumption, semi-peripheral industrial and peripheral rural zones. These have very distinct characteristics of economic structure, levels of social and economic infrastructure and composition of social class. The core consumption zone (CCZ) is characterised by the high levels of business and consumption service activities, while having relatively low manufacturing activities. The levels of social, economic and physical infrastructure in this area tend to be advanced and elaborate. The class composition of this zone is highly differentiated with large



number of upper and middle class residents, as well as substantial numbers of low income groups, but with a small concentration of the industrial proletariat.

The semi-peripheral industrial zone (SIZ) is distinctive in that it has a large manufacturing base and an absence of any other industries. The class composition of this zone follows the economic structure, with a dominant concentration of industrial proletariat. The SIZ is characterised by a relatively high level of productive infrastructure, but a low level of social amenities and services. This reflects the lack of consumption power as well as the low priority of the government as far as improving the environment for the working classes is concerned. As a result, it suffers from industrial pollution and low working and living environmental quality. The character of the peripheral rural zone (PRZ) is one of economic underdevelopment, with a marked absence of good infrastructure or real industrial development. Due to the government's sectoral emphasis, the PRZ is basically an agricultural production zone. The lack of capital and population do not make it feasible on 'efficiency' grounds to provide social and environmental amenities and services. The low levels of government and private sector investment continues the cycle of underdevelopment. Increasingly the PRZ areas are intruded upon by the invasion of leisure and recreational developments from the CCZ. The natural environments are eaten up by golf courses and leisure resorts bringing not only low-quality employment opportunities, but also environmental degradation and disasters.

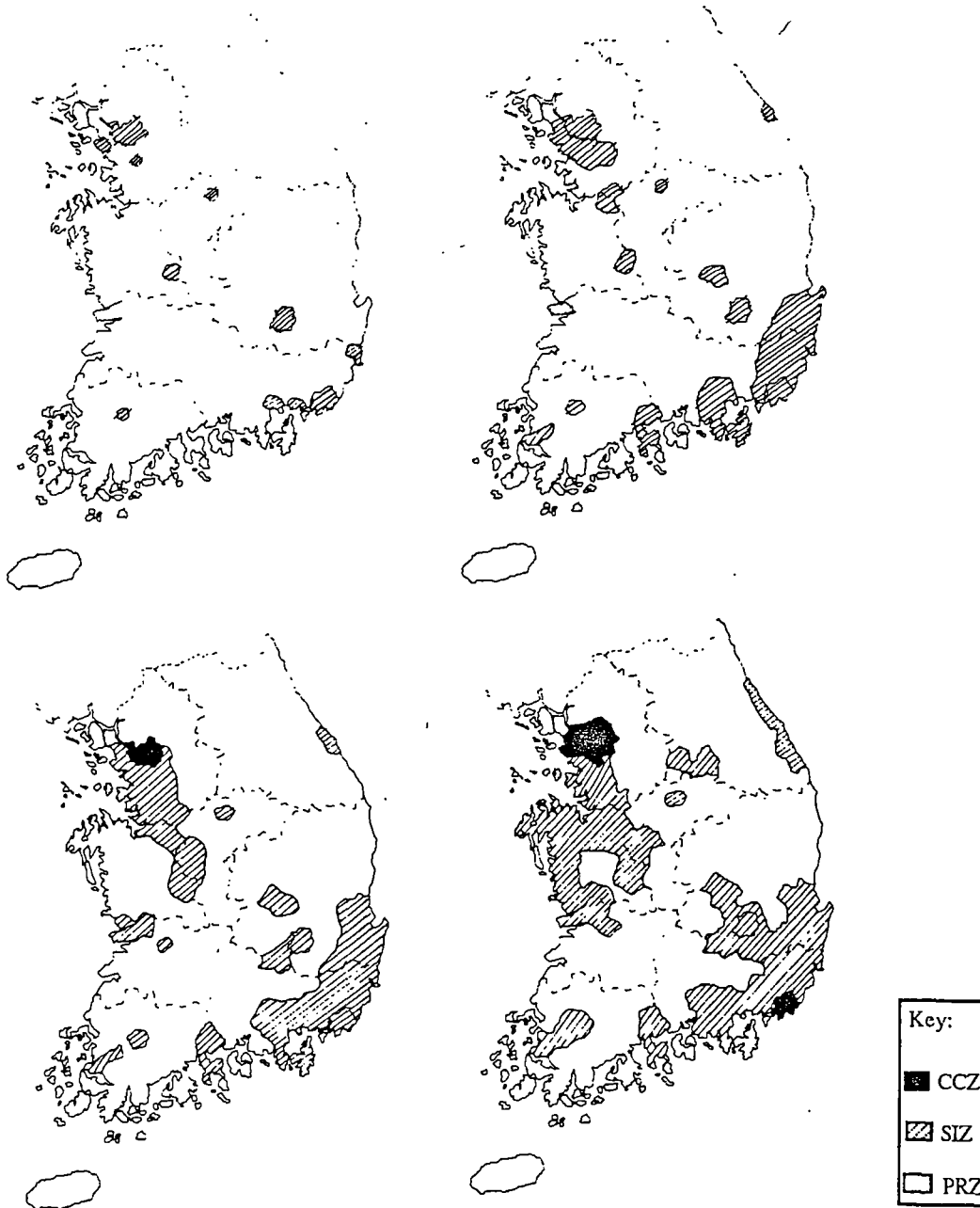
These zonal characterisations are to a certain extent conceptual, and in reality a combination of these zones may exist in one geographical area. Seoul is indeed a prime example of a CCZ, but places like Pusan, Incheon, Taegu and Daejeon are not so clear. These cities tend to display both the signs of CCZ and SIZ. However, it is not necessary to place these urban areas into one or the other, but in recognising the characters of both zones, one can examine and analyse the social and environmental problems with greater clarity.

If we examine the geographical distribution of these zones, we can see that Seoul and its immediate urban area and Pusan can be classified as CCZs; the rest of the Capital and Southeast Regions, and small pockets of industrialised areas in the southwest and central regions, are SIZs. The remainder of the nation with the exception of the above mentioned areas are PRZs. Figure 4.3.1 shows the historical transformation and growth of these zones in Korea.

Figure 4.3.1 Historical Development of Space in Korea

A Taylorist Period

B Yusin Period



C Peripheral Fordist Period

D Neo-Fordist Period

Source: compiled by author based on MoC (various years) *Ten Year National Comprehensive Physical Development Plans*.

Environmental conditions in Korea are also differentiated by these three zones. The differences in the production-consumption relationship, the level of infrastructural provision and class relationships will give rise to different environmental conditions in each zones. This differentiation will be looked at in greater depth in the following chapter.

## Chapter 5

### Environmental Impact of Accumulation Regimes and Spatial

#### Differentiation in Korea

Throughout history society has developed through the utilisation and transformation of nature. The capitalist mode of production, which has 'accumulation for accumulation's sake' as its basis, has used resources and produced waste at an increasing rate. Not only has the development of technology and the capitalist global accumulation system exploited nature at the world scale: it has also enslaved human beings and their activities within the economic structure and institutional control. As we have seen in Chapter 1, the causes of environmental problems have been identified as coming from a single problem such as the industrial processes, failure of the market, technology, the capitalist mode of production, consumption and urbanisation. Of course, production processes and human reproductive process are the direct mechanism by which resources are turned into commodities and then into wastes. However, the spatial dynamics of capitalist accumulation must also be incorporated into the analysis of environmental problems. Since space is produced by the dialectical interaction between society and the environment, the production of environmental problems is very much dependent upon spatial development. Without such consideration, it is difficult to understand or explain the difference in environmental problems between places. The spatial division of labour at both global and sub-national levels has had much impact on the nature of environmental destruction. The agglomeration of industries and population in 'core' areas and the intensive exploitation of natural resources in 'peripheral' areas have resulted in uneven development. The uneven spatial development of the capitalist accumulation process has created differing environmental conditions over space depending on the type of production and MSR deployed.

We have so far seen the linkages between the regimes of accumulation, state development policies and spatial restructuring in Korea. This has resulted in the spatial differentiation and concentration of different production and consumption activities, resulting in the *combined development* phenomenon. The spatial division of labour created three distinct spatial zones: the core consumption zone (CCZ), semi-peripheral industrial zone (SIZ) and peripheral rural zone (PRZ). The consequences of combined development have been uneven levels of economic and social conditions between zones. The most pressing spatial problem is not urban-rural inequity but regional inequity since economic conditions in urban areas in lagging regions are poorer in terms of per capita income than rural areas. The consequences of combined development and resultant regional inequity have been the production of serious environmental problems and the migration of population to developed areas, exacerbating already serious environmental problems. Thus, environmental degradation under the rapid EOI accumulation regime in Korea

cannot be fully understood without examining each spatial zone. Only by examining each zone separately can one identify the causal mechanisms of environmental problems.

The environmental problems discussed in this chapter are wide in scope, encompassing all those issues related to the reproduction of the whole of the ecosystem (fauna, flora, water, soil, air, landscape, wildlife habitat, and so on) including the human environment (housing, living and working conditions, sanitation, water supply and public health). Only through the examination of the totality of environmental problems can we expect to understand the complex and diverse ways in which the accumulation regime, the MSR and the environment interact with each other, and how the environmental problems of the three spatial zones combine to create a national environmental crisis. Therefore, after a brief historical introduction, the environmental problems of the three zones will be examined in turn: CCZ (Section 5.2), SIZ (Section 5.3) and PRZ (Section 5.4). The examination of each zone should reveal not only the causal mechanisms of environmental degradation, but also differences in the regional or sectoral MSR. Section 5.5 will examine the inter-zonal interactions of environmental problems in order to show the seriousness of combined environmental degradation in Korea. It will also be shown that the impact of the environmental problems is unequally distributed over space and between social groups. The effects of environmental problems are more severe lower down the spatial and social hierarchies.

## **5.1 Introduction; Historical Review of Environmental Problems in Korea**

### *Colonial Exploitation of Environmental Resources*

The environmental condition of Korea before the annexation by the Japanese was very much as it had been over the previous thousand years. The agrarian economy had not changed for centuries and the urbanisation rate was very low. Little of the mountainous area had been utilised for their resources. Thus, Lee (1993) claims that Korea had retained a high biodiversity for such a small country due to the complex system of mountains and rivers (Lee K-J. 1993, pp. 53-4). The country's wilderness and ecosystems which had enjoyed thousands of years of little human disturbance, saw their first major changes with the influx of foreign influences and the annexation of the Korean peninsula as a Japanese colony.

The Japanese colonial period signalled both the transformation of the economic and social systems, and that of the environment. Due to intensive agricultural policies in conjunction with chemical fertiliser and pesticide use, the fertility of the soil began to be affected (Korea Catholic Farmers Association & Korea Anti-nuclear Anti-pollution Peace Research Institute 1990, Park, C-J. 1991). Timber and mineral resources which were exploited for industrial and military purposes laid bare much of the mountain areas. By the end of the colonial period, timber

resources were extensively depleted. For example, when the road and rail networks were extended in the 1920s, commercial timber production commenced in earnest, with deforestation rates of 2,500,000 - 2,800,000m<sup>3</sup> per year of timber during the colonial period. Thus the timber accumulation<sup>73</sup> level declined from 49 cubic metre per hectare in 1939 to 13.9 cubic metre per hectare in 1945. During their 36 years of occupation the Japanese stripped 72 percent of the forest in the peninsula (Lee K-J. 1993 pp. 48-50). The rail and road construction and the expansion of urban areas also had a profound effect on the natural environment. This decimation of forests and the construction of road and rail networks during the colonial period resulted in the disappearance of many large wild animals and many species of flora (ibid., pp. 53-4).

#### *Interim Period: War Devastation*

The ensuing Korean War, not only destroyed much of the infrastructure, industrial facilities and housing built up during the colonial period, but also had a devastating impact on the natural environment. Together with war devastation and the influx of population from the north before, during and after the war created severe housing shortages as well as putting great strain on the urban infrastructure in Seoul, Pusan and other large cities. The health risks which followed were acute, and the shortage of food brought malnutrition to many. The UN and later US aid were essential to the survival of much of the population. The natural environmental conditions during this period were as acute as the human environmental conditions. One of the severest environmental disasters of this time was deforestation. The heavy bombardment of artillery shells and the use of wood as the only cheap source of fuel had reduced already depleted forest mountains into bare earth hills. Commercial logging for timber and for firewood continued after the colonial period, reducing the timber accumulation level to 4.8m<sup>3</sup>/ha in the late 1950s. Only in the 1960s has reforestation become a national priority, with strict policies to protect trees and forests. The timber accumulation rose in 1985 to 27.5m<sup>3</sup>/ha and in 1990 to 38.4m<sup>3</sup>/ha. However the level of timber accumulation in 1990 had only reached 78 percent that of 1939 (Lee K-J. 1993, pp. 48-50).

#### *Taylorist Exploitation, Migration and Urban Environmental Problems*

In the 1960s, the economic and spatial policies which concentrated on labour intensive industrial developments in the existing large urban centres, gave rise to rapid rural-urban migration to these cities. The main environmental issues were the chronic living and working conditions of the urban working classes, ecological contamination from industrial waste, the juxtaposition of polluting industries with residential areas, and air pollution from the widespread use of anthracite coal for domestic heating (Byun 1983, pp.209-211). The sudden concentrated development of industries and influx of population caused housing shortages and consequently, growth of

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<sup>73</sup> The timber accumulation level is the volume of mature trees which can be used as timber resource per hectare.

squatter settlements in Seoul and Pusan. The problem of squatter settlement and housing shortages which started in this period, continued to be a major issue in subsequent regimes of accumulation<sup>74</sup>. The exploitation of labour was not only achieved through the lengthening of the working hour, but also through minimal conditions of safety in the workplace (see Section 5.3).

#### *Yusin Regulation, H-C Industrialisation and Industrial Pollution*

In the early 1970s, in order to alleviate economic bottlenecks, slow down population migration into Seoul and Pusan and reduce the urban and rural income gap, the state implemented a new industrial and spatial strategy. With the implementation of heavy and chemical industrialisation and the spatial decentralisation policy, environmental problems deepened and also widened spatially (Huh, Un-Do, 1993, p.18). The HCIDP started the heavy dependence on fossil fuel consumption<sup>75</sup>. It also commenced the production of large quantities of toxic wastes<sup>76</sup>. The spatial policy which centred around the 'concentrated dispersal strategy' through the construction of large industrial estates and cities in the Capital and Southeast regions enlarged the area affected by environmental degradation and at the same time concentrated the pollution effect. With much of the industrial estates lacking proper waste treatment plants and pollution mitigating facilities, the environmental impacts of industrial pollution have been serious: the decline in crop yield in adjacent farmland, river pollution and deterioration of drinking water quality (Noh, Y-H. 1993, Lee, M-H. 1992), coastal water pollution (Byun, 1983, Konghaechubang-undong-yeonhap Yeongu-wiwonhwae 1992), acid rain (Noh, Y-H. 1993) and damage to forests (Lee K-J. 1993), declining health of workers and residents (Nishini K. and Noda K. 1991, Yu 1992). The time-lagged appearance of serious pollution effects was so massive that in the late 1970s concerns for the environment became a newly emerging issue. However, the resource-poor government did very little towards the regulation of pollution and the protection of the environment. Instead, concerned only with the supply side of production, the state concentrated its efforts upon developing physical infrastructure for the more 'efficient' utilisation of environmental resources.

In conjunction with heavy and chemical industrialisation, the state launched a rural modernisation programme spearheaded by the 'green revolution' in rice production, through

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<sup>74</sup> See section 5.2.1 regarding the struggle over housing rights. The continued centralisation of capital and social and economic functions has led to one of the greatest concentrations of population, which perpetuated the housing crisis.

<sup>75</sup> With the implementation of an energy intensive and petrochemical-based higher industrial trajectory, the increased use of energy was an inevitable outcome. Even in the government's view energy was used 'inefficiently and profligately' (MoE 1991, pp.54). During the period between 1970 to 1989, there was a 4.1 fold increase in energy consumption. This raised Korea's dependence on overseas energy sources. During the same period, energy imports increased 7.2 times, thus increasing dependency from 47.5% in 1970 to 82.7% in 1989. This external dependency has also been due to changes in the composition of energy type and source, i.e. the reduction in domestic coal use, the increase in imported oil/gas use and the implementation of a nuclear energy programme (Choi, B-D. 1991a, p.29).

<sup>76</sup> See section 5.3

intensive farming with the aid of chemical inputs. Although it raised productivity and thus raised rural income in the 1970s, due to the degradation of agricultural land and changing government policy towards agricultural subsidies, the farmers ended up in a vicious cycle of agrochemical use and debt problems. The environmental impact of chemical farming can be observed in the serious health impacts upon farm workers from pesticide poisoning, in the increase in diseases and pest plagues, in water and soil pollution amounting to general destruction of natural ecosystems. Toxic residues in agricultural produce also became an issue (see section 5.4).

#### *Peripheral Fordist Regulation, Industrial Reconcentration and Regional Environmental Problems*

In order to re-adjust the inefficient industrial structure to changing world market conditions, in the early 1980s industrial restructuring was implemented, which not only raised the industrial trajectory by focusing on consumer durable and high-technology industries but also introduced a competitive MSR. Through austere economic policies and repression of labour unions and the political opposition, the state was able to put the economy back on to a rapid growth trajectory. However, this increased the tendency of capital centralisation and spatial differentiation. In addition, the demand-led supply of infrastructure intensified regional disparities and resulted in a highly uneven spatial configuration. The competitive MSR increased the externalisation of environmental costs by industrial capital. The state, which also operated under the neo-liberal market philosophy, underproduced environmental and social consumption infrastructure, thus leading eventually to the socio-environmental crisis which appeared in the late 1980s.

The government's continued investment in productive infrastructure not only produced regional inequities, but also led to environmental problems. Water resources were developed intensively. To meet rising water consumption<sup>77</sup>, huge investments were put into developing water resources. However, production fell short of demand in the late 1980s<sup>78</sup>. Hence the government plans to construct a further fourteen multi-purpose dams between 1995 and 2010 (Lee, S-D. 1992, p.711). In the development of large infrastructure, particularly relating to water resources, natural ecosystems were severely affected. On the one hand, the construction of artificial reservoirs ruined many wildlife habitats, not to mention the destruction of traditional settlements. On the other hand, reservoirs and the diversion of water to urban areas have resulted in the decline of the rivers' natural ability to absorb pollution and sustain a healthy ecosystem (Choi, B-D. 1991a, pp.28).

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<sup>77</sup> Water consumption rose from 16,880 million m<sup>3</sup> in 1980 to 29,400 million m<sup>3</sup> in 1989, a rise of 74.2% (Choi, B-D. 1992a, p.29).

<sup>78</sup> Due to a more than doubling of domestic and a tripling of industrial and 'other' water uses, there was a shortage of 1800 million m<sup>3</sup> in 1989 (where as in 1980 there was a surplus of 620 million m<sup>3</sup>. See Appendix 5, Table 4.2).

Power generation was another part of the productive infrastructure which had much environmental impact. During the 1970-89 period, many coal and oil-fired power generation plants were constructed, and electricity consumption increased 10.6 fold<sup>79</sup> (Choi, B-D. 1991a, pp.28-9). The increase in electricity consumption was not only due to extravagant consumption by newly affluent consumers, but reflects relatively low electricity prices<sup>80</sup> and the government's habitual promotion of demand-led supply management over energy efficiency (FEER, 1991, 1 August). The high consumption of electricity has increased Korea's dependence on imported fossil fuels, contributing to global environmental problems: non-renewable resource depletion and global warming. High levels of energy production and consumption also resulted in high levels of air pollution in major Korean cities. For example, air pollution due to coal and oil fired power generation has increased over 5 times between 1970s and the 1990s. Air pollution from power plants has contributed significantly to overall air pollution<sup>81</sup>. In the early 1980s, with a change in the government's energy policy, nuclear power plants were constructed and by 1989 nuclear electricity had a 50.2 percent share of total electricity generation (Choi, B-D. 1991, pp.28-9)<sup>82</sup>. The state in the 1990s is not only maintaining current nuclear plants and output, but is planning and constructing even more nuclear power plants for the future. However, the government has not announced any increase in the nuclear waste reprocessing capacity or addressed the increasing environmental problems linked with nuclear power. The increased energy consumption, production and the changes in the source of energy have had a serious environmental impact.

Increased consumption of fossil fuel in industrial, domestic, power generation and transport sector meant that throughout the 1980s sulphur dioxide (SO<sub>2</sub>) levels in Seoul, Pusan, Ulsan, and other major cities exceeded the annual environmental standard of 0.05ppm, for more than 30 percent of the year (see Figure 5.1.1 for regional distribution of SO<sub>2</sub> pollution). This prompted the government, belatedly, to enforce the use of low sulphur petroleum in industries and large urban heating plants. Although the levels of SO<sub>2</sub> declined significantly soon after this policy was implemented, they continued to rise again to above the national maximum in the major cities (Seoul, Pusan and Taegu) during the late 1980s. The levels of suspended particulates in Seoul, Incheon, Pusan, Taegu, and Ulsan also exceeded the national environmental standard maximum of 150 microgrammes per cubic metre (Noh, Y-H. 1993, pp. 4-5). Even though the levels of air

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<sup>79</sup> Although industry continued to use the bulk of electricity produced, (approximately 60% of total in 1989) domestic and service sector consumption rose quickly. The society as a whole had a tendency for over-consuming electricity (Choi, B-D. 1991a, pp.28-9).

<sup>80</sup> Low electricity prices have stoked surging demand. From 1985 to 1990, electricity prices fell almost 26 percent even though consumer prices rose 30 percent. Although The World Bank (1992) claims that Korea has been charging full market price in 1987 (p.69), since then the government has pushed utility prices down under political pressures of the Korea Electric Power Co. (Kepco) making too much money. (FEER, 1 August).

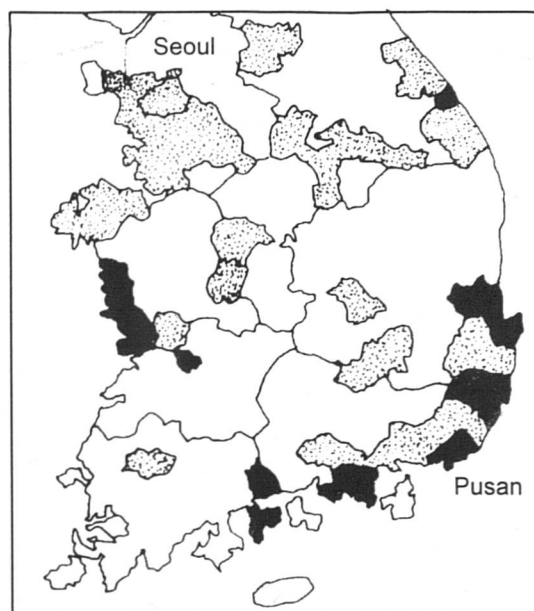
<sup>81</sup> See Table 5.3.6 in Section 5.3

<sup>82</sup> See Appendix 5 Table 3.1.



pollution in Seoul have been declining slowly in the 1990s, they are still excessive compared with the advanced industrialised countries.

Figure 5.1.1 Spatial Distribution of SO<sub>2</sub> pollution in Korea (June 1996)



Key:   
 ■ Area with SO<sub>2</sub> levels greater than 86 tonnes per sq.kilometre   
 ▒ Area with SO<sub>2</sub> levels greater than 43 tonnes per sq.kilometre   
 □ Area with SO<sub>2</sub> levels around 8.6 tonnes per sq.kilometre.

Source: Chosun Ilbo 1996, 25th July, p.35.

Due to the reconcentration of industries and population in the Capital Region in the 1980s, air pollution levels here have been higher in the industrial areas such as Suwon, Anyang, Sungnam and Bucheon than in industrial cities such as Ulsan, Masan and Changwon<sup>83</sup> in the Southeast Region (Huh, U-D, 1993, p.16). This difference can be explained by the higher concentration of population, industry and automobile ownership in the Capital Region, the distinct spatial consequences of the peripheral Fordist mode of social regulation.

<sup>83</sup> See Table 5.3.7 in section 5.3.1

Table 5.1.1 Sulphur Dioxide Levels in Major Cities (Unit: ppm)

City	1978	1980	1984	1986	1988	1989	1990	1991
Seoul	0.082	0.094	0.066	0.054	0.062	0.056	0.051	0.043
Pusan	0.048	0.058	0.050	0.042	0.044	0.047	0.039	0.038
Taegu	0.033	0.038	0.040	0.043	0.053	0.048	0.041	0.041
Kwangju	-	0.009	0.026	0.020	0.019	0.021	0.017	0.017
Ulsan	0.028	0.053	0.024	0.032	0.028	0.029	0.031	0.038

Source: MOE (1991), p.52, and Lee, S-D (1992), p.703

### *Neo-Fordist Accumulation, Megalopolisation and Regional Disparity*

During the neo-Fordist Regime, there were two distinct trends: the industrial expansion of the Capital Region into the West Coast Region and the megalopolisation of Seoul, with the concentration of mass consumption. The large industrial estate development under the Second Comprehensive National Physical Development Plan spread to the western coastal areas where land prices were lower. However, due to shallow waters, unsuited to deep water ports, large land reclamation projects in the West Coast Regions were necessary to set up huge petrochemical industrial complexes in Daesan, Ahsan, Sihwa and Daebul. Although these developments provided much needed jobs and economic growth, the construction of ports and industrial estates caused much disturbance to the coastal and marine environment, and the large outflow of untreated toxic waste polluted the air, soil, rivers and coastal waters in traditional farming and fishing areas<sup>84</sup>. The rivers and coastal waters near these industrial complexes experienced pollution levels which exceeded BOD of 100 ppm making these places into 'dead zones'<sup>85</sup> (Choi, B-D. 1991, pp.30, Huh, U-D, 1993).

As industrial development occurred in the provincial cities of the Capital and Southeast Regions, the large metropolitan cities and their suburban areas became more de-industrialised. The changing economic role of cities in the SMA, and the growth and concentration of the newly forming middle classes in these cities, especially in Seoul, has resulted in growing consumption-related environmental problems such as solid waste and sewage disposal, air pollution and traffic congestion due to spectacular increases in private car ownership. Due to the rapid rise of mass consumption and 'disposable' consumer attitudes, the increasing volume of solid waste has become a key problem for the Seoul metropolitan administration since its main disposal method was to dump waste in landfill sites. Urban solid waste produced was an average of 61,072 tonnes per day in 1986 and this increased to 83,962 tonnes per day by 1990, an increase of 7 to 9 percent per year (Noh, Y-H. 1993, p. 5). The urban and regional differences in garbage

<sup>84</sup> See Hanguk Gonghae Munjae Yeonguso (1986) *Pollution Map of Korea*, Ilweol Seogak, Seoul.

<sup>85</sup> In 1988, of 67 industrial estates, only 23 had or were serviced by waste water treatment plant, 20 had no plans to have any treatment plant built and the rest were in the planning stages of primary treatment plants.

production (see Appendix 5 Figure 5.1) is obviously related to the differences in consumption power between spatial zones. Solid waste production per person is highest in large cities like Seoul and Pusan and urban areas in the Capital Region. The urban centres have higher levels of solid waste production than the rural areas, and industrialised provinces tend to have higher levels than underdeveloped provinces. The differences in the levels of waste production demonstrates the highly differentiated levels of consumption between the three zones, and thus the waste disposal problem is particularly serious in the CCZ.

The megalopolisation of the SMA aggravated the housing problem. From the 1960s on, the competition over housing intensified and the urban poor became the victim of middle class oriented housing policies and the profiteering of property capital. The rapid increase in demand for housing has led to suburbanisation of housing development which encroached into the greenbelt areas. The continued urban expansion turned more and more green areas into concrete jungles. The network of dense urban areas in Seoul Metropolitan Area without adequate green spaces has made the urban agglomeration virtually devoid of any wildlife through high concentration of human activities and pollution. Acid rain inevitably increased, to almost 20 times higher, causing soil acidification and the death of trees and plant life (Choi, B-D. 1991a, Noh, Y-H. 1993).

With rising consumption power and recreational time of the middle classes, peripheral areas have been increasingly capitalised in the form of golf courses, ski resorts and condominiums. Not only have the beautiful mountain areas and countryside been capitalised into commodities, but there have been many side effects of such developments such as deforestation, loss of wildlife, flooding, landslides and destruction of the ecosystem from chemical pesticide run-off. These environmental problems have led to antagonism between social classes, and to urban-rural divisions.

The picture of environmental issues in Korea presented so far has demonstrated the deepening intensity and complexity of environmental problems as industrialisation progressed. This chapter attempts to study the environmental conditions and problems of each zones in order to analyse the causal mechanisms at work.

## **5.2 Environmental Problems of the Core Consumption Zone**

Although the CCZ can be represented in terms of geographical areas, these places do not have homogeneous characteristics. Instead, the CCZ may be defined by several factors: an urban centre for social reproduction with high levels of business and consumption services and a low proportion of manufacturing industries; concentration of state administrative functions; a relatively high concentration of middle and upper classes, but also low income groups and even a lumpen-proletariat to serve in the large number of low wage service and informal sector activities; a high level of consumption. It is also a locus of struggles between classes and social groups over the means and conditions of reproduction, rather than over the means of production. The CCZ has in fact been relatively small in area, and as demonstrated in Chapter 4, has been limited to Seoul. With the suburbanisation of office work and middle class housing, it has only recently spread to the Seoul Metropolitan Area encompassing Seoul and its satellite cities such as Incheon, Bucheon, Bundang, Kwacheon. Pusan, the second largest city in Korea can also be considered as a CCZ. Other regional cities such as Taegu, Daejeon and Kwangju may be seen as regional consumption centres, but these cities tend to display other characteristics more closely related to semi-peripheral zones. Thus, for the purpose of this study, the Seoul Metropolitan Area is examined to represent the environmental problems of a CCZ in Korea.

The main environmental problems of the SMA stem from the historical legacy of Seoul's role as the main engine of economic development and as the main political, cultural and administrative centre. These factors have led to the huge concentration of population and capital in the SMA, resulting in environmental problems such as deteriorating housing conditions, air and water pollution, traffic congestion and high density urban expansion. According to the Seoul Municipal Government (1990a), the top four concerns of the public in Seoul have been environmental issues: traffic, housing, urban environment and pollution (p.18). Here, these four issues will be discussed. Section 5.2.1 discusses the commodification of housing by monopoly capital, which has resulted in the eviction of the urban poor from redevelopment sites and in the continual spatial expansion of Seoul's middle class housing. Section 5.2.2 examines the environmental impacts of private consumption, and the ability of the physical infrastructure to cope with waste. Section 5.2.3 concerns the problems associated with the increasing density of transport, particularly the private car. In Section 5.2.4, the totality of the urban and natural environmental quality in the SMA is examined.

### **5.2.1 Commodification of Housing, the Urban Poor and Urban Growth**

Land and housing are the most basic and fundamental environmental needs of human reproduction. As these needs became increasingly commodified with industrialisation, the urban

population has found it increasingly difficult to secure affordable housing. The situation has been exacerbated by the huge concentration of population and the high rate of urbanisation in a handful of cities.

Housing shortages in the large urban centres have been a major problem since the Korean War, during which much of the housing stock was devastated. The rate of migration into Seoul and Pusan during the 1960s labour intensive EOI were extremely high. The competitive MSR tended to reinforce population concentration even after the end of the 1960s industrial development based in large metropolitan cities. Despite the government's efforts to disperse population from Seoul during the last 30 years, it has grown to be one of the world's largest cities with one of the highest densities and concentrations of national population (Table 5.2.1).

Table 5.2.1 International Comparison of Population Concentration in Major Cities

City	Population Concentration (%)	Density (person per sq.km)
Seoul	24.1	18,121
London	13.5	4,039
Taipei	13.4	10,001
Tokyo	9.73	5,430
Paris	3.9	20,445
New York	3.0	9,153

Source: Park, C-J. (1991), p.103, SMG (1993), p.349-391, compiled by author

Table 5.2.2 Housing Supply Ratio\* of Major Cities in Korea 1985

Place	Housing Supply (%)
Seoul	50.6
Pusan	50.9
Taegu	49.1
Incheon	67.3
Kwangju	51.8
National Average	69.8

Note: \*Housing supply ratio is the ratio of number of dwellings to number of households and official definition of households are based on registered married couples with or without dependants

Source: Park, C-J. (1991), p.112

Apart from the situation in Seoul, housing shortages have also been serious in the large urban centres such as Pusan and Taegu. This is shown clearly in Table 5.2.2. In the 1960s and 1970s, much of the female urban manufacturing workers in the Seoul Export Industrial Estate were accommodated in dormitory-style living quarters. They shared their accommodation in shifts as

in a factory line. For others, the private rental housing sector was the only alternative to living in squatter settlements. The housing supply ratio declined as the years progressed, and overcrowding in sub-standard dwellings was a great problem. About 60 percent of Seoul's population lived in rented accommodation. The shortage of rented accommodation, and high rents, led to drastic and horrifying incidents. Some resorted to suicide taking their family with them<sup>86</sup> and others moved into polythene greenhouses in the countryside because they could not afford proper housing. Many dwellings were small and had no sewerage or water supply. Although housing standards rose over the years as can be seen in Table 5.2.3, much of this improvement was in the middle and upper class housing. The gap between the income groups in the standard of housing widened in the three decades of rapid economic growth, and the difference is well illustrated in Table 5.2.4. While low-income group households lived in shared houses or tiny apartments with communal facilities, the middle classes enjoyed large, modern apartments and the upper income groups had luxury houses and villas.

Table 5.2.3 Housing Standards and Supply

Classification	1975	1980	1985	1990
Average size of dwelling (m <sup>2</sup> )	57.7	68.3	72.6	78.2
Housing Area per Capita (m <sup>2</sup> )	7.9	7.9	11.2	13.8
Standing Kitchen (°o)	-	18.2	35.1	-
Flush Toilet (°o)	-	18.4	33.6	-
Household (Thousands)	6,376	7,470	8,763	11,361
Dwellings (Thousands)	4,734	5,319	6,104	7,160
Housing Supply Ratio (°o)	74.4	71.2	69.7	63.0
(Urban)	(56.9)	(56.6)	(57.8)	-
(Rural)	(91.8)	(91.7)	(92.9)	-
Urbanisation Ratio	49.9	58.4	66.7	77.9

Source: MoE (1991), p.49

<sup>86</sup> On 10th April 1990, Sung Ok Urm, aged 30 committed suicide with four members of his family because he was unable to find alternative accommodation when his landlord told him to vacate his room (Park, C-J. 1991, p.111)

Table 5.2.4 Housing Conditions of Korean Households by Income Group (1985)

Type of Home	Families per House	Space per person	Space per family	No. of people using Toilet	Income Percentile
Lower Class	3	2m <sup>2</sup>	16.5 m <sup>2</sup>	9	1
					2
					3
Middle Class	1	6.4m <sup>2</sup>	66.0m <sup>2</sup>	5	4
					5
					6
					7
					8
Upper Class	1	12.5m <sup>2</sup>	322.7m <sup>2</sup>	1.3	9
					10

Source: cited in ACHR 1989b, p.48

Many of the migrants who came to Seoul during the 1960s and 1970s were not able to obtain jobs and were forced to live in squatter settlements - located on hilltops, swamps and along open sewer-streams (ACHR, 1989b, p.6). The rate of slum and squatter development in the 1960s and 1970s was extremely fast, affecting large areas of the city. Table 5.2.5 shows that Korea had the fastest growth of squatter settlements compared to other rapidly developing nations. More than 250 squatter areas were in existence by the mid-1970s (ACHR 1988b).

Table 5.2.5 Population in Slums and Squatter Settlements as a Percentage of Population for Selected Cities, 1970 - 1975

Country	City	Percentage of Slum and Squatter Population to City Population	Annual Growth Rate of Slum and Squatter Settlements (%)
Kenya	Nairobi	33	22.5
Mexico	Mexico City	46	12.0
Korea	Seoul	29	56.6
Tanzania	Dar-Es Salaam	50	35.7

Source: UN, Dept of Economic and Social Affairs, (1976) World Housing Survey, United Nations, p.159

The growth of squatter developments had a significant impact on the environment. In particular, the hillside developments resulted in deforestation and consequently landslides during the monsoon season. The lack of sanitation and fresh water and electricity supply posed health risks to the poor. However, the government did little to alleviate the situation, neither protecting the environment nor providing public rental housing.

In 1966, the Seoul Metropolitan Government undertook its first major squatter clearance project. The three-year project sought to clear 136,000 dwellings housing 230,000 households, while constructing 90,000 public housing units to resettle some of the displaced families. By 1970, some 50 percent of the squatter settlements had been cleared but only 16,000 units were built. The squatters were not rehoused in the new apartments. Instead they were forcibly removed to Sungnam New Town, where some received land sites but with no services. This was unpopular not only because of the lack of basic services such as water supply and sanitation, but also because of the distance from their jobs and labour markets (ACHR 1989a, p.90). Most received nothing and had to resettle in other squatter areas. As Seoul expanded, and especially with the construction of the subway-electric train system, these areas again by the late 1980s became prime real estate, and the urban poor were once again threatened with eviction (ACHR, 1989b, p.6).

In the early 1970s, the government had changed their approach due to mass demonstrations and riots in the resettled slum areas. With the new *Housing Improvement Law* in 1972, the emphasis was on clearing and redeveloping sites but with the intention of providing homeowners whose housing were demolished with apartments in the redeveloped site. A series of redevelopment projects implemented during the 1970s was responsible for reducing the number of squatter settlements in Seoul, but the intention to rehouse those displaced did not materialise, which contributed to further overcrowding. The tenants, who usually made up most of the population in the redeveloped areas were evicted with little or no compensation. The homeowners in theory received the right to an apartment on the new site but, in fact, they usually only received an offer of an apartment at a 'low price' which they could not afford. So they were forced sell their rights to these apartments to businesses or wealthier households. Between 1960 and 1980, a total of 117 square kilometres was redeveloped, around one fifth of the entire city's area (ACHR 1989a p.90-1). Between 1982 and 1988 around 250 sites were further designated as 'Redevelopment Areas', which entailed planned eviction of some 3.5 million poor people from these sites<sup>87</sup>. Of these, around 100 had been 'redeveloped' by 1988. Housing rights abuses in Korea were found to be amongst the worst in the region. Korea was listed along with South Africa, by the Berlin 1987 Habitat conference as one of the two countries in the world where evictions by force were most brutal and inhuman (ACHR, 1989b, p.1-5).

The case of Mok-dong illustrates the way these redevelopments worked. In 1964, people displaced from six eviction sites in central Seoul were forcibly moved to Mok-dong, which was at that time farmland covering some 400 hectares. In 1968, more evicted people from Yeouido redevelopment were dumped there. This continued during the 1970s, and by the early 1980s

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<sup>87</sup> The government however, have refuted the ACHR claims through excluding the tenants from their figures since the government have never recognised the rights of the tenants. Tenants are estimated to make up 60 percent of the squatter population. (ACHR, 1989b, p.5)



Mok-dong became the home for around 7,800 families - 2,600 homeowners and 5,200 tenant households evicted from other redevelopment sites. In 1984, Mok-dong was itself subject to redevelopment and 3,200 houses were destroyed. The residents were again forcibly removed from the site. Some 23,000 apartment units were built but their actual sale price was far too high for local residents. The public authorities made a profit of some US\$1,300 million by their sales to others. No compensation or help was given to the tenants. The farmers who owned land were paid one sixth of the market value for their land<sup>88</sup> (ACHR, 1989a, p.91). All this brought much condemnation.

As a result of the strong opposition by homeowners and tenants to redevelopment schemes, the state introduced a new model, the 'joint (or co-operative) development' strategy. This sought to avoid demonstrations and sit-ins. In this new programme, responsibility for redevelopment passed to the construction companies, and tried to incorporate slum homeowners in the development process, in which they received a priority status for an apartment at a low price. However, tenants were still excluded from the process even though they usually made up three-quarters of the residents of such areas. As a document produced by the Urban Poor Institute commented, the only rights the tenants had were "to move elsewhere, or resist eviction, get beaten up and then be driven out" (ACHR, 1989a, p.91). The residents actually had far less control over the process than the model suggested. Creating division between residents with false promise of cheap apartments, harassment of and threats to residents opposing redevelopment, and moving in of non-resident landowners made this process more favourable to the construction companies. Violent attacks on residents of slum and squatter settlements continued, some even resulted in deaths<sup>89</sup>.

Due to the fact that housing policies were designated to favour the middle and upper classes, redevelopment schemes did not reduce the overcrowding problem or the number of squatters or squatter settlements proportional to the number of redevelopments. Squatter settlements were pushed out from the centre of city to the suburbs and then to the outskirts of the city. The low compensation schemes to landowners<sup>90</sup> and the exclusion of tenants from any form of compensation or rehousing meant that these urban poor had no alternative but to find accommodation in other low rent areas, that is other squatter settlements. Even if they were able to manage to pay the difference between their compensation and apartment prices, there were other reasons which prevented them from staying in the redeveloped areas: the expensive

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<sup>88</sup> See for more information, Urban Poor Institute (1988), *Information Packet on the Urban Poor in Korea*, Seoul, and Catholic Institute for International Relations, (No Date Given) *Disposable People: Forced Evictions in South Korea*, CIIR, London.

<sup>89</sup> See the case of Sang-Kye Dong Redevelopment in ACHR 1989a, 1989b.

<sup>90</sup> In cases where the land was privately owned, until 1987 the landowners were paid only 10-15 percent of the land's value. Only from the beginning of 1988 were some payments close to the market value (ACHR, 1989b, p.5)

maintenance costs of new units, and the loss of job opportunities that existed near squatter areas. For these reasons most former squatter owners sold their rights to the new units and moved into other squatter settlements (Chang, S-M. 1991, p.384). The number of low income people living in slum housing did not diminish, but they were simply displaced further out from the city centre. By 1989, the population of Seoul, who still live in rented accommodation was still at 60 percent. Much of this population lived in old or slum housing areas, which no doubt would be earmarked for redevelopment in due course. The redevelopment schemes created large benefits for the construction companies and large costs for the people displaced by redevelopment (ACHR, 1989a, p.93).

The brutal way in which these redevelopment projects were pursued in the early 1980s were very much linked to the preparations for the Olympic Games of 1988. Urban redevelopment projects were used to provide the sports stadia, accommodation, hotels and other tourist facilities needed for the event as well as the government's 'rehabilitation' and 'beautification' projects which were seen as important in enhancing the image of South Korea internationally. This redevelopment programme largely focused on what the government considered 'slums' and unsightly areas which were visible from main roads or near Olympic facilities and hotels. During the spring and summer of 1988, many communities were evicted from such sites, simply because they were visible from the path along which the Olympic torch was to be carried (ACHR 1989a, p.92).

An important reason for the scale of redevelopment was the power of the large construction companies and their need to find more contracts within South Korea as their volume of work overseas decreased. During the 1970s, the rapidly growing *chaebol* conglomerates started to form huge construction companies by taking over smaller firms. They became the backbone of the *chaebols* and their mammoth business groups. They initially accumulated vast amount of capital in building medium and large-sized (27 to 55 pyeong<sup>91</sup>) apartments in Korea and in construction projects overseas. The scale of work undertaken by South Korean construction companies working overseas, largely in the Middle East had grown very rapidly during the 1960s and 1970s, and by 1981, they ranked among the world's largest contractors. The sudden decline in the construction market in the Middle East in the 1980s brought about such a slump that the firms who had placed their main emphasis on foreign projects found themselves on the brink of bankruptcy (ACHR 1989a, p.92-3, 1989b). In order to prevent the rippling effect that such a crisis could have on monopolised capital and, indeed, the whole economic system, the government rescued the insolvent companies with financial support and awarded them large contracts in the domestic construction market (ACHR 1989b, pp.53-4). The construction boom due to the Olympic Games, and subsequent economic growth, saved the large construction companies from bankruptcy. The profitability of housing redevelopment can be seen by the

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<sup>91</sup> 1 pyeong = 3.3 sq.m. or 36 sq.ft.

number of construction companies that the Hyundai group owned, numbering four in the late 1980s.

Table 5.2.6 Average Size of Housing in Korea Before and After Renewal (unit; sq.m)

	Whole Country	Sadang District (Joint Renewal Area)	Keumho District (Joint Renewal Area)
Before Renewal	75.2	49.5-56.1	69.3-82.5
After Renewal	75.2	114.5	120.5

Source: Korea Housing Study (1989) *A Study on Housing Problems in Korea*, Korea Housing Bank and MOC (1989) *A Study on Remedies of Urban Redevelopment Program*, cited in Chang, S-M. (1991), p.384

Another reason for the plight of the urban poor has been the government housing policy of prioritising the provision of housing for the middle and well-to-do classes. This is shown by the changes occurring in the size of units being built. Between 1970 and 1980 the number of units of less than 15 pyeong (50 sq.m) dropped by more than 30 percent while units between 15 and 30 pyeong increased at a rate of more than 270 percent (ACHR 1989b, pp.54-5). The construction of larger units also allowed the private construction companies to earn much greater profit because the per square metre unit selling price for units larger than 85 sq.m (26 pyeong) was 16.5 percent higher than that of smaller units (Chang, S-M. 1991, p.384). This policy allowed two goals to be attained at the same time: higher profits for property capital and meeting the demands of the hegemonic bloc<sup>92</sup>. The trend of building bigger units was also due to the dominant theory in housing, the 'housing filtration theory', which promotes the development of medium and large size units so that the middle and upper classes would move up, freeing older units for the lower income groups (Ha, S-K. 1991, 1992,). The theory has been put into doubt since the housing crisis has spread to the middle class white collar workers, who have been finding it increasingly difficult to buy apartments due to rocketing house prices and the unavailability of mortgages.

The continuous and large-scale redevelopment of existing city areas accompanied by mass evictions of their residents is a blatant consequences of the capitalist process. The seriousness of the problem in Seoul was that it happened on such a large scale and in such a short period of time. This was due to the city's rapid growth of prosperity (capital concentration) and concentration of population, and due to the absence of government policies either to support the rights of poorer households or to provide them with affordable housing (ACHR 1989a, p.93).

<sup>92</sup> As we have already stated in Chapter 2.3, this refers to those sections of the population who are not only subject to but also maintain the hegemonic ideology of the state. In the case of Korea, the middle and skilled working classes form the bulk of the hegemonic bloc, and whose issues and aspirations are seen as politically important.

State housing policy was, in short, to allow the private sector to provide the bulk of the supply, while neglecting the needs of the poor. The right to housing was not recognised and public rental housing was seen as a burden on public expenditure. Due to the growing political voice of the working classes and urban poor under the more democratic regime, the first public rental housing was built in 1990. However, even with acute shortages of rental housing the government designated less than 20 percent of the '2 million housing unit construction scheme' for public rental housing (Ha, S-K. 1992, p.254). The estimated figure of households living in one room in 1985 was 2.8 million nationally, and of those, 40 percent residing in Seoul. The number of households living in polythene greenhouses was 20,000. Those people living in sub-standard housing was also very large (ibid., p.349). The situation had not improved much by 1990 or since. Households living in one room were 2.9 million nationally, 31.5 percent of them in Seoul (Seo et al, 1993, p.340). The reduction in the number of households living in one room in Seoul was due to their displacement to outside the municipal boundaries.

One of the most basic environmental needs of human reproduction is housing, but this need has not been adequately met for the lower income groups. On the contrary, their housing has been continually eroded, particularly in Seoul, where commodification of housing under the capitalist urban development process has been most intense. The need for capital accumulation by the *chaebols*, and the need to secure the support of the growing ranks of white collar workers and skilled working classes for legitimation purposes have been the basis of Korean housing development. Alienation of the urban poor has been an inevitable consequence.

#### *Suburbanisation of Housing and the Environment*

The government's housing policy and redevelopment strategies led to the unusual urban growth of Seoul. In the 1970s and the 1980s, redevelopment projects led to the continual expulsion of squatter settlements. The redevelopment schemes followed the squatters further and further out to the Seoul's city boundary. With the implementation of new town developments in the late 1980s, the middle class housing construction also spread outside Seoul. The new towns, as part of the 2 million housing unit supply policy to relieve the chronic and acute housing crisis, were effectively dormer cities without their own self-sustaining economic base. Thus, instead of relieving urban diseconomies, particularly housing shortage and traffic congestion, the new town developments heightened population concentration and widened the traffic congestion in the surrounding areas of Seoul.

Under immense pressure to meet targets and realise high profits, the construction companies and the public housing authorities built high rise apartments in very dense layouts. In addition, the shortage of cement, time and skilled labour, meant that the apartments were built at very low quality and structural strength. The living environment of these new towns was marred not only by the high density layout and sub-standard housing, but also by the deficient public amenities

and utilities such as water supply, bus services and shops. Unfinished road works were commonplace.

The suburbanisation of housing was aided by government provision of land through relaxing zoning restrictions and actively rezoning land for housing use. This was land that had previously been considered either unsuitable for human habitation, or under conservation to protect the local ecology. Special legislation was passed to allow the construction of new towns, even in greenbelt areas. The most notable development was the Kwacheon New Town in conjunction with the government buildings relocation programme. Since the completion of Kwacheon New Town, there have been numerous new town developments within and beyond the greenbelt. Although Bundang and Ilsan new towns are just outside Seoul's greenbelt, Pyungchon, Sanbon and Joongdong are well within the greenbelt<sup>93</sup>. The new town development was implemented through the collaboration between the state agencies and the *chaebol* construction companies.

Table 5.2.7 The Abuse of Greenbelt Area by Agent

Agent Responsible	Share
Local Residents	15.5%
Central Government	84.5%
Total	100.0%

Source: Budongsan Bank, no.56, p.37, cited in Park, C-J. (1991), p.246

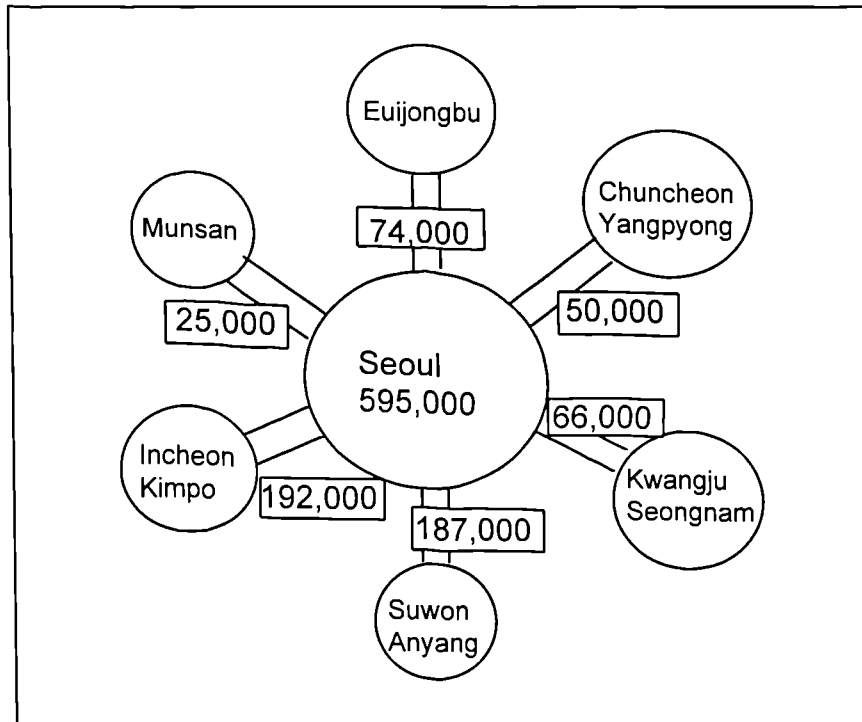
In the name of the public interest, the state has destroyed much of the natural environment in the SMA greenbelt, appropriating large amounts of public land for its own use, for military and civilian, and hegemonic projects<sup>94</sup>. Table 5.2.9 clearly shows that most of the abuse of the greenbelt area was committed by government agencies. The state has also allowed numerous leisure developments such as golf courses, ski resorts and condominiums in the greenbelts, development restricted areas and even in National Parks<sup>95</sup> (FEER, 1995, 16th Nov.). This tolerance shown to capital has not been extended to the residents in the greenbelt. Small private developments such as extensions to houses or farm buildings were met with strict application of the law. An extensive catalogue of environmental damage (forest devastation, pesticide run-off, production of sewage and solid waste and high levels of water consumption) was caused by golf courses, ski resorts and condominiums.

<sup>93</sup> See Appendix 5 Figure 2.2 for locations of new towns and their position in the greenbelt.

<sup>94</sup> See Appendix 5 Table 2.1

<sup>95</sup> Korea's largest ski and golf resort has been built in Dogyu National Park (FEER 1995, 16th Nov.).

Fig. 5.2.1 Number of cars commuting between Seoul and its satellite cities in 1990



Source: cited in Park, C-J. (1991), p.184

The environmental impact of housing and new town development has been most severe in the green field sites. The environmental disturbance from construction of new towns and new road networks meant that more land was turned into urban landscape, the countryside being divided into ever smaller segments. Seoul Metropolitan Area has become a large sprawling urban jungle. The appropriation of the natural environment and the increased noise, air and water pollution by the new residents<sup>96</sup> and automobile use caused a decline in the number of wildlife (Lee, K-J. 1993). Figure 5.2.1 shows that in 1990 there were 595,000 cars a day on the suburban highways within the Seoul Metropolitan Area: with the construction of each new town, the number of cars have increased (Park, C-J. 1991, 182-185). Thus the environmental effects have been the decline in wildlife due to disappearing habitats; an additional factor is that acid rain has become more widespread and more serious<sup>97</sup> (Lee, K-J. 1993).

<sup>96</sup> Most of the new towns did not have their sewage treatment plants or these were still under construction when they were completed. On the other hand, coal or oil fired power generation plants were built to supply electricity to the new towns (Ilsan and Bundang have new power plants). The contributed to air pollution in SMA because they used fossil fuel containing high levels of sulphur but they were not fitted with de-sulphurisation equipment. The government plans to introduce these equipment in power plants only from the year 2001 (Chosun Ilbo 1996, 25 July, p.35).

<sup>97</sup> See section 5.2.3 for damage to the environment due to acid rain.

## 5.2.2 Population Concentration, Mass Consumption and the Waste Problem

Due to changes in the dominant MSR in the late 1980s, there was a rapid increase in wages of the middle and working classes and a tendency towards the spatial reconcentration of capital and population in the Seoul Metropolitan Area. Highly concentrated private consumption activities led to a highly concentrated production of waste, an obvious urban environmental issue. The environmental problems related to mass consumption have been diverse, from resource depletion to air pollution, from water quality to solid waste disposal.

### *Energy Consumption and Air pollution*

One of the most serious environmental issues in Korea, and of course globally, has been the increasing consumption of fossil fuel and other energy sources, which contribute to global warming and air pollution. Korea, since the rapid industrialisation phase, has been using energy inefficiently and profligately in production processes, causing high levels of air pollution and copious greenhouse gases. The use of petroleum increased dramatically until 1978, but the dependence on petro-carbons has declined slightly with the implementation of the nuclear programme (MOE 1991, pp.54-6). Since the 1980s, however, with the increased consumption of electrical and electronic consumer durables, electricity consumption has increased very rapidly. As Koreans favour large and high power products such as air conditioners, fridge-freezers and washing machines, electricity has been extravagantly used in the domestic sector as well as in the industrial sector. Use of fossil fuel in power generation and domestic heating has been a major source of air pollution in urban areas.

Domestic heating has taken up a large share of overall energy consumption. As we have seen, differences in housing and living standards between income groups have been quite wide, not just in monetary terms but in life-styles. The middle classes in modern apartment blocks have enjoyed a high degree of creature comforts at relatively low cost, but the low income groups were not able to take advantage of this since infrastructure did not extend to poor neighbourhoods, or the price was prohibitive. The government subsidy system which exists for many energy sources has been the main reason for the rapid increase in domestic energy use. Table 5.2.8 shows the comparative prices of various energy sources in Korea and other countries. This demonstrates that the Korean government has been subsidising petroleum prices much more heavily than Japan or Taiwan. However, the benefits of the subsidy have been enjoyed by a minority of the population, those using petroleum-based heating systems. The middle and upper income households living in modern apartments have been able to enjoy these subsidies, while most of the lower income groups have been excluded since they could only afford to use anthracite coal. Due to the relative cheapness of heating costs, the middle classes have been able to expend liberally, rapidly increasing domestic energy consumption.

Table 5.2.8 International Comparison between Prices of Mineral Oil Categories

Type	Korea	Japan	Taiwan
Bunker-C Oil	90	139	100
Kerosene	210	472	366
Gasoline	610	915	497

Source: cited in Chung, H-J (1993), p.69

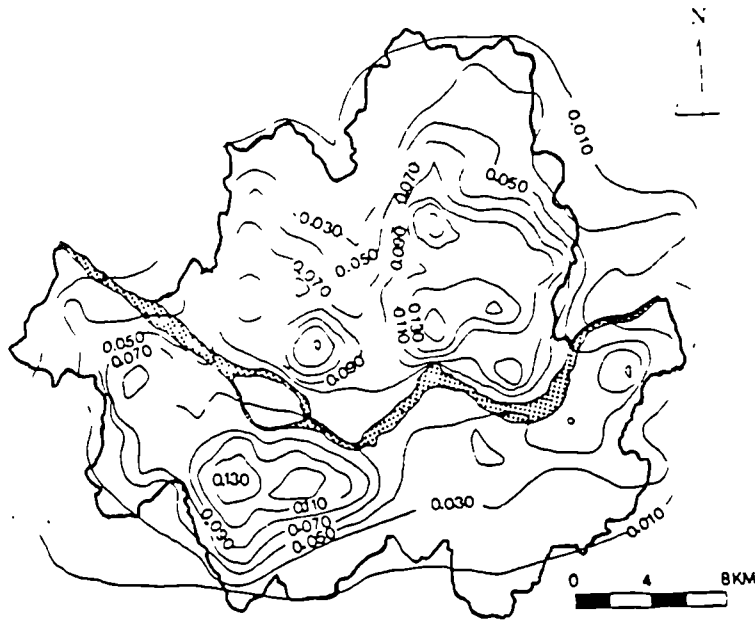
Apart from automobile exhaust, domestic heating has been the main contributor to Seoul's air pollution. Of sulphur dioxide emissions from fixed emission sources, 32 percent came from anthracite (mostly home heating and electric power plants) and 66 percent from Bunker-C type oil (mostly industries). In terms of carbon monoxide, 41 percent came from anthracite and 57 percent from gasoline consumption (OoE 1981, p.11). Seoul's average SO<sub>2</sub> pollution level declined after the implementation of the air quality policy in the 1980s, but the levels of the 1990s remained above the environmental standards. The research by Oh (1991) has shown that the levels of air pollution remained high, particularly so in localised areas in the winter months. This was due to the increased use of high sulphur content fossil fuels for heating purposes.

Oh (1991) clearly demonstrates that there has been a spatial difference in the levels of SO<sub>2</sub> within Seoul. The air pollution in southwest industrial areas such as Munrae and Kuro districts, and the areas of population concentration to the north of the Han river (such as Kilum-dong and Ssangmun-dong) showed very much higher than average. Levels recorded in these locations reached as high as 0.130ppm. Working class residential areas which used higher percentages of anthracite coal tended to have higher SO<sub>2</sub> pollution levels. Therefore, the research revealed that the high SO<sub>2</sub> concentrations corresponded to higher population density rather than the distribution of large service sector buildings (offices, hotels, shopping complexes, bath/sauna, restaurants). Thus, the spatial differences in Seoul's air pollution levels, especially in the winter months were mainly accounted for by variations in coal and oil use. The worst affected areas were mostly those of the working class and urban poor (ibid., pp.50-1). Due to the high level of sulphur dioxide released from anthracite coal briquettes and Bunker-C oil, the government promoted the use of cleaner fuel sources. However, the use of anthracite coal briquettes remained prevalent in the 1990s, particularly in poorer districts<sup>98</sup>.

<sup>98</sup> Oh, J-J. (1991) shows that even in 1989 anthracite coal was used in more than 69 percent of households in Seoul for heating purposes. The use of oil has also increased rapidly from 13.7 percent in 1986 to almost 25 percent in 1989. For cooking, the use of coal and oil has declined rapidly giving 'city gas' more than 80 percent share (see table in p.43).



Figure 5.2.2 Isopotential Graph of SO<sub>2</sub> Levels in Seoul (1990)



Source: cited in Oh, J-J. (1991), p.38<sup>99</sup>

Table 5.2.9 Changes in Average SO<sub>2</sub> Levels in Three Major Cities in Korea (unit: ppm)

Cities	Year	SO <sub>2</sub> Level	Year	SO <sub>2</sub> Level	Time of Supply of Low Sulphur Fuel
Seoul	1980	0.094	1986	0.054	July 1981
Pusan	1981	0.057	1986	0.042	July 1984
Taegu	1981	0.046	1986	0.043	July 1984

Source: MOE data compiled and cited in Lee, S-D. (1992), p.705.

Although the government's policy to enforce the use of low sulphur content oil, and the supply of LNG lowered air pollution for a short time (see Table 5.2.9), it soon continued its upward trend. There are many reasons for this. Although the increase in automobile use has been blamed, the main cause must lie with the low standard of government regulation. On the one hand, the permissible emission levels from automobile exhausts in Korea were high compared to other countries (see Table 5.2.36 in Section 5.2.3). On the other hand, the permissible levels of sulphur in various oils (Table 5.2.10) and the increases in sulphur content in anthracite coal were key factors. Table 5.2.11 shows the rising sulphur content in coal, which has contributed to a 334 percent rise in the SO<sub>2</sub> released per ton of coal from 1973 to 1990 (Park, C-J. 1991). Thus, the

<sup>99</sup> Oh, J-J. (1991) 'Air Pollution and Spatial Structure of Seoul' *Jiyeok Hwangyong*, 9,(Dec), pp.18-51. (graph origin from Yim, K-S. (1990) *Study of Spatial Distribution of Air Pollution in Seoul.* )

decline in anthracite coal use was offset by the increasing sulphur content, which actually worsened air pollution in Seoul. The government's maintenance of the relatively high sulphur content of fossil fuels was mainly due to its support for the ailing coal industry and the pressure from the oil industry, which has resisted further investments in desulphurising plant<sup>100</sup>.

Table 5.2.10 International Comparison of Permissible Levels of Sulphur in Oil (unit: %)

	Gasoline	Kerosene	light oil	Bunker oil	Bunker C
Korea	0.25	0.5	1	2	4
Japan	0.05	0.05-1	0.5	0.5	0.35
U.S.A.	0.09	0.08	0.5	-	0.3

Source: cited in Park, C-J. (1991), p.236

Table 5.2.11 Sulphur Content and SO<sub>2</sub> Emission of Coal

Year	1973	1982	1990	90/73
Sulphur Content	0.41%	0.6%	0.79%	193%
SO <sub>2</sub> Emission per ton	4.3kg	10.9kg	14.3kg	334%

Source: cited in Park, C-J. (1991), p.235

One of the environmental consequences of air pollution from domestic heating, which has been concentrated in districts with high percentages of lower income households, has been increases in respiratory illnesses. There was a higher level of illness and health complaints by school children in areas of higher pollution and corresponding low complaints in areas of low air pollution. Recorded complaints included headaches, sore throat and eyes, and high levels of lung infection (Oh, J-J. 1991, pp.50-1). Another environmental effect has been the localised greenhouse effect in Seoul, in the form of a heat island with increasing acid rain occurrence (Choi, B-D. 1991a).

#### *Solid Waste Disposal and River Pollution*

As incomes and living standards started to rise in the 1980s, waste disposal and sewage treatment became a major urban issue. It was the rise of mass consumption that changed the scale of these problems.

If we examine river pollution of the CCZ, then we can see that domestic sewage has been the major cause of pollution. The Han river which runs through the middle of Seoul, has a river basin which extends over 27 percent of the total land area of Korea, with almost half the

<sup>100</sup> Not only have the petro-chemical companies delayed the use of desulphurising equipment in the production process, but the state controlled power generation plants also have not been equipped. The government has planned to invest in desulphurising plants only in the early years of next century (Chosun Ilbo 1996, 25th July, p.35).

population. The agricultural, domestic and industrial effluents which pour into the Han river through tributaries have reduced water quality: in 1989, the sectoral contribution of contaminated materials in terms of Biological Oxygen Demand (BOD) load index were, 83 percent domestic sewage, 10 percent industrial effluent and 7 percent livestock farm wastewater. As for contamination by region, the North Han River contributed 5.2 percent, the South Han River 15.5 percent, capital suburbs 28.7 percent and Seoul area 50.6 percent, showing that nearly 80 percent of the contamination occurred within Seoul and the suburbs (SMG 1990a, pp.76-7). Although the up-river contamination was relatively small, it was an important issue in that it affected much of Seoul's drinking water (Park, C-J. 1991). The Paldang reservoir which has been the main source of Seoul's drinking water supply had been contaminated by untreated sewage from domestic, farms and leisure developments in the 7 up-stream counties. The approximately 50 golf courses also contributed to the pollution of the river tributaries with toxic pesticides and herbicides (see Section 5.4). The BOD and bacteria levels of Kyongin-cheon became worse over the years, recording 5.7 ppm in 1988. This tributary which flows into the Paldang reservoir was one of many polluting the reservoir (Park, C-J. 1991, p.240).

The river pollution problem within Seoul has arisen from both domestic and industrial sources. Although the quantities of industrial effluent were relatively small compared to those of domestic sewage<sup>101</sup>, the industrial waste which flowed directly into the rivers posed serious environmental problems since it contains high concentrations of heavy metals and other toxic substances. Even with on-site treatment facilities, industrial effluents were often discharged without treatment during the night and during rainy seasons (ibid., p.240). The industrial estates around the Yeongdungpo and Kuro districts, located in the heart of Seoul, have posed serious problems for downstream locations. The main problem of domestic sewage until the 1980s has been the disposal of human excrement, which had been collected separately and transported via tanker-trucks to treatment facilities. In the 1970s, only 71 percent of night soil collected received basic treatment, and the rest was discharged into the Han River and its tributaries (Byun 1983, SMG 1990a, pp.76-7). In the 1980s and 1990s, river pollution became worse due to the rapid increases in the use of petrochemical-based detergents<sup>102</sup>. Due to heightened competition, the

<sup>101</sup> In 1989 the total amount of waste water produced within Seoul was about 3,400,000 tons per day of which 3,320,000 tons has been sewage and 80,000 tons has been industrial waste water showing the major cause of water pollution being sewage (SMG 1990a, pp.76-7).

<sup>102</sup> Table 5.2.15 The Volume of Detergent Used per Capita per Year (unit: kg)

Year	1980	1985	1988	1990
Quantity	1.9	3.1	4.2	6

Source: Park, C-J. (1991), p.261.

domestic monopoly firms produced detergents with very toxic substances<sup>103</sup>, long since controlled in the advanced Western countries (Choi, Y. 1983, Park, C-J. 1991).

River pollution has been mainly due to the inadequate state investment into sewage collection and treatment facilities. Since the construction of the first municipal sewage treatment plant at Cheongkye-cheon in 1976 to provide primary treatment for 150,000 tonnes of effluent per day (and serving about 1.3 million people), the provision of sewerage and treatment plants seriously lagged behind the rate of population growth and economic development (MOE 1991, p.63, Byun 1983). After the late 1980s, as public concern grew over the deterioration of water quality, the government increased investment in the installation of sewage pipes and the construction of new sewage treatment plants. However, the limited implementation of the programme left much of the river exposed to continued pollution<sup>104</sup>. Although Seoul received the bulk of national investment, covering 95 percent of the population with sewerage system, over 90 percent of the city's sewerage relied on rainwater pipes. Thus the bulk of the sewage received only basic or no treatment. The national figure for sewage treatment stood at only 31 percent in 1990 (MOE 1991, p.34). Even the treated sewage remained a health hazard because the basic process was unable to kill off parasite eggs or break down chemical detergents sufficiently (Byun 1983).

Table 5.2.12 Sewage Pipe Installation 1971-89 (unit: km)

Year	Rain Pipes	Sewage Pipes	Total
1971	4,292	-	4,292
1980	16,182	332	16,514
1989	34,475	3,057	37,532

Source: MOE (1991), p.63

Table 5.2.13 Status of Sewage Treatment Plants

Year	No. of Cities with Treatment	No. of Treatment Plants	Facility Capacity (1000 tons/day)	Ratio of Sewage Pipe (%)
1981	3	4	822	18
1990	18	22	5,393	31

Source: MOE (1991), p.63

<sup>103</sup> Korean chemical companies use high toxicity substance, mainly containing phosphate salts at 10 times the concentration used in Western countries (Choi, Y. 1983, p.143-4, Park, C-J. 1991, p.261).

<sup>104</sup> In 1976, the first municipal sewage treatment plant, was constructed at Cheong-kye-cheon with a treatment capacity of 150,000 tons per day, and in 1981, 4 other treatment plants in 3 cities were operated treating 822,000 tons per day (see Appendix 5 Table 4.4). By the end of 1990, the national supply rate of sewage pipes were available to 31 percent of the population, and 18 cities had sewage treatment plants with the daily total capacity of 5,393,000 tons (MoE 1991, pp.62-3). In 1991, 38 percent of urban population were served by mains sewerage. The rest of the population's waste went straight into the river system. (for detailed figure of sewage treatment by regions, see MoE (1992), p.517-8)

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As the broken-down residues increased the level of dissolved cadmium and mercury in the water and as the raw sewage continued to be discharged straight into the river and its tributaries, the water quality of the Han river remained well below the environmental minimum. The quality of the water (measured in BOD) of the Han River at Paldang, an upstream location outside the Seoul boundary and at Kayang, a downstream location were below standard, but Kuui, an upstream point and Noryangjin, a mid stream point within Seoul were brought within environmental limits, as shown in Table 5.2.14. However, at both Noryangjin and Kayang the pollution was considered serious as there were many intakes for water supply below these points. The tributaries of the Han river within Seoul, which have been the main receptors of sewage, had BOD levels of between 40 to 140ppm, becoming a breeding grounds for malarial mosquitoes and health hazards<sup>105</sup> (SMG 1990a, 1990b). As the streams became open sewers, the Seoul Government, instead of cleaning them up, covered them with concrete to provide roads.

Table 5.2.14 Water Quality (BOD) of the Han River

Location	Environmental Limit	1982	1985	1987	1988	During Olympics
Upstream (Kuui)	less than 3	1.5	1.7	1.4	1.6	1.1
Midstream (Noryangjin)	less than 6	5.4	5.9	4.3	4.3	2.2
Downstream (Kayang)	less than 8	12.8	14.6	7.4	9.9	3.2

Source: SMG (1990a), p.78

One of the main environmental issues related to river pollution has been that of safe drinking water. In the case of Seoul, in the 1990s the City draws municipal water from six points on the Han, two above and three below the areas where large volumes of waste are discharged to the river. Water quality was adequate near the upstream intakes, but was unacceptable at crucial downstream intakes. The water quality for urban centres lower down the river like Incheon was even worse. Although water was treated, waterborne diseases continued to be a serious problem due to outdated water purification systems<sup>106</sup> (Byun, 1983, p.215, Park, C-J. 1991, p.243). The loss of public confidence in safe drinking water led to the rapid growth of the bottled water business, primarily consumed by the middle and upper classes, and leaving much of the lower classes open to health risk. The state has not taken the provision of safe drinking water seriously,

<sup>105</sup> See SMG (1990b), p.105. During the 1981-86 period, the pollution levels of the tributaries have been between BOD 40 to 120 ppm, which can be called sewers on their own right. One of the worst affected tributaries was the Cheongye-cheon, which BOD level increased from 90ppm in 1981 to over 140ppm in 1986 (p.105).

<sup>106</sup> The use of these detergents has resulted in soapy-foam interfering with water treatment processes. One of the problems which came from the outdated water purification systems and the use of high chlorination levels, resulting in high levels of harmful THM in the drinking water (Park, C-J. 1991, p.243).

leading to growing social antagonism because of the underproduction of social consumption goods.

Although, in the period after 1987 the state has been trying to rectify the river pollution problem by investing in new sewerage and treatment plants, the efforts have been conservative. Instead of aiming for a higher standard of water quality by increasing investment, environmental standards were lowered to make water quality figures more acceptable. The authorities also resorted to banning shampoo and detergent use in public and commercial places. It is clear that raising the quality of water in the river system cannot be achieved without more government investment. However, the government is less inclined to invest in social infrastructure than in productive infrastructure such as transport facilities.

In terms of solid waste, as Tables 5.2.15 and 5.2.16 show, the rate of solid waste production was especially high after 1987. This corresponds to the beginning of the neo-Fordist regime and the rapid rise in wages. The average annual rate of increase was 7 percent, and the average waste per person stood at 2.3 kg per day in urban areas and almost 3kg per day in Seoul. Of these wastes, about two thirds were coal briquette ash and waste foods, but recently, various disposable goods and plastic packages have contributed to a significant share of the total output of waste (MOE 1991, p.54). The increasing population concentration in the SMA and the increasing garbage production per person made solid waste disposal a major issue for the authorities of the SMA.

Table 5.2.15 Generation of Municipal Wastes in Korea

Year	Amount (tons)	Increase Rate (%)	Per Capita Per Day (kg)
1984	54,347	-	na
1985	57,518	5.8	na
1986	61,072	6.2	1.99
1987	67,031	9.8	2.09
1988	72,897	9.7	2.17
1989	78,021	7.0	2.22
1990	83,962	7.6	2.32

Note: na - not available. The data is an average of all urban centres above 20,000.

Source: MOE data, cited in Lee, S-D. (1992), p.713.

Table 5.2.16 Trend in the production of Garbage in Seoul

Year	1970	1975	1980	1989
Garbage (kg/person/day)	1.27	1.29	2.51	2.82

Source: cited in Park, C-J. (1991), p.252

Table 5.2.17 Garbage Volume and Disposal by Method (unit: 1000 ton/yr)

	Total	Landfill	Incineration	Recycling	Uncollected
Total	72,897 (100%)	69,248 (95.0%)	1,210 (1.7%)	1,759 (2.4)	680 (0.9%)
Seoul	28,800	28,548	252	-	-
Self Admin. City	17,141	16,223	1	725	192
Province	26,956	24,477	957	1,034	488

Note: Special City refers to Seoul, and Self-Administered City refers to Pusan, Incheon, Taegu and Daejeon.

Source: MOC, cited in Park, C-J. (1991), p.252.

The method of disposal of solid waste created serious problems for many of the local governments, particularly Seoul. As can be seen in Table 5.2.18, as late as in the early 1990s the main method of disposal was landfill sites. Despite Seoul's lack of sites, it continued to rely on this method for the bulk of its waste. Although some waste was incinerated, the unsophisticated incineration plants could not cope with domestic waste since they contained a mix of materials, liable to give off toxic fumes. Even clinical waste from hospitals was dumped in landfills. In the mid-1990s, the government tried to construct more incineration plants, but this was met by fierce resistance from local residents fearing the affects on house prices, and on environmental quality generally.

After the early 1990s, the government and environmental groups promoted recycling, segregation of waste and the polluter-pays principle, which levies a market price for disposal. Although recycling of aluminium, paper and bottles were positive outcomes, there was an increase in illegal dumping on public land of larger items such as used tyres. In 1995, in order to reduce waste at source, the state started a compulsory separation of recycling items and the devised a 'limited quantity garbage system', by issuing standard bags for domestic waste, and charging a fee for quantities above the household limit (see Chapter 6).

The state was keen to blame the high consumption behaviour of society at large for the urban environmental problems of river pollution and garbage disposal. However, the levels of waste production were not especially high if compared to the advanced industrialised countries or even other NICs. The urban environmental crisis was largely due to the subsidisation of fossil fuel, promoting profligate use of energy, in the context of the lack of investment in environmental amenities and services and low standards of regulation. Much of the river pollution could have been avoided if there had existed a comprehensive strategy for collection and treatment of sewage, and the garbage disposal problem could also have been largely solved by heavy investment in modern incineration equipment instead of resorting to landfill sites. The minimal



investment into environmental and social consumption goods stemmed from the state's desire to minimise social expenditure in order not to hinder the rapid capital accumulation process.

### **5.2.3 Mass Consumption, Automobiles and the Environment**

The rapid increase in private consumption of automobiles has not only been responsible for increased use of fossil fuel and the production of air pollution and other waste such as engine oil and used tyres, which are hard to dispose of, but has also contributed to traffic congestion, parking problems and road accidents. The need to dispose of automobiles has become a great problem since very few parts are recyclable. The broad impact of problems produced by the use and ownership of automobiles has been immense and lies at the core of the CCZ's environmental problems.

As a mode of transport, automobiles have been essential in the daily operation of urban activities, both commercial and private. The central government has promoted the use of automobiles as the main mode of transport, reflected in the promotion of the domestic automobile industry since the 1970s, when it invested a high proportion of government spending on road building as opposed to the railway system. The share of vehicular cargo and passenger transport increased dramatically. Particularly in the urban centres, since the late 1970s the automobile has been the main mode of passenger transport. Tables 5.2.18 shows the heavy dependence on automobile transport in urban areas despite the introduction of the subway system in Seoul. With the rise of working class wages and the declining export sales of cars in the late 1980s came the rapid increase in private car ownership in Korea, off-setting the export decline (Table 5.2.19). This was the main cause of the exponential growth of domestic car registration in Korea, particularly in Seoul (Figure 5.2.3) and the change in the composition of automobile by use (Figure 5.2.4). In 1970, the private car comprised only 36 percent share of total automobiles, while in 1990 the private car increased its share to 90.9 percent. The rapid increase in the total volume of automobiles and especially the private ownership and use of cars, have created many new environmental problems and contributed to existing problems. Traffic congestion, energy consumption, air pollution and acid rain, noise pollution, parking problems, road accidents and damage to local and global ecosystem cannot be blamed on mass car consumption alone. As we will see in this section, car-related environmental problems have been accentuated by factors such as inadequately funded and inappropriate road networks, high density urban development and the low standard of emission controls.

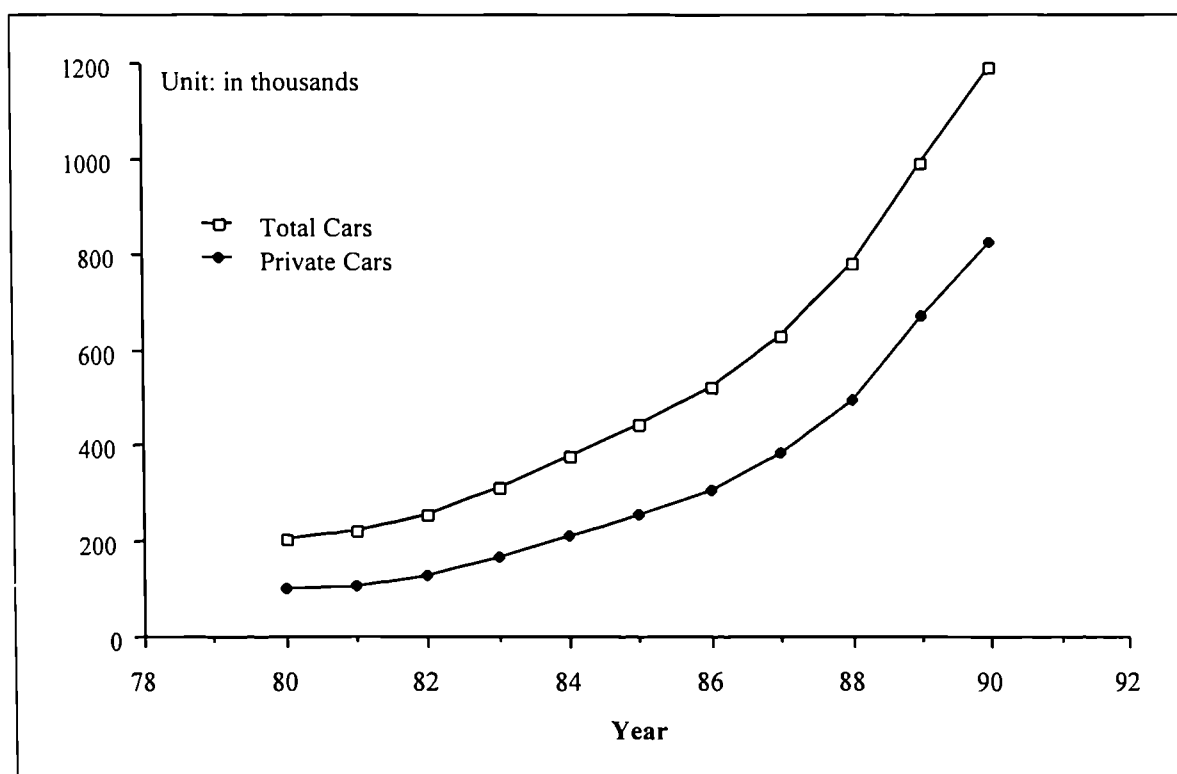
Mode of Transportation	1983	1984	1985	1986	1987	1988
Buses	64.3	63.5	58.0	56.7	54.0	50.6
Subways	10.0	10.1	14.0	15.0	15.5	16.8
Taxis	17.0	16.9	16.5	15.8	15.1	16.0
Cars & Others	8.7	9.5	11.5	12.5	15.4	16.6

Source: SMG (1990a). p.123

	1987	1988	1989	1990	1991
Export	535	564	347	240	379
Domestic	249	324	500	626	773
Total	884	888	847	866	1,152

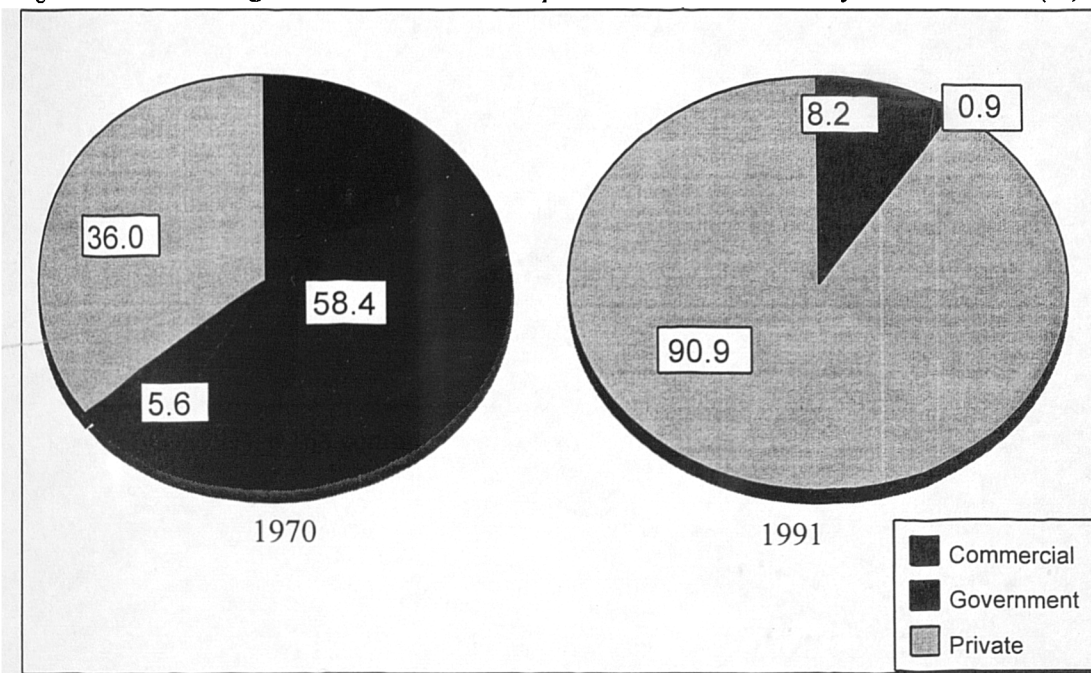
Source: cited in Lee, S-H. (1993), p.448

Figure 5.2.3 Motor Vehicle Ownership in Seoul 1978-1992



Source: National Statistical Office, *Korea Statistical Yearbook*, various years. produced by author

Figure 5.2.4 Changes in the National Composition of Automobile by User 1970-91 (%)



Source: SMG (1993), p.168 compiled by author

#### Traffic Congestion and Parking Problems

Although car ownership has increased rapidly since the mid-1980s, the number of automobiles in Seoul, where the majority were concentrated, was quite low compared to other major cities around the world. In 1990 the ratio of persons per automobile stood at 9:1<sup>107</sup>. However, traffic congestion was still said to be amongst the worst in the world, attributed to the density of vehicles in comparison to roadspace.

Table 5.2.20 Proportion of Road Space to Total Land Area in Seoul

	Road Area (Km <sup>2</sup> )	Road Length (Km)	Road Ratio (%)
1970	35,014	5,286	9.6
1975	43,107	5,786	11.5
1980	56,244	6,610	15.0
1985	62,248	6,975	16.6
1990	68,600	7,326	18.3
1970-90 Increase (%)	95%	39%	90.6%

Source: The Seoul Metropolitan Government, (1991) City Administration, and Kwon, W. Y. (1991), p.205

<sup>107</sup> Based on statistics from NSO (1993), p.37 and p.284, and SMG (1991), p.170

The state road construction strategy has been dominated by the widening of existing trunk roads rather than the construction of new ones. As Table 5.2.20 shows, the road area increased by 95 percent between 1970 and 1990, but road length only increased by 39 percent during the same period. Although the state has invested more in road construction than in almost any other public project, it still has not been able to keep up with the rapid rise in private car use (the road ratio increased by 0.53 percent per annum, while automobiles increased at a rate of almost 30 percent per annum). The main cause of traffic congestion can be attributed to the high density of business and residential areas within Seoul and the low road ratio (road area/total area) and road density (road length/km<sup>2</sup>). Seoul has one of the highest population densities in the world, but it also has one of the lowest road ratios and densities compared to other developed countries (see Tables 5.2.21 and 5.2.22).

Table 5.2.21 International Comparison of Road Ratios of Major Cities (unit; %)

City	Seoul	Tokyo	New York	Paris	London
Road Ratio	18.1	24.0	35.0	25.1	23.0

Source: Park, C-J. (1991), p.185

Table 5.2.22 International Comparison of Road Density (road length per land area)  
(unit: km/km<sup>2</sup>)

Korea	Japan	W. Germany	U.K	France	Italy	U.S.A
0.57	2.91	1.98	1.53	1.46	1.0	0.67

Note. Value for Korea is based on 1989 data  
Value for other countries are based on 1987 data

Source: Park, C-J. (1991), p.186

Table 5.2.23 Type of Road by Size in Seoul and Comparison with Tokyo

Road Type	Seoul City		Tokyo	Seoul: Tokyo Ratio
	Length (km)	Area (1000 m2)	Length (km)	Length:Length
Trunk	653 (9.2)	22,338 (35.1)	228 (1.1)	2.9:1
Secondary	507 (8.6)	7717 (15.6)	1052 (4.9)	1:2
Tertiary	5778 (82.2)	29372 (46.0)	20251 (94.0)	1:3.5
Total	6038 (100)	59427 (96.7)	21531 (100)	1:3.5

Source: cited in Park, C-J. (1991), p.187

This low road density has been made worse by the inefficient road network and hierarchy. With the government's preoccupation with primary or large roads, secondary and tertiary road development has been neglected. Table 5.2.23 shows that there are fewer secondary roads than primary roads and that there are far fewer tertiary roads compared with Tokyo. This

demonstrates the government's dependence on trunk or wide arterial roads for urban traffic flow, whereas Tokyo's traffic is largely carried by secondary or tertiary roads. This unbalanced road development has been one of the contributing factors in traffic congestion and parking problems. In Seoul, much of the tertiary road system is so limited that car traffic cannot be accommodated, let alone parking. Thus the road ratio is much lower than the official 18.1 percent indicates, and the lack of service roads for loading and unloading of passengers and goods means that congested roads have to be used. The current trunk road and 'super-block' system have become the major obstacle to efficient traffic flow (Park, C-J. 1991, p.187-8). The state strategy for urban road construction has concentrated on trunk roads and main urban arterial ways in order to facilitate general economic activities, particularly those of large businesses in the export sector. The smaller neighbourhood roads have been disregarded since improvements to these would only benefit private individuals and small businesses.

State urban development policies have been one of concentration and high density to promote economic efficiency, but in fact traffic congestion has undermined the efficiency of capital accumulation due to the rising cost of transportation. As we will see, large scale redevelopment of Seoul depends on ever higher and larger buildings. The road situation has been well over capacity for a long time, but these larger developments simply generate further problems. Intra-urban traffic between Seoul and its new towns and satellite cities has been increasing rapidly. Although local governments have implemented the use of 'traffic impact assessment' for large developments, these are at the moment very much a formality, and under such structural problems, the impact of such procedures are not adequate to address the growing congestion.

Parking problems in Seoul have become very serious, both in the down-town areas and in residential areas and the suburbs. According to the Seoul Municipal Government (1990a) parking spaces available in the central business area were, as of the end of 1988, 51,750 which was a figure about 3,500 less than the estimated need. Moreover, 80.7 percent of existing parking spaces belonged to private buildings and were often inaccessible to the public. Consequently, illegal parking was increasingly common in the central area. To relieve the parking problems in the CBD, the city government planned to build more car parks (ibid., p.124-5). However, the rate of car ownership increase has meant that car park construction programmes were being outstripped even before completion. The solution of the parking problem in the long term demanded a more concerted and co-ordinated effort such as density and height restrictions of new developments, improvement to public transport, enforcement of environmental and traffic impact assessments, road rationalisation, pedestrianisation and small street development.

The seriousness of the parking problem in residential areas is reflected in murders and suicides due to conflicts with neighbours over parking spaces<sup>108</sup>. Parking problems in residential areas arise due to the density and design layout of housing areas. Private developers have minimised road width in order to maximise the floor space of developments, and the public authorities have allowed high density developments in the interest of the construction industries' profits. Parking in the modern high rise apartment estates has fared no better. Even with parking space provision, multiple ownership has meant shortage of spaces. The entrance of many apartment blocks have been barred to keep non-resident cars from entering. The parking problems in Seoul, and indeed in most cities of Korea result from urban planning strategies on the one hand and the profiteering behaviour of the land speculators and developers on the other (Chosun Ilbo 1995, 19th Sept.). Thus, we may conclude that under the competitive mode of social regulation, parking problems in residential areas represents just another manifestation of the fragmentation of communities and of social cohesion. The competitive nature of social regulation and overall market orientation, has permeated from the productive spheres into the very basis of reproduction of civil society.

With the state-propagated ideology of modernisation and high-tech societal projection, the car has been the ultimate consumer item, an indicator of assimilation into the modern way of life. Rapid increases in consumption of automobiles was, therefore, directly linked to the hegemonic ideology. Although automobiles were increasingly seen as essential to everyday living, the association of the car and wealth has become deeply imbedded. One of the main trends in Korean car consumption patterns has been the preference for large engined, prestige cars as an exhibition of wealth and power. The phenomenon of such exhibitionism was inherent in the materialistic consumer society, and the break up of the traditional Confucian hierarchy with its agrarian roots. In a society like Korea, where there has been rapid economic growth, huge social upheaval and widespread feelings of social injustice resulting from exploitative labour relations, the flaunting of one's recently acquired wealth has been an untoward outcome.

#### *Air Pollution, Human Health and Damage to Nature*

The most serious problems associated with car use are air pollution and the impact on human health and the natural ecosystem, though air pollution in urban areas has not been entirely due to automobile exhausts. But as cleaner fossil fuel was introduced in domestic heating and industrial

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<sup>108</sup> On 3rd September 1995, a person was found to have committed suicide by hanging himself from a tree behind his house due to problems over parking in Daejo-dong, Seoul. On 18th September, a 25 year old man seriously injured his neighbours with a knife over parking disputes in Kunja-dong, Seoul. These types of parking related incidents have been most serious in multi-occupancy housing areas and high density housing areas such as Wangsip-ri, Sangdo-dong, Dapsip-ri and Bulgwang-dong, where violent crimes over parking have occurred many times. The problem lies in the inadequate parking provision by the developers and owners of these properties as well as the urban planning regulations. (Chosun Ilbo 1995, 19th September)

use, the proportion of air pollution due to automobile use rose more rapidly than in any other sector, as can be seen in Table 5.2.24.

Table 5.2.24 Emissions of Sulphur Dioxide in Seoul by Source (unit: tonnes/year, %)

Year	Source	Heating	Industry	Transport	Electricity	Total
1988	Emission	129,445	24,720	21,186	17,455	192,806
	Share %	67.1	12.8	11	9.1	100
1991	Emission	84,317	16,084	16,918	5,902	123,221
	Share %	68.4	13.1	13.7	4.8	100

Source; Park, C-J. (1991), p.235, and MOE, (1992) *Korean Environmental Yearbook 1992*, p.486, compiled by author

Table 5.2.25 Air Pollutants from Automobiles (unit: thousand tonnes)

Pollutants	1986		1987		1988		1989	
	Nation	Seoul	Nation	Seoul	Nation	Seoul	Nation	Seoul
TSP	32	7	36	8	38	9	41	10
SO <sub>2</sub>	33	7	38	8	42	9	47	11
NO	254	67	284	76	304	78	331	86
HC	70	25	78	28	78	27	83	27
CO	395	158	441	174	434	162	454	163

Source: cited in Lee, S-D. (1992), p.708.

Lead, hydrocarbons, suspended particulates (TSP) and ozone are recognised as harmful to human health, and nitrous oxides, carbon monoxide and sulphur dioxide are acid rain causing gases. Although the rate of increase in automobiles was spectacular, the actual number of automobiles in Seoul was not that high, at 9 persons per car in 1990. However, their contribution to air pollution was substantial: 57 percent of carbon monoxide, 30 percent of nitrous oxides and 41-48 percent of hydrocarbon loading were due to automobile use (Byun, 1983, p.213; Huh, U-D., 1993, p.16). Table 5.2.25 shows the large quantities of pollutant produced by automobile use, showing a rising trend, with concentrations of sulphur dioxide, suspended particulates and ozone extremely high. Table 5.2.26 shows an improvement in the general trend with the level of SO<sub>2</sub> concentration falling below the national environmental limits of 0.05 parts per million (ppm) in 1991. However, levels remained very high and would be unacceptable in countries like U.S.A, Hong Kong and Taiwan, where the environmental standards were set at 0.03 ppm; in Singapore, they stood at 0.028 ppm (Yu S-M. 1992, p.150).

Table 5.2.26 Air Pollution in Seoul 1981-1991

Year	Sulphur Dioxide (SO <sub>2</sub> )	Floating Dust (TSP)	Ozone (O <sub>3</sub> )
	Less than 0.050 ppm	Less than 150mg/m <sup>2</sup>	Less than 0.030 ppm
1981	0.09	-	-
1984	0.061	254	-
1985	0.056	200	-
1986	0.054	183	0.011
1987	0.056	174	0.010
1988	0.062	179	0.009
1989	0.06	149	0.008
1990	0.051	150	0.009
1991	0.043	121	0.012
During 1988 Olympic	0.015	63	-

Source: Seoul Municipal Government (1990), p.75; \*Yu (1992), p.150 and MOE (1992), Environmental Yearbook, p.120

Table 5.2.27 International Comparison of Number of Days over the Limit of Permissible Levels of SO<sub>2</sub> (Unit: days)

Cities	Beijing	Tehran	Seoul	Paris	New York
No. of Days	68	104	87	46	8

Note: 1. Average measurement in various places within the city between 1980-1984  
2. The WHO recommended that daily permissible level should not exceed 150microgram/m<sup>3</sup> and the permissible number of days over this level per year is 7 days

Source: cited in Yu 1992, p.149.

The seriousness of air pollution in Seoul is well demonstrated in Table 5.2.27 which shows the number of days per year over the environmental maximum standard of 150 microgramme/m<sup>3</sup>. Seoul recorded 87 days when the SO<sub>2</sub> levels exceeded the environmental standard. Only Tehran with 104 days was worse and even Beijing which recorded 68 days had a far better record than Seoul. If we take into account the World Health Organisation's recommendation that the number of days over the 150 ug/m<sup>3</sup> should not exceed seven per year, we can see the seriousness of the problem. The danger to health was also increased by other pollutants such as ozone and hydrocarbons. A particularly carcinogenic substance, benzopyrene is mainly produced by automobile exhaust fumes. Table 5.2.28 shows the levels in Seoul and the comparison with cigarette smoking. Highest concentrations were found to be in commercial and industrial areas, these having high concentrations of traffic. The average level in Seoul was found to be equivalent to smoking half a packet of cigarettes a day. Even indoor levels were found to be excessive. The seriousness of Seoul's problem is indicated by the average level being 5 times that of Tokyo (Park, C-J. 1991, p.237-8).



Table 5.2.28 Benzoperene levels in Seoul by district 1985

District	Benzoperene ( mg/ml)	Cigarette Equivalent (cigarettes/day)
Cheongjin-dong (commercial)	28,312	20.2
Karibong-dong (Industrial)	24,164	17.0
Wonhyo-ro (semi-commercial)	13,895	9.7
Dangsan-dong (semi-industrial)	9,721	6.8
Kuui-dong (residential)	9,416	6.6
Joongang University laboratory (class room)	4,384	3.1
Average in Seoul	14,972	10.5
Yong-in-gun (rural)	2,792	1.7

Source: cited in Park, C-J. (1991), p.237

Table 5.2.29 International Comparison of Permissible Automobile Emission Levels

(unit: emission in grammes per kilometre equivalent)

	Korea	U.S.A.	Japan
Hydrocarbon	2.8	0.25	0.39
Carbon Monoxide	18.0	2.1	2.7
Nitrous Oxides	2.5	0.62	0.48

Source: cited in Park, C-J. (1991), p.236.

The continued high level of pollution due to automobile use cannot be totally blamed on the increasing number of cars, but like air pollution due to domestic heating, the governmental regulations as well as high density urban development were as much to blame. Table 5.2.29 shows the high levels of permissible automobile emissions in Korea compared to the U.S.A. and Japan. The higher emission levels allowed the automobile manufacturers to cut production costs, and commercial and private users to cut maintenance levels, both allowing for greater monetary gains at the expense of the environment and society. Korea as a major exporter of automobiles to the U.S.A. could produce cars to the same high standards for the domestic market, but the low environmental standards allowed *chaebols* room to cut costs and make higher profits. Thus, the state has deliberately kept the standards low to allow greater capital accumulation.

#### *Acid rain and Damage to Nature*

Acid rain became a problem associated with industrialisation in the whole of Seoul Metropolitan Region. For example, 90.6 percent of the rain which fell during August 1985 and May 1986 (with the exception of December, January and February) was classified as acid rain (lower than pH 5.6). Of this, 17.6 percent was lower than pH 4.5, and 100 percent of rain during October and

November was considered acidic (Noh, Y-H. 1993, pp. 4-5). Table 5.2.30 shows that the acid rain problem in Seoul became worse after 1988. In a de-industrialising city such as Seoul, the rising acidity of rain was increasingly contributed by the rising number of automobiles (Choi, B-D. 1991a).

Table 5.2.30 Trend in the Average pH Level of Rain in Seoul, 1986-1990

Year	1986	1987	1988	1989	1990	Env. Standard
pH	4.9	5.2	5.0	4.7	4.8	5.6

Source: Based on SMG (1990) State of Seoul Environment, p.42,  
cited in Park, C-J. (1991), p.238

The environmental damage by acid rain and air pollution was already evident in the forests in and around Seoul, which presented an additional burden. With the increased mobility and leisure time, more and more people were visiting the 'natural' parks in and around Seoul. The increased numbers of vehicles and people in these sensitive areas had a significant effect on the fauna and flora of the parks.

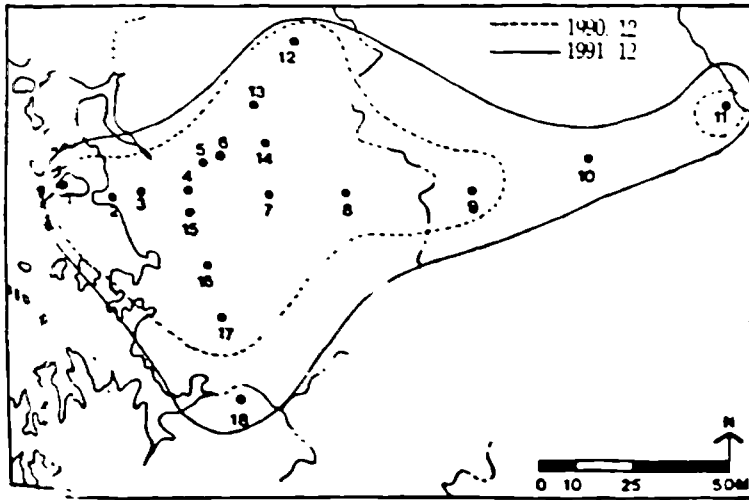
Table 5.2.31 The changing state of tree species in selected areas within Seoul (unit 500m<sup>2</sup>)

Place	Species of Tree	Year	Sub-species	Number of Trees
Secret Garden	Oak	1986	27	385
		1990	13	227
Namsan	Pine	1986	26	1,179
		1990	18	294
Mountain	Oak	1986	27	1,375
		1990	19	333

Source: cited in Lee, K-J. (1993), p.66

Table 5.2.31 shows that during the four years between 1986 and 1990 many types of dominant species (oak and pine trees) disappeared. The decline in the number of trees in Namsan mountain in the middle of Seoul in the four years was dramatic, with over 75 percent disappearing during the period. The decline in the number of trees in the 'secret garden' of Changdeok Palace was moderate due to the limiting of visitors. Much of the decline in the numbers could be attributed to pollution and acid rain. By 1992, most of the leaves on the upper level of the trees were dying or were in a very bad condition. However, governmental agencies failed to acknowledge the damage to the ecosystem by air pollution and acid rain. Thus the relatively young trees planted during the afforestation schemes implemented since 1962 were being destroyed before they could mature sufficiently to resist pollution (Lee, K-J. 1993, pp.66-8).

Fig. 5.2.6 Spatial Spread of Acid Rain Damage



Source: Lee, K-J. (1993), p.

The geographical spread of acid rain damage widened during in the 1990s in the Capital Region. Figure 5.2.6 shows the eastward and southward spread of acid rain damage. The southward spread was due to the increased industrial and population concentration in the Capital Region's industrial zone. With the absence of increased industrial activity and population settlement east of Seoul, the eastward spread of acid rain was due to the increase in automobile use along the Yeongdong Highway (Choi, B-D. 1991a, Lee, K-J. 1993).

#### 5.2.4 Quality of Urban Environment

The density, layout and design of redevelopment areas and construction of new towns have been a major contributing factor to the production of environmental problems and the low quality of the urban environment. As we have seen in this section, the high density urban development strategy intensified environmental problems through the concentration of population, economic activities and automobile use. Seoul and most cities in Korea were characterised by haphazard juxtaposition of office buildings, old or slum housing areas and the huge estates of high rise apartment buildings. with extremely wide boulevards and narrow streets within the 'superblocks'. The urban redevelopment strategy was based on the 'superblock' and gridiron road layout concept to enhance the efficiency of circulation and thus maintain the high growth rate of urban economy. However, this type of urban development strategy caused traffic congestion, parking problems, high accident rates and the degradation of urban space as the locus for social reproduction. The extremely wide roads allowed cars to take over the city. The pedestrians were reduced to second class citizens at the mercy of car users. The state urban planners and road

engineers forced the pedestrians to cross these wide roads by either subterranean footways or overhead footbridges in order not to hinder traffic flow, disregarding the needs of the less mobile people. Even in the narrow streets within the 'superblocks', the lack of division between pavement and vehicular way put the pedestrians at a disadvantage. The increase in cars, air pollution and noise by traffic made street culture almost obsolete. Myong-dong and Daehak-ro were the only part of Seoul in which partial pedestrianisation was implemented. However, the popular shopping district of Myong-dong was slowly infiltrated by traffic and the pedestrianised area became obsolete.

For non-car users, the subway was since the late 1980s the most popular mode of public transport (in Seoul and Pusan). However, the air pollution in the subway system was found to be extremely high. Table 5.2.32 showing the high levels of TSP, heavy metals and other pollutants demonstrates the seriousness of pollution in subway stations. Park (1991) shows that of the suspended particulate matters, significant levels of asbestos were found (p.238). The confined space of the subway system trapped much of the particulate matters. Until the mid-1990s very little was done to reduce the TSP levels in the subway system<sup>109</sup>. The combination of dust, asbestos particles and heavy metals makes a cocktail which could result in serious respiratory illnesses, as well as cancer.

Table 5.2.32 State of Pollution in Subway Stations in Seoul, 1990-1992

Pollutant	1990	1991	1992 (First Half)
TSP (ug/m <sup>3</sup> )	534	417	441
SO <sub>2</sub> (ppm)	0.022	0.029	0.029
NO <sub>2</sub> (ppm)	0.045	0.048	0.055
CO (ppm)	2.8	3.7	3.1
Pb (ug/m <sup>3</sup> )	0.924	0.633	0.518
Cu (ug/m <sup>3</sup> )	2.827	1.936	1.676

Note; Korean environmental standard for Daily Level of TSP is 300 microgram/m<sup>3</sup> and 150 microgram m<sup>3</sup> for average annual level.

Data from Environmental Health Research Institute, SMG.

Source: cited in Lee, S-H. (1993), p.451

As for housing developments, they were more directly linked to the profiteering behaviour of the construction industry and to the hegemonic project of the state. The state policy of providing as many housing units in the smallest land area has coincided with the profit needs of the construction and property development industry. The state allowed taller and taller apartment

<sup>109</sup> A Korean-Australian firm had contacted the state authorities to remove the asbestos in the subway stations and tunnels, but the contract was not awarded on the grounds of negligible risk to health and high costs. (Interview with the president of the firm, Mr. Choi, Bong-gil, in April 1994.)

buildings to be constructed as housing shortages increased. These housing developments were at the expense of the urban poor who were evicted without proper compensation or alternative accommodation. The high density layout of residential areas has, therefore, reduced the reproductive environment to a standardised commodity, with many environmental problems as well as destroying established communities.

Table 5.2.33 A Comparison of Urban Parkland Areas in Major Cities in the World

City	Park Area per person (m <sup>2</sup> /person)
Los Angeles	18.9
Washington	40.8
Brasilia	22.1
London	22.8
Paris	8.4
Rome	11.4
Amsterdam	18.6
Stockholm	68.3
Seoul	0.8

Source: SMG data cited in Park, C-J. (1991), p.257.

A result of this high density development policy was the low level of green open spaces within the urban core of Seoul. In Seoul, forest land declined from 31 percent (187.8 km<sup>2</sup>) in 1981 to 26.8 percent (162.4 km<sup>2</sup>) by 1988, which had a profound effect on the ecosystem (Choi, B-D. 1991a, pp.30-1, Lee, K-J. 1991). Although the government tried to ensure a minimum level of green space, there were very few public open spaces for recreational needs. In the early 1990s, the total park area in Seoul was 8,470,000m<sup>2</sup>, but three quarters was part of the Bukhan-san National Park in the outskirts of the city, where everyday usage from residential districts was difficult. In 1990 average urban park area per person in Seoul was 0.83m<sup>2</sup>, when most cities in developed nations exceeded 8.4m<sup>2</sup> (Park, C-J. 1991, p.257). However, there were an increasing number of private commercial ventures which took advantage of this shortage. Amusement and leisure parks such as the Lotte World, the Yong-in Family Farm and the Seoul Grand Park increased mass usage. Thus the provision of public recreational spaces was privatised and commodified. Even the Olympic Park, one of the largest public parks in Seoul and constructed with public money, charged an entrance fee.

Another serious urban problem has been the well publicised man-made disasters in the built environment. With the rapid economic development in Korea, and the even faster rate in Seoul, there occurred a shortfall in the supply of many commodities and intermediate input goods. The ambitious programme of urban development, particularly of housing development in the late

1980s and early 1990s to relieve the housing crisis, led to a shortage of cement and other construction materials not to mention skilled labour. The consequence was that substandard materials were used and construction was hurried, which meant that the strength of concrete structures was underdeveloped. State inspection procedures were also stretched and there were many short cuts since state officials were equally under pressure to meet government targets. This output-led development process with minimum state regulation led to disasters in the mid-1990s such as the collapse of two bridges in Seoul, the gas explosion at a subway construction site in Taegu and the collapse of Sampoong Department Store in Seoul, which claimed hundreds of lives creating fear in the minds of the public about their immediate physical environment. These hazards and disasters have not been isolated incidents. Dangerous construction practices have been inherent in the competition mode of social regulation, with its high profit orientation and monopolistic practices.

The nature of CCZ environmental problems arose from the struggle over the preconditions of reproduction and the intensification of capital accumulation processes. The dualistic role of the city as both a centre for labour reproduction and capital accumulation has been the essence of urban problems. However, this contradiction has been intensified in the case of Seoul, with its high population concentration and the lack of willingness of the state to provide adequate social consumption goods. In all cases, housing, garbage disposal, wastewater treatment and water supply, traffic related problems, building safety and urban parks, the state promotion of capital accumulation and the suppression of collective consumption needs have turned environmental problems into crises. The belated and conservative efforts of the Korean central government have been wholly inadequate to meet the consequent environmental needs.

## 5.3 Semi-Peripheral Industrial Zone: Industrial Production, Pollution and the Reproduction of Labour

### 5.3.1 Competitive Regulation, Industrial Waste and Environmental Degradation

As we have seen in Chapter 4, the rapid industrialisation process since the 1960s was accompanied by a particular spatial division of labour as well as a concentration of industrial activities in the cities in the Southeast and the Capital Region. These semi-peripheral industrial zones are not exclusively manufacturing areas, but instead should be viewed as zones which contain a network of industrial cities, with some residential and/or agricultural activities. However, these zones are predominantly industrial in character and are home to a large industrial proletariat.

The industrial cities have been mainly developed at coastal locations near major rivers, where traditional agriculture or fisheries have existed for a long time. Thus the industrial activities and the resultant pollution, not only affected the human environmental conditions of the industrial cities, but had a wider environmental impact on natural ecosystems and farmlands (Chung, 1992).

#### *Industrial waste water*

The small waterways near residential areas are often the only source of 'general use water', and these have customarily been polluted by nearby industrial areas. Industrial wastewater from heavy chemical industries, particularly harmful due to heavy metals and toxic chemicals, has polluted nearly all the major rivers near the industrial cities (Yu 1992).

Table 5.3.1 Industrial Waste Water Released Daily by River Basin (1000 tonnes/day)

River	Nakdong	Han	Kum	Ansung*	Mankyong	Yeongsan	Sabkyo*
Volume of pollutants	448	402	152	67	61	36	30

Note: \* rivers so marked are small river-tributaries near urban areas.

Source: Data published by Ministry of Environment on 28th March 1991; cited in Yu (1992), p.151

Table 5.3.1 shows the scale of pollution problems in the major river systems (1991); small rivers received 30,000 tonnes and the larger rivers received more than 400,000 tonnes of industrial wastes. Much of this was not treated even though wastewater treatment facilities were mandatory for all operating factories. Table 5.3.2 shows the volume and BOD loading from the major industrial estates. Although the volume of industrial wastewater from the steel and metallurgical production processes in Pohang and Kwangyang was the largest, the BOD loadings were

amongst the lowest, as the water was mainly used for cooling purposes. However, the chemical industrial estates such as Ulsan, Onsan, and Yecheon, released lower volumes but at much higher BOD loadings. The Taegu estate which had mainly dyeing industries, and Banwol industrial complex with light industries, also released wastewater with high concentrations of pollutants (ibid., p.153).

Table 5.3.2 Waste-water Discharge, Major Industrial Estates 1988

Industrial Estates	No. of Firms	Major Industrial Activity	Released Waste Water (Ton/day)	BOD Load (Kg/day) <sup>1</sup>
Pohang Steel Estate	26	Steel Manufacturing	3,166,432	461
Kwangyang	4	Machine, metals, non-metals	1,031,413	6
Ulsan	151	Heavy Chemical	140,171	3,420
Onsan	18	Petrochemical	79,809	6,210
Taegu Dye Estate	115	Dye Industries	59,213	1,194
Banwol	237	Light Industries	58,666	2,214
Kumi	59	Electronics and Fibre	42,426	1,101
Jeonju	47	Fibre and Food	37,604	503
Yecheon	22	Petroleum and Chemicals	27,181	1,528
Masan Export	49	Electronic Products	25,387	1,223
Sasang	447	Metals, Fibre and Chemicals	16,494	1,048

Note: 1. Amount of pollutants after waste water treatment.

Source: MoE (1989) 1988 Report of Waste-water Treatment Facility Survey; cited in Choi, B-D, (1991)

*Hanguk-eui Gongankwa Hwangyong (Space and Environment in Korea)*, Hangilsa, Seoul, p.328

Industrial wastewater was responsible for much of the river pollution and coastal water pollution and has affected all users; farming, fisheries and drinking water supply. There were many instances where polluted river water caused considerable damage to crops such as in Dalsungmyon and Hwawon-myon area, where polluted waters of Kumho river and Nakdong river were used. The BOD levels of the rivers were above 20ppm (Korea Buddhist Social Education Institute, p.68, Yu 1992, pp.151-2).

The health risk posed by industrial effluent was also very serious and even fatal for the local people (Chung, 1992, p.22). In 1984, the National Environmental Research Institute after conducting a survey of Nakdong river, revealed that mercury levels increased 700 times to 36 ppm, and chrome levels by 40 times to 120 ppm compared to 1982 levels (Lee, M-H. 1992, p.243-4). Another source reported that 16.8 percent of the residents of industrial estates and



cities were diagnosed as contaminated by heavy metals, testifying to the serious health risks for the industrial workforce by industrial toxic wastes (Yu 1992, p.152). One of the most serious cases was the case of phenol release into the Nakdong river by Doosan Electronics. In March 1991 the mid-river reservoir of the Nakdong river, supplying drinking water to Taegu and Pusan, was contaminated by chlorophenol, a very toxic and carcinogenic compound. This incident (which released 10 times (0.01ppm) the maximum level set by WHO) raised public health fears and caused a public outcry against the prevalent environmental practices of large corporations. The Doosan electronics in Kumi industrial estate had released the toxic substance when their incineration plant broke down, over a year earlier. Even after having received a 30 days suspension of manufacturing order by the environmental agency, the company secretly continued to release the substance. This provoked the public to stage a boycott of the products of Doosan and its subsidiaries (Lee, M-H. 1992, p.244).

The government's position regarding the control of water pollution had long been passive. Even after its public declaration of commitment to protect the environment in the early 1990s, its measures remained rather conservative, particularly in the regulation of industrial pollution (see Chapter 6). This is exemplified by the number of categories stipulated in testing water quality. WHO has recommended that 47 categories be tested, and even the UK authorities have established 51 items. However, Korea only included 29 items (Yu 1992, p.152). Even with this low standard, if testing procedures and pollution regulation were enforced properly the water pollution would clearly have been less severe. The externalisation of environmental costs by private capital and the lack of government will and resources to protect the environment combined to bring this situation about.

#### *Coastal Water Pollution in the SIZ*

Coastal waters have mainly been used as fishing grounds by local people, but since the rapid industrialisation period, the coastal areas near industrial complexes were used as a dumping ground for industrial pollution, seriously affecting marine ecosystems. The environmental state of coastal waters in Korea deteriorated in tandem with rising GNP. Coastal water pollution has had many causes: domestic, industrial discharges (including those nuclear energy generation), agriculture (livestock effluent, pesticide and fertiliser run off) and large coastal construction activities (suspended solids from land reclamation and other developments). The pollution from ocean activities such as waste from ships and coastal facilities, oil spillages from shipping accidents and pollutions from underwater resource development (oil exploration and artificial fisheries) have made substantial contributions to the degradation of the coastal environment.

Coastal pollution has, therefore, tended to concentrate in coastal areas with high levels of industrial and human activities. The physical and topographical conditions of coasts were also a factor for the level of pollution (Konghaechubang-undong-yeonhap Yeongu-wiwonhwa 1992).

According to the annual survey of 1990<sup>110</sup>, the coastal areas with Grade 3 and below were found near coastal industrial complexes, ports and large coastal settlements such as Sokcho, Pohang, Incheon, Banweol, Mokpo, Pusan, Masan and Ulsan. There were 53 such seriously polluted areas. Grade 2 waters tended to cover wider areas and were further out to sea without necessarily being near industrial or port facilities. These numbered 80 places. There were sixty Grade 1 water quality areas and most of the sea further out from the coast<sup>111</sup> (Konghaechubang-undong-yeonhap Yeongu-wiwonhwae 1992, p.73). Table 5.3.3 shows clearly the severity of pollution in major coastal areas and particularly near industrial and port areas. In 1990, the suspended solids (SS) in the coastal waters of Korea ranged from the lowest at 3.8 mg/l (Mukho) to the highest at 17.9 mg/l (Jeonjupo). Pollution from suspended solids (SS) was not serious and only the West Coast areas had levels exceeding Grade 1 (3 coasts, that of Banwol, Jeonjupo and Mokpo). The combination of shallow coastal waters and increased land reclamation works in the West Coast were responsible for these high SS levels. In terms of Chemical Oxygen Demand (COD), nitrate and phosphate pollution, heavily industrialised coastal areas such as Banweol, Kunsan, Ulsan, Mokpo, Pohang, Suncheon, Masan, Sokcho, Jumunjin and Okpo had the worst conditions while non-industrialised coastal areas like Seosan, Wando, Chungmu and Seokyupo had reasonably good conditions. Areas with good water circulation fared better, with superior dispersion of pollutants (Konghaechubang-undong-yeonhap Yeongu-wiwonhwae 1992).

<sup>110</sup> Coastal water quality has been monitored by the MoE at 199 points around Korea 4 times a year to determine the state of the coastal environment. (Konghaechubang-undong-yeonhap Yeongu-wiwonhwae 1992)

<sup>111</sup> The Korean coastal water quality has been categorised into 3 Grades and the table below shows the water quality standard.

Table 5.f.1 Environmental Standards for Coastal Water Quality

Category	Grade 1	Grade 2	Grade 3
COD (mg/l)	less than 1	less than 2	less than 4
pH	7.8 - 8.3	6.5 - 8.5	6.5 - 8.5
Suspended Solids (SS) (mg/l)	less than 10	less than 25	-
Nitrate compounds (mg/l)	less than 0.05	less than 0.1	less than 0.2
Phosphate (mg/l)	less than 0.007	less than 0.015	less than 0.03

Source: Konghaechubang-undong-yeonhap Yeongu-wiwonhwae (1992), p.74

See map 5-1 on p.73 in Konghaechubang-undong-yeonhap Yeongu-wiwonhwae (1992) which shows that most of the coastal industrial areas and ports have Grade 3 water quality and surrounding bays and coastal areas have grade 2. The other coastal seas are of Grade 1 standard.

Table 5.3.3 Pollution Level of Coastal Waters of Korea (1990 average. Unit: mg/l)

Coast	Coastline	COD	SS	Nitrate	Phosphate
West Coast	Incheon	1.9	8.8	0.499	0.010
	Banwol	2.7	10.1	1.217	0.011
	Ahsan	1.1	4.5	0.158	0.003
	Seosan	1.3	4.3	0.158	0.005
	Kunsan	2.5	8.3	0.130	0.017
	Jeonjupo	2.5	17.9	0.369	0.014
	Mokpo	2.4	12.0	0.312	0.028
7 coastline		2.1	9.4	0.408	0.013
South Coast	Wando	1.3	6.4	0.096	0.019
	Suncheon	1.8	9.8	0.146	0.019
	Samil	2.6	14.4	0.189	0.072
	Yeosu	2.1	8.6	0.146	0.033
	Chungmu	1.4	7.9	0.998	0.001
	Masan	4.1	7.3	1.355	0.016
	Jinhae	2.5	6.6	1.070	ND
	Okpo	1.6	6.6	1.129	ND
	Pusan	1.6	6.7	0.769	0.007
	Cheju	1.6	5.1	0.110	0.019
	Seokyupo	1.4	4.9	0.096	0.011
	Samchonpo	1.6	8.3	0.869	0.002
	Jangsungpo	1.3	5.8	0.934	ND
Average	13 coasts	1.9	7.6	0.609	0.015
East Coast	Sokcho	5.9	7.7	0.826	0.005
	Jumunjin	5.3	5.5	0.840	0.001
	Mukho	2.1	3.8	0.680	0.067
	Bukpyong	2.1	5.0	0.701	0.029
	Samcheok	1.8	4.7	0.516	0.020
	Pohang	2.0	8.6	0.967	0.030
	Onsan	1.8	5.5	1.002	0.068
	Ulsan	2.1	7.7	1.293	0.041
Average	8 coasts	2.9	6.1	0.853	0.033

Note: COD - Chemical Oxygen Demand; SS - Suspended Solids; ND - None Detected.  
 Numbers in Bold are highest average values between Coastal Regions.

Source: Konghaechubang-undong-yeonhap Yeongu-wiwonhwa (1992), p.76-9

One of the environmental consequences of high COD, nitrate and other pollution has been the epidemic growth of a 'red algae', which decimates much of the marine life and fisheries due to a

drastic lowering of oxygen level. The first appearance of *Jeokjo*, the 'red tide', was in 1963 in the bay of Jindong and until the mid-1970s the occurrence had been limited to a few inland bays for short periods of time, having little impact on marine life. However, since 1981, the *Jeokjo* has appeared over a large area stretching from Pusan to Jinhae Bay and lasting for periods of up to 2 months. The most seriously affected area was the coastal waters of Masan, which was regularly affected between April and October. From 1983, the *Jeokjo* spread to most of the South, Southeast and even West Coasts (Bays of Ulsan, Onsan, Incheon and Kwangyang and even to mouth of Kum river) (Konghaechubang-undong-yeonhap Yeongu-wiwonhwae 1992, p.90). In 1995, this epidemic of red algae in the South and Southeast Coasts caused much environmental damage (mass destruction of marine ecosystems and fisheries) causing huge financial losses<sup>112</sup> (Chosun Ilbo 1995, 22nd Sep.).

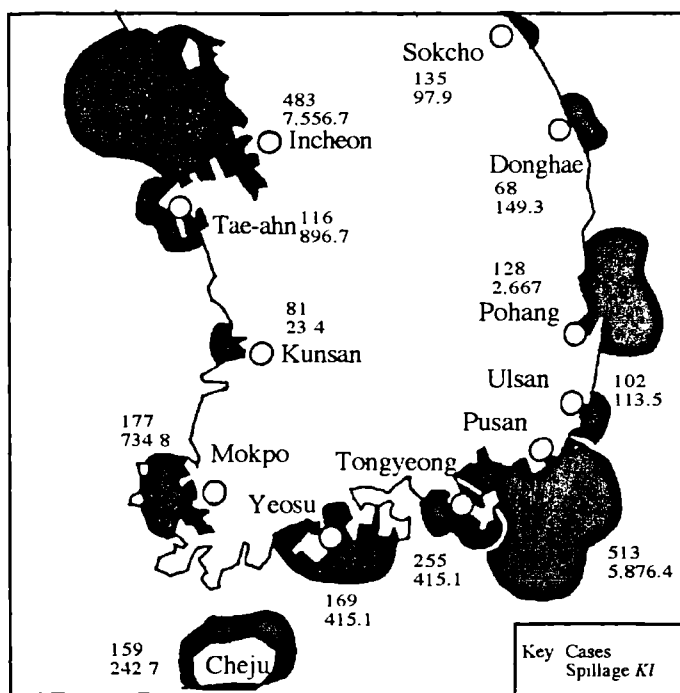
### *Environmental Pollution due to Oil Spillage*

Another source of serious coastal pollution has been oil leakages or spillages from shipping as marine transport of imports (especially petroleum) and exports increased. Although pollution from shipping occurred from everyday activities such as tank-cleaning and accidental oil leakages, there were more serious incidents such as collisions or wrecking of oil tankers. There were also deliberate leakages. Table 5.3.4 shows the increasing trend in the incidence of oil spillages by type over the 1980s. As trade increased through the years, and coastal areas became busier with shipping, the numbers of shipping accidents rose. The large quantities in 1985, 1986 and 1990 were due to accidents involving large oil tankers (see table 5.3.5). Large scale oil spillages occurred in 1987 at Ongjin, 1989 at Pohang (sinking of the *Kyongshin*), 1990 at Incheon (*Korea Hope*) and 1991 at the coast of South Choongchong Province (*Pacific Friend*), all involving large oil tankers both Korean and overseas (Konghaechubang-undong-yeonhap Yeongu-wiwonhwae 1992, p.93). In 1995, there were two serious shipping accidents (the *Sea Prince* and the *No.1 Yong-il-ho*), highlighting the dangers of transporting petroleum, and also the inadequacies of the state in tackling the cleaning up of oil slicks (Chosun Ilbo, 1995, 27-28 July and 22 Sep.). This was due to the increasing competitive market environment which forced the marine transport operators to use unseaworthy vessels, reduce costs of servicing and take risks in order to maintain the rate of profit. Externalisation behaviour in this form of pollution source is therefore evident.

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<sup>112</sup> The Jeokjo or red tide phenomenon in the summer of 1995 occurred in the South and Southeast Coasts and to a lesser degree in other ports on the West Coasts of Korea, which led to a 10 billion won damage of fisheries in South Kyongsang province alone. On 21st September, 260,000 fish died in Yecheon and Wando fisheries in South Cholla province. The cause of rapid explosion of algae had changed recently and the planktons not only cause the decline of oxygen in the sea, but also release toxins, which have been fatal for other marine creatures (Chosun Ilbo 1995, 22 Sep.).

Figure 5.3.1 Diagrammatic Illustration of Oil Spillage by Location in Korea



Source: Munwha Ilbo (1996), 26, July, p.3

Table 5.3.4 Coastal Pollution Incidents by Type of Accident

Year	No. of Pollution Incidents by Type of Accident					Total
	Carelessness in handling	Deliberate Spillage	Damaged Ship	Shipwreck	Unclear	
1986	77	47	5	24	5	158
1987	71	43	6	31	1	152
1988	88	42	6	19	3	158
1989	111	41	5	39	4	200
1990	109	68	16	47	8	248

Source: Konghaechubang-undong-yeonhap Yeongu-wiwonhwae (Research Committee for Association of Anti-Pollution Movement) (1992), p.94

Table 5.3.5 Oil Pollution From Vessels

Year	Incident	Total Discharge	Compensation for Property Damage	Clean-up Cost
	Cases	1000 litre	million won	million won
1983	248	361	6,708	2,490
1984	226	201	478	446
1985	166	2,204	5,107	587
1986	158	2,529	916	796
1987	152	482	7,877	1,294
1988	158	1,058	191	610
1989	200	368	173	374
1990	248	2,421	-	-

Source: Lee, S-D. (1992), p.716

### *Industrial air pollution*

Air pollution from industrial plants has been as serious a problem as the industrial effluents. Though SO<sub>2</sub> emission from industry declined as a proportion of total emissions, air pollution from manufacturing plants remained the greatest problem. However, this pollution was localised due to the state's industrial location policies which concentrated the problems in the main industrial areas of the Capital and Southeast Regions, and in the new industrial space of the West Coast Region.

Table 5.3.6 Emission and Share of Sulphur Dioxide in Korea by Source

Year	Source	(unit: tonnes/year, %)				Total
		Heating	Industry	Transport	Electricity	
1978*	Emission	31,000	555,000	37,000	525,000	1,101,000
	Share %	2.8	50.4	3.3	43.5	100
1990	Emission	336,481	805,605	188,907	279,967	1,610,960
	Share %	20.9	50.0	11.7	17.4	100
1991	Emission	314,742	787,216	200,452	295,370	1,597,780
	Share %	19.7	49.3	12.5	18.5	100

Source: MoE (1992), p.486, and \*data from OOE (1981) cited in Hanguk Konghae Munjae Yeonguso (1983), p.89

Table 5.3.7 Sulphur Dioxide Pollution Levels in Major Cities in Korea, by Region 1986

(unit: ppm)

Capital Region		Southeast Region		Other Regions	
City	SO2 Level	City	SO2 Level	City	SO2 Level
Seoul	0.054	Taegu	0.043	Cheongju	0.033
Incheon	0.053	Pusan	0.042	Cheonan	0.026
Ansan	0.064	Wonju	0.041	Choongju	0.024
Anyang	0.061	Kumi	0.038	Kangrung	0.021
Suwon	0.058	Ulju	0.036	Yeosu	0.021
Euijongbu	0.057	Andong	0.035		
Seongnam	0.056	Masan	0.032		
Kwang-myong	0.050	Ulsan	0.032		
Bucheon	0.055	Changwon	0.032		
Sihung	0.046	Pohang	0.031		

Note: Korean environmental standard, less than 0.05 ppm; USA, less than 0.03 ppm

Source: data from Choi, B-D. (1991b), p.330

Nineteen eighty-one showed the highest recorded level of SO<sub>2</sub> in Seoul, at 0.886ppm or 17.7 times the legal limit. Levels of 0.317ppm in Karibong-dong, and 0.247ppm in the Kuro area were also recorded in April 1991. However, sulphur dioxide pollution has been worse in the industrial cities like Ansan, Anyang, Suwon and Sungnam in the Capital Region and southeastern heavy-chemical industrial cities such as Ulsan, Ulju, Masan, Changwon and Pohang (Yu 1992, p.149). Ulsan was one of the worst affected cities imaginable: in the 1970s around 180,000 tonnes of SO<sub>2</sub> were emitted per day, and residents of Samsan and Dal-dong area (Taehan Aluminum), Yeocheon-dong (Yeongnam Chemicals), Yaum-dong area (Chosun Fertiliser) and Bugok-dong (petrochemical industrial estate) were ordered to move elsewhere due to dangerous levels of air pollution. According to a survey of the Ministry of Public Health and Social Services and the Southeast Health Institute, the SO<sub>2</sub> level of Ulsan Industrial Area in 1978 reached 2.87ppm, which in the mid-1990s remained a world record (Korean Buddhist Social Education Institute, pp.49-50, Yu 1992, pp.149-150). If compared to the notorious 'London smog' of 1952, where the SO<sub>2</sub> level was 0.3ppm, the seriousness of air pollution in the industrial estates in Korea can be easily appreciated. The Korean working classes were, therefore exposed to serious air contamination, in both living and working environments. The health implications for industrial workers from suspended particles and toxic chemical fumes were clear, though there have been few surveys of environmental conditions in the workplace (Yu 1992, p.150). As for the automobile as a cause of air pollution, Table 5.3.7 shows the Capital region's industrial cities having worse overall conditions than the Southeast region, this being

due to the combination of higher concentrations of industrial, and domestic sources with that of the automobile.

### *Impact of Air Pollution*

A study conducted from 1982 to 1992 in Ulsan's Gomsol forest adjacent to a heavy chemical industrial estate revealed the impact of new industrial cities on the surrounding natural environment. The study revealed that seriously damaged forest areas expanded from a 0.5 km radius from the industrial estate in 1982 to 1.5km in 1987, and 2.5km in 1991<sup>113</sup>. The effect on plant-life sensitive to pollution is a good measurement of the toxicity and quantity of pollution. The species of pine tree here is a common one in the coastal areas of Korea and is quite resistant to pollution. The almost total destruction of the species in this forest qualified it as an 'environmentally dead area'. The spread of American red grass was another indicator of deteriorating soil conditions. According to Lee, K-J. (1993), by 1990, it had extended only to 2.5 km from the industrial estate, to a site where a primary school was located. But in two years it had spread to the hills near Seonam-dong public housing estate almost 5 km away. The pollution from the industrial estate not only damaged soil conditions<sup>114</sup> in such areas, but also must have implications for the health of the inhabitants (pp.77-80). The acidification and fertility decline affected the agricultural production in and around the industrial cities. Table 5.3.8 below demonstrates the linkage between the number of manufacturing establishments and the decline in fruit production. The drop in yield was dramatic as the number of polluting industries increased.

Table 5.3.8 The Changes in Fruit Production in Ulsan Area, 1961-1970

Year	Area of Orchard (pyong)	Production (1,000 kg)	Production per unit Area (kg/pyong)	Percentage (%)	Number of Manufacturing Plants producing Air Pollution
1961	687,000	4,573	6.72	111.8	0
1962	685,000	4,536	6.62	106.9	0
1963	681,000	4,215	6.19	100.0	1
1964	676,000	4,150	6.14	99.2	1
1966	600,000	3,635	6.06	97.9	2
1968	565,000	2,327	4.12	66.6	5
1970	550,000	1,600	2.91	47.0	7

Note: data on Years 1965, 1967 and 1969 omitted.

Source: data based on Seoul Nat. University Medical School (1973) *Study on Pollution in Large Industrial Estate*, Seoul Nat. University, p.20. cited in Cho, J-R. (1983), p.95

<sup>113</sup> This area of severe damage has seen almost total destruction of the forest. The only trees left standing in any number were less than 1.5m tall, due to the protection of American red grass, which grows only in infertile and damaged environments. American red grass is a good indicator of soil and ecosystem damage (Lee, K-J. 1993, p.77-80).

<sup>114</sup> See appendix for soil condition in Gomsol forest in Ulsan.



### *Industrial waste and toxic waste management*

As of 1988, there were 8,015 registered firms producing industrial wastes, totalling 52,230 tonnes per day. Of this, 96.1 percent was 'ordinary' waste and 3.9 percent (2,013 tonnes/day) was classified as 'special' toxic industrial waste. Sixty-six percent of the latter was inorganic substances produced by mining industries (in comparison, Japan's main waste-producing industries are machinery and chemicals). Ashes, dust and sludge were also significant. Of the waste produced, around half was treated and disposed of by the firm itself, while the rest was subcontracted to 'specialist' waste management firms (Chung, W-S. 1992, p.21). However, the so called specialists often disposed of the waste illegally by dumping or burying it in remote hills, because they themselves lacked facilities and technical capability (Yu 1992, p.153).

Table 5.3.9 Disposal of Industrial Waste (Year: 1990)

Method	Recycled	Incinerated	Land Fill	Other Means	Stored	Total
Volume (1000 tons/year)	12,193	684	7,474	658	1,406	22,415

Source: cited in Yu (1992), p.153.

As seen in Table 5.3.9, (over a million tonnes of waste per year) waste were stored, and the part disposed was often unsafely dumped in landfills. Heavy metals such as cadmium and mercury, which are difficult to treat, were often left in and around the factories leading to health risks to workers and potential water and soil contamination. For example, approximately 1,100 tonnes of industrial waste was produced a day at Banweol and until 1992, there was no facility for properly disposing of it (Yu 1992, p.154). Considering that there were only two waste treatment and disposal firms in Korea which could handle special toxic substances, both located in the Southeast Region (near Ulsan and Onsan), the problem of toxic waste disposal in terms of treatment capacity and of management during transportation and storage was extremely serious (Chung, W-S. 1992, p.21).

### **5.3.2 Social Welfare, Working Conditions and Reproduction of Labour**

#### *Impact of industrial pollution on the working environment*

The result of cutting costs on safety gave Korea the world's highest rates of industrial accidents, with an average of 5 workers killed daily and another 390 injured in the 1980s. The country also came to lead the world in the rate of occupation illnesses, with 2.66 per 11 persons suffering from work-related illnesses and injuries, compared to 0.61 for Japan, 0.70 for Taiwan and 0.93 for Singapore (Bello and Rosenfeld 1990, p.25). Table 5.3.10 shows that injuries and deaths due to industrial accidents claimed more victims than any other type of accidents (see also Chapter 3.5). Pneumoconiosis and deafness associated with mining and heavy metals and chemical poisoning related to manufacturing industries are detailed in Table 5.3.11 (Yu 1992).

Table 5.3.10 Comparison of Injuries and Loss of Life due to Accidents in 1983

Types of Accidents	Number of Victims
Car Accidents	177,845
Fire	1,351
Industrial Accidents	317,000
Coal Gas Poisoning	172,000

Source: Maeil Kyungje Shinmun, June 11, 1985; Dong-A Ilbo, Feb 18, 1984 and Nov 8, 1984; cited in The Christian Institute for Study of Justice and Development (1985), p.115.

Table 5.3.11 Trend in Work Related Illness by Type (units: persons)

Year	pneumo- coniosis	deafness	lead poisoning	organic substance poisoning	special chemical poisoning	others	total
81	2,764	1,417	4	6	0	74	4,265
83	3,894	2,348	61	9	9	24	6,345
85	3,766	2,889	43	41	14	142	6,895

Source: cited in Nishina K. and Noda K. (1991), p.132.

### *Medical and Environmental Provisions in Industrial Cities*

The severity of water and air pollution meant that on occasions, whole districts had to be evacuated or resettled. Social welfare services and environmental amenities in the SIZ industrial cities were lower than those of large cities in the CCZ, due to mainly lower population concentrations and higher proportions of working class communities. These industrial cities served one central purpose, that is as production centres. They had very few consumption-related services or market functions. The majority of the population in these cities were employed on the plant production lines. Therefore, the state did not intervene in the provision of social and environmental services and amenities. The reproduction of the labour force was left to the market. However, due to the spatial division between the production line and the headquarter functions, private monopoly capital also neglected the (pre-)conditions for labour reproduction, and the balanced development of these cities as both production and consumption centres was undermined.

As we can see from Table 5.3.12, there are considerable differences between the CCZ cities (Seoul, Pusan, Taegu and Incheon) and SIZ cities (Anyang, Ahsan, Pohang and Changwon). In almost all the categories, the industrial cities had lower levels of social infrastructure. Together with the severe environmental pollution effects and the lower social and environmental amenities, the conditions for the reproduction of the labouring classes have been dire.

Table 5.3.12 State of Medical and Social Welfare Services in Major Cities, 1992

	Seoul	Pusan	Taegu	Incheon	Anyang	Ansan	Pohang	Chang-won
Population (1000)	10,960	3,890	2,288	2,070	540	350	320	390
Hospital	154	69	18	17	9	2	4	4
No. of Beds (per 1000) <sup>1</sup>	29,030 (2.65)	10,525 (2.70)	4,560 (1.99)	3,321 (1.60)	1,124 (2.10)	250 (0.71)	1344 (4.2)	305 (0.95)
Doctors (Persons per Doctor) <sup>2</sup>	12,518 (876)	3,231 (1200)	2,206 (1037)	1,038 (1994)	241 (2241)	144 (2431)	306 (1046)	112 (3482)
Nurses	12,523	3,568	1,943	1,395	363	142	444	149
Child Welfare Institutes	49 (5726)	26 (3780)	22 (1548)	11 (797)	3 (275)	- (-)	2 (371)	1 (81)
Institutes for the Aged	10	7	7	2	2	-	2	-
Psychiatric Institution	1	11	4	1	-	-	-	-
No. of Parks	1055	146	117	147	99	50	23	62
Area (1000 m <sup>2</sup> )	95,301	13,229	19,701	9,398	812	1,893	41	1,897

Note: 1. data in parentheses are number of beds per thousand population;

2. data in parentheses are population per doctor.

Source: SMG (1993), pp. 50-1, 88-91, 98-9

The environmental condition of the SIZ have been one of severe pollution caused by the externalisation of production costs on to the environment. The state did not intervene in the regulations of industrial practices concerning the environment as it has done in the promotion of export performance and structural adjustments in times of economic crises. It also played a minimal role in the reproduction of labour, in contrast to its active role in the suppression of labour unions. Due to the spatial separation between industrial areas and the major population centres, monopoly capital and the state were able to suppress labour demands, not only for higher wages but also for better living and working conditions. The spatial separation allowed capital and the state to externalise the social cost of labour reproduction. Under the competitive MSR which dominated Korean accumulation regimes, the private sector externalised production costs to the environment. The cost of reproduction of labour was also minimised to enhance the rate of capital accumulation.

## 5.4 Peripheral Rural Zone; Agricultural Pollution, Underdevelopment and Capitalisation of Nature

Ecological conditions in the PRZ are particularly crucial as its inhabitants to a large degree depend upon it for their livelihoods. We have already considered some of the effects of industrial pollution on the productivity of agricultural production. The environmental issues dealt with in this section concern the environmental impacts of economic activities within the countryside, such as agriculture and leisure developments.

The PRZ environment has been utilised by capital as the 'last frontier', with nature commodified within the 'production line'. And here, the rural community is trapped in the vicious cycle of chemical dependency and debt.

### 5.4.1 Toxic Earth: Pesticide use in Leisure Resorts and Agricultural Production

#### *Chemical use in agriculture and its ecological impact*

The use of artificial fertilisers and pesticides has been one of the most serious problems in the rural regions. The volume of chemical input in the production of rice and other crops increased rapidly after the Japanese colonial period.

In the post-war decades, the use of artificial fertilisers and pesticides increased even more dramatically. Between 1961 and 1964, there was a 320 percent increase in pesticide use: toxic mercury-based pesticide constituted 76 percent of the total. After 1965, with the appearance of *minamata* illness in Japan and Korea resulting from mercury-based pesticide, the use of this chemical declined. However, chlorine- and phosphate-based pesticides which are also known to be harmful to the natural ecosystem rose rapidly. Between 1961 and 1983, the average annual increase in the use of pesticide was 23.6 percent (Korea Catholic Farmers Association and Korea Anti-nuclear Pollution Peace Research Institute 1990, p.23).

However, the most rapid rise in fertiliser and pesticide use occurred during the 1970s, with the implementation of 'rural modernisation' and the rice self-sufficiency drive. The second 'green revolution' which introduced the high productivity rice, '*Tong-il*' variety, gave rise to chemical intensive farming due to its weak resistance to diseases and pests. Thus, pesticide use increased from 8,518 tonnes in 1978 to 41,449 tonnes in 1979 (*ibid.*, p.24).

Due to the change in the government's agricultural and grain price policies, the farmers had to supplement their income from rice with other crops and produce. By the 1980s, the pesticide use which had hitherto largely been limited to rice cultivation spread to other field crops such as

corn, barley and fruit. Non-rice crop application went from around 15,000 tonnes in 1978 to over 25,000 tonnes in 1983. The use of pesticides in greenhouses led to increased poisoning of farm workers (ibid., p.24). Average applications per crop were 27 for rice, 24 for apples, 17 for cucumbers, and 18 for hops (Lee, M-H. 1992, p.246). Low grain prices and the lack of young agricultural labourers forced the ageing workforce to depend on pesticides and fertilisers in order to maintain productivity (KCFA and KAAPRI 1990, p.25, Lee, M-H. 1992, Nishina, G. and Noda, K. 1991).

Pesticide use posed health risks to farm labourers which were often fatal. Although the state authorities tried to deny the existence of pesticide poisoning, the death of the Ko family in 1970 brought the issue into public view (KCFA and KAAPRI 1990, p.26, Chung and Hwang 1983, p.149). Thereafter, there were increasing numbers of deaths associated with pesticide poisoning (see Table 5.4.1). One of the most serious group poisonings occurred in 1982 in Hongseong, South Chungchong province, where 47 people died between January and July. Research conducted by the Seoul National University in 1980 revealed that 44 percent of the rural population in the nine surveyed areas were seriously affected by pesticide poisoning. Further research by a national institute in 1984 showed that 82 percent of a rural population sampled had experienced effects of pesticide poisoning at least once, and 31 percent were found to need immediate medical attention and convalescence (KCFA and KAAPRI 1990, p.26-27, Lee, M-H. 1992).

Table 5.4.1 Number of Deaths due to Pesticides Poisoning

Year	1982	1983	1984	1985	1986	1987
Persons	1,186	954	1,135	1,561	1,391	1,400

Source: Nishina, G. and Noda, K. (1991), p.143

The long term effects of exposure to pesticide are as yet unknown. However, reports of high levels of toxic pesticide residues in breast milk suggests that the the rural population is at risk from birth (Lee, M-H. 1992, Chung and Hwang 1983).

Agrochemical run-off caused soil contamination, decline in fertility and pollution of rivers and coastal waters. Agrochemicals commonly used include pesticides and herbicides such as DDT, BHC, carbamate and phenoxy which are extremely toxic to most living creatures and remain in the soil for long periods (Lee, M-H. 1992, p.246).

Korea's farmers were trapped in a cycle of chemical use to increase productivity to repay debt incurred to buy the chemicals. Debts mounted in the 1980s due to the reduction in government subsidy for the purchase of fertilisers and pesticides, and to low grain prices. The increasing volume of cheap imported American grain and beef struck another blow at the agricultural sector. Thus Korean farmers were firmly entangled in global economic forces. Even though organic and natural farm products were in high demand, very few farmers were able to switch over to organic farming due to labour shortages. With the lack of social welfare and infrastructure and the alienation of rural opinion in the formulation of rural development and rice price policies, the 1990s saw little possibility of halting rural depopulation through relief to the farming communities (ibid., p.246).

Risk to the health of consumers has also come in the form of chemical residues on agricultural produces. According to a survey by the National Health Institute in 1984 of Kyonggi, South Chungchong, North Cholla and North Kyongsang provinces, the pesticide in 11 types of fruit, vegetables and crops were three time the national permissible levels. In the case of fruit, most of the pesticide could be avoided by peeling the skin, but vegetables, even when washed, retained 40 percent of the chemical residues (Nishina and Noda 1991, pp.147-8).

#### *Chemicals and golf courses*

The use of fertilisers, pesticides and herbicides in golf courses became a major problem. Golf courses, usually located in the mountains and forests upstream of agricultural land and population centres, produce large amounts of chemical run-off. Though they posed substantial ecological problems in the PRZ, the benefits of golf courses were for a wealthy minority, quite unrelated to the rural community (Park, C-J. 1991, p.240).

Table 5.4.2 Use of Fertilisers and Pesticides on Golf Courses (Dec. 1992)

Fertiliser	golf course	per hectare		166.5 kg
		Total	Opened Opened & Under Construction	1,015.65 t 3,332.83 t
	agricultural land	per hectare	Korea 449kg USA 94kg	Japan 430kg Philippine 36kg
Pesticide	golf course	per hectare		10.83kg
		Total	opened opened & under construction	66.06t 216.78t
	agricultural land	per ha	Korea 10.9 kg Italy 13.8kg	Japan 31.9kg USA 3.1kg

Source: cited in Lee, K-J. (1993), p.88.

Table 5.4.2 shows the extent of fertiliser and pesticide use in both golf courses and agriculture. Of the fertiliser used, over 50 percent was lost in run-off, increasing the BOD of rivers (Lee, K-J. 1993, pp. 86-7). Such high concentrations of fertiliser run-off has threatened to upset the river ecosystem as well as contaminating drinking water. Although the total use of pesticide was relatively small, the pollution from this source has been serious. Highly toxic chemicals were used and these were not seen in agricultural production. Nishina and Noda (1991) show that of the 4 golf courses surveyed in Kyonggi province, high levels of organic chlorine (*Daconil*) were present in the water run-off: 0.1ppm from Kwanak C.C., 0.68ppm from Gold, 1.12ppm from Suwon and 1.4ppm from Taekwang, all flowing into the Han river. This compound is known to be lethal to wildlife and human beings. Another toxic pesticide (*Dacopol*) was also found at very high levels of up to 6.59ppm at Taekwang. A solution at 1.3ppm would kill off all riverine fish life (Nishina and Noda, 1991, pp.148-9).

#### 5.4.2 Leisure Industry, Road Construction and Nature Conservation

Apart from the pollution from pesticides, another threat to the PRZ environment has come from the rapid increase in tourism and leisure developments which also flourished alongside rapid economic growth. With the growth of the middle classes, the demand for exclusive sporting activities like golf and skiing became high. Leisure projects privatised natural environments into a means of capital accumulation, while disrupting and degrading the natural ecosystem and wildlife habitats. In conjunction with these private leisure developments, road construction by the public authorities to promote tourism and the local economy contributed to the problems.

Table 5.4.3 Loss of Forest Area in Korea, 1975-1990 (unit: 1000 ha)

Year	Total Forest Area	Yearly Decline
1975	6,635	-
1980	6,538	13.52
1985	6,531	1.33
1990	6,476	11.01

1967-1990 159,000 hectare has been lost (yearly loss of 8,000 ha)

Source: Office of Forestry (1991) Statistic of Forest Industry; cited in Lee, K-J. (1993), p.84.

The extent of the developments can be seen from the loss of forest land, where most of the leisure facilities have been located. Between 1967 and 1990, this averaged 8,000 hectares per year, and a significant part was for luxury recreational facilities like golf courses, ski resorts and condominiums. In 1991, the number of golf courses opened or under construction was 168,

estimated to rise to 300 by the end of 1995. These would take up some 25,000 hectares. The number of ski resorts in operation was 6 (1,092.6 ha) and 2 were in planning application stage. There were 65 condominiums in operation or under construction in 1992 (Lee, K-J. 1993, pp. 84-5).

Table 5.4.4 Number and Total Area of Golf Courses in Korea (July 1991)

	No. of Developments	Total Area (ha)
Opened	47	6,100
Under Construction	121	13,917
1995 Estimate	300	24,981
Maximum estimated by Korean Industrial Economic Research Inst.	840	70,000

Source: cited in Lee, K-J. (1993), p.85.

Much of Korea's countryside is mountainous, often too steep for golf courses. The construction of golf courses has involved not only the destruction of forest but also of actual mountains. The destruction of some 300,000 *pyong* for a 18-hole golf course means that 300 to 700 species of plants, hundreds of species of insects, birds, animals and reptiles and micro-organisms would lose their habitat. The sole use of imported bent grass for the majority of playing surfaces has made golf courses devoid of much of their native wildlife. In addition, the use of bent grass which needs well draining soil has meant both rapid run-off and high levels of watering. May is a month with little rain, and the golf courses using sprinklers monopolise scarce local water resources. During the monsoon season (June to September), the rainfall is drained to cause flooding in the rice paddies and other agricultural lands lower down the valley. As mentioned earlier, the run-off containing pesticides and fertilisers have caused a major environmental problem (Lee, K-J. 1993, pp. 86-7).

Table 5.4.5 Condominium Developments in Korea (Jan. 1992)

	No. of Development	No. of Rooms	Total Area of Development (ha)
Opening	24	6,918	66.88
Under Construction	41	9,902	95.74
Total	65	16,820	161.62
Developments in Tosungmyon	11	3,591	72.10

Note: Tosung-myon is a rural district in Kosung-gun, Kangwon Province.

Source: cited in Lee, K-J. (1993), p.86



The increase in leisure activities and tourism had both positive and negative impacts on the local economy as well as on the environment. A positive outcome of the influx of tourism has been much needed employment opportunities for the rural population (albeit low paid casual or seasonal jobs). The negative impacts have included the erosion of local communities, the environmental damage and the congestion caused by tourists and holiday makers in the vacation season. The construction of new roads and the widening of existing ones have created their own problems.

### *Conservation of nature and National Park management*

National parks were first established in 1968. By 1996, there were 66 nature parks at national, provincial and county levels, covering 4.7 percent of the national land area. They were divided into four main land-use zones: nature preservation zones, natural environment zones, settlement zones and collective facility zones, which have differing degrees of land use controls. During the 25 year history of national parks in Korea, the recreational function was put before conservation. This was due to two main reasons. Firstly, parks were regarded as a means of local economic development through the promotion of tourism. Secondly, they were underfunded and the authorities had to rely on revenue raised through granting commercial licences and charging entrance fees. The promotion of tourism through road building and commercialisation of national parks resulted in the rapid deterioration of environmental conditions in these environmentally sensitive areas (Lee, K-J. 1993, p.88-92).

For example, in 1988 as the road between Cheon-un sa (a Buddhist temple) and Banseon in Jirisan National Park was widened and paved, visitor numbers increased from 50,000 in 1987 (Cheon-un sa) to more than 463,000 in 1990. In order to accommodate the corresponding increases in the number of cars and coaches, a large car park was built at 1,100m altitude which necessitated the levelling of a part of the mountain area. The number of visitors using the footpath and steps to the summit rose from 37,800 in 1987 to 263,700 in 1990. The dramatic increase in the number of visitors resulted in the devastation of plant life near the footpaths. In 1991, this area was totally closed for a period of 3 years (ibid., p.100-1).

Visitors to national parks increased steadily over the years and the damage to the plants and wildlife habitats was substantial<sup>115</sup>. The number of visitors to Mt. Halla National Park in Cheju Island was estimated to be 400,000 in 1990, with over 100,000 ascending the local peak, Baekrok-dam. By 1990, the total damaged area amounted to about 18 hectares. It has been estimated that the cost of restoration would be in the region of 30 billion won. Furthermore, the damage

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<sup>115</sup> See Kim, J-W. (1994) for more details of visitors to National Parks. In 1992, the highest concentration of visitors per sq. km was found in Bukhan-san NP in Seoul (average of 99,000 person per km<sup>2</sup>), Naejang-san NP in South Cholla Province (17,000 persons/km<sup>2</sup>) and Gearyong-san NP in South Chungchong Province (31,000 persons/km<sup>2</sup>).

from camping activities was also severe. The lack of good management resulted in reducing the campsites and their surroundings to a 'vegetation free zone'. Lee (1993) shows from his research on three national park campsites that most of the campsite damage was in the 3-5 Grade category, meaning almost complete vegetation destruction. In one case, over 90 percent of the campsite area was categorised as Grade 5, the worst possible situation (soil erosion and dying old or mature trees). The level of human concentration in national parks during the peak season (June to August) had negative effects on the mating behaviour of wild birds, causing a significant reduction in the number of rare birds and threatening the survival of certain species (ibid., p.103-4).

### 5.4.3 Social Infrastructure, and Rural Living Environment

In the Japanese colonial period, the agricultural workforce, mainly the tenant farmers were particularly downtrodden. The postwar period saw land reform, which redistributed land among the rural population. But instead of bringing wealth to the new owner-farmers, cultivation on small parcels of land was at subsistence level. Export-oriented industrialisation was achieved at the expense of the agricultural workers and the rural economy. Rural modernisation in the 1970s which aimed at raising productivity to stabilise domestic food prices, and at self-sufficiency in order to obviate grain imports, achieved little in raising the level of social and environmental amenities and services. The rural areas had very low levels of basic infrastructure such as sewage treatment facilities, hospitals and medical staff, cultural amenities and communications. Table 5.4.6 and 5.4.7 shows clearly that by the 1980s, rural areas had lower levels of social infrastructure than both the large cities (CCZ) and the small and medium cities (SIZ). The lack of higher educational facilities in rural areas has led to the migration of many to urban areas. Due to de-population and declining numbers of pupils, the schools were closed down. The cycle of underdevelopment and de-population has been spiralling at an ever greater rate.

Table 5.4.6 Selected Indices, Urban and Rural Living Conditions, 1984

	Percentage of Coverage				Telephones per 100 persons
	Paved Roads	Medical Insurance	Piped Water	Sewage Treatment	
Nation	46.3	42.0	64.0	8.0	13.8
Large Cities	68.1	62.2	94.1	17.5	19.0
Small and Medium Cities	59.2	47.8	80.1	0.7	14.3
Rural	15.4	21.0	19.2	0.0	7.2

Source: Kwon, W-Y. (1988a), p.60.

Table 5.4.7 Urban/Rural Disparities in Medical Service Provision 1985

	Total	Large Cities*	Other Cities	Rural Areas
No. of Doctors	26,019	19,447	4,733	1,837
Share of Total (%)	100.0	65.4	24.9	9.7
Share of Total <sup>1</sup> (%)	100.0	65.4	29.5	5.1
No. of People per Doctor	2,039	1,310	2,022	7,914
No. of Medical Institutions	14,368	8,670	3,666	2,032
Share of Total (‰)	100.0	60.3	25.5	14.1
Share of Total <sup>2</sup> (‰)	100.0	49.4	35.4	15.1
No. of People per Institution	2,814	1,880	2,610	7,163

Note: \* Seoul, Pusan, Taegu and Incheon.

1. Specialist only.

2. Hospital (including general hospitals) only.

Source: Ministry of Health and Social Affairs; Kwon, W-Y. (1988a), p.77.

The PRZ environment has been both intensively and extensively utilised for the production of agricultural goods and for leisure and recreational developments. Although the agricultural sector has not been infiltrated by large business due to land tenure laws, it has been integrated into the overall accumulation regime via the agrochemical sector. The heavy dependence on agrochemicals in agricultural production supported the rapid development of the Korean chemical industries in the 1960s and 1970s. However, the agricultural sector has not been incorporated into the accumulation system, and the rural population has been alienated from the economic growth and social development processes (KCFA and KAAPRI 1990, p.24).

The government intervention in the PRZ has been mainly to assist the development of tourism as the main strategy to help the economy of the rural areas as well as promoting capitalisation of the countryside by monopoly capital. The social services and infrastructure of the PRZ have been largely neglected, with the exception of the road building programme in tourist areas. It is no wonder that the rural population has been rapidly declining, adding to labour shortages in the agricultural sector as well as increasing urban housing problems, where most migrants end up. The alienation of the rural population and the invasion of leisure developments and tourists have raised resentment towards the state and increased social and regional tensions. Environmental degradation and the lagging social development in the PRZ have come to threaten the reproduction of the rural economy, community and the overall environment.

## 5.5 Conclusion

The historical review of environmental issues in the first part of this chapter showed the conjunctural development of environmental problems and the rapid EOI mode of development in Korea. The environmental problems since the Japanese occupation have worsened with the heightening of accumulation regimes and the intensification of modes of social regulation. In the Japanese colonial period, environmental problems were associated with primary resource depletion such as timber and minerals. In the post-war period of rapid export-oriented economic development, environmental problems ranged from squatter settlements, sanitation problems and traffic-related issues in the urban areas to chemical poisoning and lack of social and environmental amenities in the industrial and rural areas. The changes in industrial trajectory and economic structure have increased the complexity of environmental problems, and the spatial differentiation of industries has widened and differentiated the environmental problems in Korea. The differences in the political economic structure over space have created particular mechanisms of environmental degradation. Urban consumption centres such as the Seoul Metropolitan Area have had as many serious environmental problems as the industrial and rural zones, but the character of the problems have been quite different.

The CCZ's socio-environmental problems represent a struggle over the preconditions of reproduction of civil society. The high consumption demand created by a high concentration of the wealthy middle and upper classes have been the main cause of urban environmental problems, which have disproportionately affected the politically and economically powerless urban poor. In particular, the conditions of reproduction of the urban poor (such as land, water and air) have been continually eroded. Firstly, due to the high concentration of population in the mega-urban cities, competition for land has been intense. In the name of 'redevelopment', the urban poor's housing has been forcibly taken away to build housing for the middle and upper classes and to satisfy the profits of property capital. The urban poor have been continually displaced outwards from the city centre to other squatter settlements and slum areas, contributing to overcrowding. Secondly, water quality has been worsening since the 1960s. Although the increase in wastewater from the high concentration of population and the rise in consumption of petroleum-based detergents have been blamed for the deteriorating water quality, the real reason behind the severity of the problem has been the lack of state investment in modern sewerage, and water treatment plants. The state's efforts to promote rapid economic development have meant limiting social overhead costs which are considered a burden on the economy. Investments have been concentrated on productive infrastructure such as highways and port facilities. River pollution and deteriorating water quality has hit the poorer social groups as they were unable afford bottled water, which most wealthier classes opted for. Thirdly, deteriorating air quality has had a wider social impact, but the evidence shown in Section 5.2 demonstrates that the lower income groups are more seriously affected. While middle classes were able to enjoy the

availability of cleaner domestic heating fuel, the lower classes were still trapped into using cheaper but more polluting anthracite briquettes, which the unscrupulous manufacturers have been increasing the sulphur contents over the years. The urban poor were both contributors to and victims of the overall air pollution. Unlike air pollution from fixed sources which tended to have localised impact, exhaust fumes from automobiles tended to have much wider spatial impact due to their mobility. Since 1990, with the composition of automobile use showing that over 90 percent of trips were private, the wealthy minority's consumption of cars has been responsible for the bulk of the social and environmental impact. The non-car owning lower income groups had to endure greater environmental maleffects due to the increasing conspicuous consumption of the middle and upper classes.

For the *chaebol* groups which own construction firms to automobile manufacturing companies, the urban economy has been central to the capital accumulation process. In the over-heated economic development period of the late 1980s, high consumer demand allowed the *chaebols* to produce low quality commodities for domestic consumption. The state was willing to turn a blind eye to illegal and dishonest practices. This has had literally devastating results in the case of construction sector. In the 1990s, we have seen spectacular urban disasters from collapsing bridges, subway explosions and department stores, which were due to *chaebol* groups bent on making large profit, and the state relaxing building regulations to meet economic growth targets. The government policies and regulatory framework has contributed to the environmental problems: the low environmental standards have led to air pollution as well as low water quality. The urban environmental problems reached crisis proportions, and what little the government attempted to do under growing public demand was wholly inadequate to the scale of the problem.

The scale of environmental problems in the SIZ was even greater. The cause of environmental problems in this zone were production-related. As we have seen, heavy discharge of industrial waste seriously affected the quality of the natural and human environment, as well as the health of residents. Since the beginning of industrialisation and particularly of heavy and chemical industries, there were several evacuations of towns and neighbourhoods, and numerous environmental accidents, threatening the survival of farming and fishing communities as well as the urban population. The coastal areas of the SIZ were amongst the worst hit, with oil spillages from tanker-vessels and with pollution flowing in from polluted rivers. As economic growth stimulated demand for more industrial land, the industrial zone continuously spread wider, and since the late 1980s, it expanded into the West coast. With the rush to develop new industrial plants, the provision of pollution mitigating facilities was overlooked. By the mid-1990s, the pollution in the West coast was as serious as that along the South and Southeast coasts, with *Jeokjo* occurring widely.

In addition to the increasing pollution which threatened the conditions of the human and natural environment, collective consumption goods and services such as medical care, sanitation and sewage treatment plants were seriously neglected. The low provision of social amenities by the state could be seen in the same light as its suppression of labour unions: the minimisation of production costs in pursuit of EOI (social costs of labour reproduction).

In the PRZ, the political and economic exclusion of the rural economy and population has been at the root of rural environmental degradation. Not only was the agricultural sector excluded from the accumulation regime, but the decline in population and political power in the rural areas led to neglect and abuse of the environment. With the demise of the political power of the agricultural sector since the land reform, and rapid urbanisation and industrialisation, the rural economy was squeezed by the decreasing state support of agricultural prices and rising cheap imports. The heavy dependence on agricultural petrochemicals for high productivity, a consequence of competitive regulation, had profound and irreversible effects on soil quality as well as contamination of water resources, with corresponding risks to the health of farm workers.

Another source of PRZ environmental degradation came from the development of tourism and leisure facilities such as golf course and ski resort developments which carried out by monopoly capital with the blessing of the state and with weak political opposition from rural communities. The method of construction was as destructive as the impact of the use of pesticides by these developments. The floods and water shortages ruined the livelihoods of subsistence farmers. Instead of generating stable jobs or contributing to the local economy, the developments created low wage casual employment and siphoned off profits to headquarters usually based in Seoul. The subsistence farming, low employment prospects and low standard of social, cultural and physical amenities drove the younger generation to the city, contributing further to rural problems. The reproduction of the rural economy and environment was severely undermined by the state agricultural squeeze and lack of environmental investment.

Each zone has its own set of environmental problems and causal mechanisms due to its unique political, economic and physical characteristics. However, cross-boundary linkages such as water and air flows have meant that the problems of one zone impinged on other zones. Coastal waters were the ultimate receiving ground of river pollution from nuclear energy, industrial, agricultural and domestic wastewater. As we have seen, the natural absorption capability of the sea was exhausted by the sheer quantity of pollutants and resulted in the unnatural occurrence of *Jeokjo* epidemics, which destroyed more marine life. The case of air pollution in Korea was just as severe. The environmental impact of air pollution was not localised. Although the source of air pollution was concentrated in developed regions with high levels of cars, population and industries, the impact was wide. Acid rain was found to have spread to much of the country, causing considerable damage to forestry, natural habitat and agricultural land. As Figure 5.2.8

shows, the air pollution from the Capital region spread east to Kangwon province. Other parts of Korea were affected by a similar spread of acid rain.

Apart from the effects of pollution, the ever-expanding urban areas had huge impacts on the countryside and the natural environment. The increased demand for housing and leisure developments, for industrial sites and transportation projects turned the whole country into a 'production line', reducing the natural environment into pockets of 'managed gardens', causing a decline in the variety of flora and fauna. The increasing impulse towards capitalisation of resources have provided the dynamics of urban expansion. Particularly, leisure developments in the PRZ were the result of growing opportunities for profit as demand for recreation by the affluent middle classes increased. The transmission of environmental problems was embedded in commodity exchange: agricultural commodities produced with high levels of chemical input have become a threat to the health of the urban working classes. Thus, the environmental problems of the zones are very much interlinked through physical elements as well as social relations.

The causes of environmental problems are as complex and interrelated as the mechanisms of economic and social structures and practices. However, it is maintained here that the accumulation strategy and MSR are central determinants of the production of space and the environment.

From the above analysis, the competitive MSR and the accumulation regime based on the EOI have given rise to the following factors of environmental degradation:

- 1) the continued concentration of population and megalopolisation of primate cities like Seoul and Pusan has overwhelmed the urban infrastructure and has intensified the competition for scarce resources, particularly land;
- 2) rapid growth and spatial concentration of industries, and the externalisation of production costs to the environment has concentrated the effects of pollution;
- 3) the spatial differentiation of classes, resulting in the separation of production and consumption, has led to the underproduction of social and environmental infrastructure in the SIZ and PRZ;
- 4) the state's economic prioritism has led to the neglect of social consumption infrastructure, low environmental standards and lax control of pollution activities of industrial capital;
- 5) the bi-partite co-operation between state and monopoly capital has allowed the exploitation of the agricultural sector (intensive farming methods and debt crisis), the urban poor (housing crisis), the industrial working classes (dangerous working environments and low quality of social amenities) and the natural environment (pollution, destructive leisure developments).

The spatial division of labour, which gave rise to the spatial separation of classes, production and consumption, has been central to the mechanism of environmental degradation, and has intensified the socio-environmental problems. It is also clear that the environment and the alienated social groups (the rural population, industrial working classes and urban poor) have been the main victims of rapid EOI development. In addition, the competitive MSR has been used by the state to promote and justify the private provision of environmental goods (medical care, housing, bottled water, organic foods, green consumer goods, recreational amenities). It has also been the basis to enforce a monetary environmental regulation system (see Chapter 6) as well as the continuation of a rapid economic and physical development programme.

Environmental problems in Korea have reached crisis proportions due to the cumulative effects of the past environmental degradation and belated and modest state policies and action. The resolution of contradictions between the reproduction of the accumulation system and the reproduction of the environment depend upon which environmental ideology gains dominance in political and bureaucratic circles. An examination of the state of government environmental policies and the environmental movement in Korea is important to appreciate the current political and ideological hegemony in the protection of the environment. This is undertaken in the next chapter.



## Chapter 6

### Mode of Social Regulation, Environmental Movement and the State

As we have seen in Chapter 5, over the decades environmental problems in Korea have become both severe and complex. Environmental problems have grown from poverty related issues of the 1950s and 1960s to industrial pollution in the 1970s, and by the late 1980s, consumption related problems became prominent. Indeed, it would not be overestimating matters to say that the accumulation of problems has reached crisis proportions. The impact has been felt by most of the population in Korea, making environmental issues one of the most important political and social questions. In view of public demand for better environmental quality, the state is confronted with the need to protect and enhance the environment. This also means a certain form of regulation of both society and capital.

This chapter examines and analyses the state's and society's response to growing environmental problems. In particular, we hope to illustrate how these problems have been tackled by the state, and indeed, how they have been incorporated into the national hegemonic MSR. Therefore, we will examine three main elements of environmental politics: the state and its regulatory framework, environmental groups and society at large.

In Section 6.1, we will examine the historical development of the environmental movement, and the conjunctural development of state environmental regulation. This historical examination reveals how the changing internal and external political-economic situation during the industrialisation period has influenced the growth of the environmental movement and state environmental policies. An analysis of the early 1990s government's environmental regulatory structure and mechanisms of the early 1990s is undertaken in Section 6.2 and the social mode of environmental regulation is discussed in Section 6.3; here we focus on how the state attempts to resolve environmental responsibilities with its role as the arbiter of capital accumulation. As we have discussed in Chapter 2, the role of the state is a complex one: it must ensure the continuation of capital accumulation and the reproduction of civil society in order to maintain both economic and political conditions for its survival, as well as that of the nation state itself. This chapter examines how the dual role of the state is implemented, and what mechanisms are deployed to achieve this.

## 6.1 Historical Development of the Environmental Movement and State Regulation in Korea

If we examine the development of the environmental movement over time, there are distinct historical phases and characteristics. This can be divided into three stages from 1960s to the early 1990s, which corresponds to the historical development phases of the accumulation regime<sup>116</sup>.

### Taylorist and Yusin Period (1960 to 1970s)

Korea's first environmental statute was the Pollution Prevention Act of 1963, but it was never intended to be an compliance-forcing statute as the state did not acknowledge that serious environmental problems existed. As industrialisation proceeded in the 1960s, there were increasing pollution incidents, which not only worsened environmental conditions but also inflicted damage on property and health. By the mid-1970s, as pollution became widespread due to heavy and chemical industrialisation, the government responded to growing public concerns by the enactment of new measures, the *Environmental Preservation Act* of December, 1977 (Chung, T-S. 1992, p.238). The *Marine Pollution Prevention Act* was also brought in at the same time. However, enforcement of the Environmental Preservation Act was merely overseen by a department within the Ministry of Public Health and Social Affairs<sup>117</sup>. The main government environmental policies were focused on the establishment of nature sanctuaries and national parks and the use of zoning in land-use planning to prevent the setting up of factories in locations upstream of major population centres (in the case of Seoul only). Pollution was not directly tackled, either through regulation or investment in waste treatment plants.

In terms of the environmental movement, this period can be characterised as 'pollution victim centred collective activism': The beginning of environmental/anti-pollution activism date back to 1966, with the anti-air-pollution demonstrations against the development of Pusan's oil fired electricity generation plant. This was followed in the late 1960s by similar demonstrations in Ulsan, and in the 1970s, in Yecheon and Kwangyang industrial areas. These anti-pollution demonstrations by local residents were limited by their lack of organisation, and experience of how to fight the government-backed industries, and demands were restricted to compensation. They were pacified with small sums. The early environmental movement, therefore, had the characteristics of economic struggle for compensation for pollution damage to properties and/or

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<sup>116</sup> Kim, B-W. (1994) divides the development of environmental groups into 4 stages. Here, I have integrated the last two stages since my focus is the conjunctural development of environmental groups and accumulation regime.

<sup>117</sup> In 1967, a pollution section, which was the fore-runner of Office of Environment, was set up in environmental health section of Public Health Department within the Ministry of Public Health and Social Affairs. (Kim, B-W. 1994, p.90)

health (Kwon, H-S. 1991, p.75). Through the 1970s environmental activism increased in intensity and scope. However, the activism remained centred on anti-pollution demonstrations and its character was sporadic, localised and short-lived. The relative weakness of these local environmental groups meant that big businesses and government were able to largely ignore them or pacify them with small compensation. Generally, issue of pollution were firmly suppressed by the state since it was thought that tightening of environmental regulation might slow down economic development, and thus anti-pollution organisations were repressed as anti-government (Kim, B-W. 1994, pp.214).

#### Peripheral Fordist Period (from 1980 to 1987)

During this period, there were several important legislative and administrative developments. In 1980, under the new political regime, a new constitution was adopted which included a guarantee to the right to live in a clean and healthy environment (Chung, T-S. 1992, p.238). Under this constitutional change, in 1980 the Office of Environment (OoE) was established as a sub-cabinet agency of the Ministry of Public Health and Social Affairs. Though the status of the Environment Administration was still not sufficient, the creation of a new governmental agency to enforce the environmental statutes was in itself a great advance. In order to overcome administrative difficulties in monitoring pollution activities, the amendment to the 1977 Act in 1986 established six regional offices of the Office of Environment (Kim, B-W. 1994, Chung, T-S. 1992, p.238).

In terms of legislation, the 1977 Environmental Preservation Act introduced a number of important new features such as the promulgation of general environmental standards, environmental monitoring, emission standards and control, and various administrative sanctions for violations. Under the revision of the Act in 1979, Environmental Impact Assessment (EIA) was adopted as a further regulatory mechanism. The 1981 amendment introduced an emission charge system to enforce compliance with the emission standards. In 1986, the *Solid Waste Management Act* was introduced to complement several provisions of the Environmental Preservation Act and replace the existing *Waste Cleaning Act* (Kim, B-W. 1994).

However, the government's prioritising of economic development and the competitive regulation of the 1980s, and the lack of will and resources to enforce environmental legislation reduced the environmental administration and regulation to window-dressing intended for political legitimisation purposes. This further aggravated the worsening pollution problems and environmental degradation.

Despite introducing many changes to environmental administration and regulation, in the 1980s, there was little alteration in the government's attitude towards environmental issues. Rather, in the face of economic recession, the state became even more concerned with economic growth.

Thus, in order to counteract the regime's intensive accumulation strategies and competitive regulation, and to support the victims of pollution caused by the rapid heavy and chemical industrialisation of the 1970s, organised anti-pollution groups were established all over the country. They included for example Hanguk Pollution Problem Research Institute (1982), Anti-pollution Movement Association (1984) and Anti-pollution Citizens Movement Association (1986). These groups formed alliances with the pro-democracy movement, to demonstrate that pollution problems were a result of the structural faults of the society, particularly the undemocratic authoritarian government, which favoured monopoly capital over the rights of the public. The environmental groups were suppressed together with labour unions and the democracy movement. This phase of the environmental movement has been termed the 'coalition of democratic and anti-pollution movement phase' (Kim, B-W. 1994, p.215).

#### Neo-Fordist Period (1988 to 1992)

In this period, there were, again, significant changes to environmental legislation and administration. One of the most important was the elevation of the Office of Environment to full ministerial level as the Ministry of Environment (MoE) (Shin, D-H. 1993, Kim, B-W. 1994, Chung, T-S. 1992).

A milestone in environmental conservation in the 1980s was the *Long Term Comprehensive Plan for Environmental Preservation* (1987 - 2001), which aimed to outline a programme of government strategies and plans for the environment up to the next century. Although this was revised and complemented by a medium term plan (1991-1996), the long term plan has in fact guided the government's environmental projects, such as the designation of 'areas of concern' which needed intensive management. For example, the two largest river systems in Korea, the Han and Nakdong, and some coastal areas adjacent to industrial sites were selected for special management. These projects have had some success, particularly in the lowering of water contamination in the Han River, but at the same time, pollution in other river systems increased (Shin, D-H. 1993).

The beginning of the 1990s saw a thorough overhaul of existing environmental legislation, and the National Assembly passed a completely new set of environmental statutes to replace the 1977 Environment Preservation Act. This legislation included the *Environmental Policy Foundation Act*, the *Air Environment Preservation Act*, the *Water Environment Preservation Act*, the *Noise and Vibration Control Act*, the *Hazardous Chemical Substances Control Act*, and the *Environment Pollution Damage Dispute Co-ordination Act*. In March 1991, the Solid Waste Management Act and the Marine Pollution Prevention Act were completely amended (Kim, B-W. 1994, p.100). Later in 1991, the *Natural Environment Preservation Act* was introduced. The judiciary also began to tighten the regulatory loopholes to effectively prosecute polluters, and the state administration established new directives to raise environmental improvement funds

(Chung, T-S. 1992, p.238). Although a complete range of environmental legislation has been put into place, there remains many problems in implementation (MOE 1991, pp.68-70, Lee, D-G. 1991, p.91, Chung, T-S. 1992, Kim, B-W. 1994, p.88-101).

Due to the political liberalisation that occurred in June 1987, the environmental movement became more widespread among ordinary people, who wanted to express their discontent at the seriousness of environmental problems and at the government's lack of action. Thus, there was a rapid increase in the number and activities of non-governmental organisations (NGOs). Of the wide variety of environmental groups, the most important and representative was the *Konghae Chubang Undong Yeonhap* (Pollution Expulsion Movement Coalition, 1988). It was in this period that environmental groups emerged out of hiding and became organised, and spread their roots as a mass movement. However, the NGOs were unable to influence government policies or stop particularly harmful developments due to their continued marginalisation in the political process in the early 1990s.

The lack of effective influence of the new environmental groups as well as the new need to deal with global environmental issues made it necessary to establish nation-wide organisations. This commenced in 1993, and it brought about a significant change in the role of NGOs. For example, *Baedal Hwangyong Club* established local offices in 12 cities (March 1993) and *Hwangyong Undong Yeonhap* (Environmental Movement Coalition) was established through the coalition of eight regional NGOs with *Konghae Chubang Undong Yeonhap* (April 1993). This brought in a new phase in the development of the environmental movement in Korea, and reflecting a certain maturity and a new effectiveness. The Korean environmental movement had gone beyond the antagonistic and spontaneous stage and developed into a value-oriented movement (Kim, B-W. 1994, pp.214-216).

### *Changing Environmental Issues*

Over the last three decades, environmental issues have changed, diversified and fragmented. Although environmental problems of the 1960s and 1970s still exist in the 1990s, they have been displaced in spatial terms as well as social terms as more pressing new problems have come to threaten the reproduction of the politically and socially dominant classes. Working class environmental issues such as housing and sanitation were separated from the concerns of environmental groups. The creation of industrial pollution, which was a major concern in the 1970s, was spatially displaced to semi-peripheral areas away from the major population centres. As industrial pollution became spatially remote, it lost its immediacy to the majority of the urban population. Instead, more visible and tangible environmental problems such as the deterioration of drinking water, air pollution, degradation of the natural environment, traffic problems and solid waste problems replaced earlier issues. As the environmental movement received mass support, the issues began to reflect middle class preoccupations. However, the development of

interest in such middle class issues was not affected solely by the changing structure of civil society, but was also greatly influenced by government propaganda and ideology, as will be seen shortly.

The historical development of the environmental movement and state environmental regulation and administration was a response to growing environmental problems and public concerns. Phases of development in the environmental movement and in state regulation corresponded closely with the phases of accumulation regimes. In particular, the development of the movement coincided with the political changes, that is, changes in the MSR with each regime of accumulation. Particularly after the political liberalisation of 1988, state environmental administration and legislation developed rapidly in response to heightened environmental activism and public concern. Table 6.1.1 summarises the development of environmental regulation and the environmental movement. The role and effectiveness of environmental regulation and groups will be discussed in the subsequent sections.

Table 6.1.1 The Development of Environmental Policies, Institution and Responses in Korea

Period	Environmental Policy	Environmental Administration	Environmental Movement	Comments
Extensive Development Period (Up till 1979)	Pollution Prevention Legislation (1963) Environment Protection Act (1977)	Within Ministry of Health and Social Welfare	Spontaneous formation of antipollution groups in localised areas for compensation.	Local Environmental Problems: Ulsan and Onsan Pollution Damage: Expansion of Development Effects.
Peripheral Fordist Period (80-88)	Constitutional Requirement for the Protection of the Environment	Establishment of Office of Environment (1980) Environmental Survey of the 4 Large River Basins; Comprehensive Long Term Environmental Conservation Plan (1987)	More organised environmental groups, which allied with the pro-democracy and labour movement. Character was antagonistic and radical.	Expansion of Environmental Problems: Conflict between Development and Conservation.
Neo-Fordist Period (1988-Present)	Declaration of Environmental Conservation (1990) Establishment of National Environmental Policy (1992) Establishment of Individual Environmental Management Acts	Upgraded to Ministry Level (1990) Medium Term Environment Conservation Plan	Political liberalisation brought environmental groups out into the open, which stimulated the start of mass movement. These groups organised themselves in to national groups through amalgamation.	Globalisation of Environmental Problems: Rio Summit: 'Green Round': Sustainable Development.

Source: compiled by author

The development of public awareness and state regulation cannot be seen in isolation from global trends in economic and environmental concerns. Emergence of global environmental

issues in the international political arena was a significant reason for the rapid development of environmental regulation in Korea in the 1990s. The high growth export-oriented industrial regime of Korea had been dependent on the importation of resources and export of commodities, and the state had to be concerned about the impact of changes in environmental conservation policies and trade regulations internationally. Thus, considerable diplomatic efforts were needed to avert economic disadvantage (Kim, B-W. 1994, pp.149-163). Due to international pressures directly or indirectly through rising environmental standards in Korea's trading partners, notably the USA, the Korean state was obliged to participate in global environmental initiatives. It also had to establish a structure of environmental regulation applicable to the industrial and social system in Korea. As a new consensus on environmental conservation began to influence international trade and industrial standards, Korean NGOs and the government were quick to adapt to the changing situation. As an export-oriented economy, Korea had to adjust to the new climate so as not to be left behind in the competitive market.

## **6.2 Contradictions of Development and Environment within the State**

The state, as we have seen in earlier chapters, has intervened to differing degrees and with varying effectiveness in the regulation of the economy, social welfare and spatial restructuring. In the 1990s, in order to tackle the growing environmental problems of industrialisation and urbanisation, the state has strengthened environmental legislation and administrative structure and implemented many environmental regulatory systems and policies. In the ensuing discussion, the state environmental regulation and administrative structure will be examined to assess the character of state regulation, the problems of environmental administration, and the manner in which environmental regulation fits into the main MSR or 'social mode of economic regulation'<sup>118</sup> (Jessop 1994, p.254-278). Such an analysis of the state environmental regulation (the bureaucratic structure, legislation and ideological propaganda) will show the nature of regulation and how it tries to control social attitudes and behaviour.

### **6.2.1 The Structure of the Korean Environmental Management System**

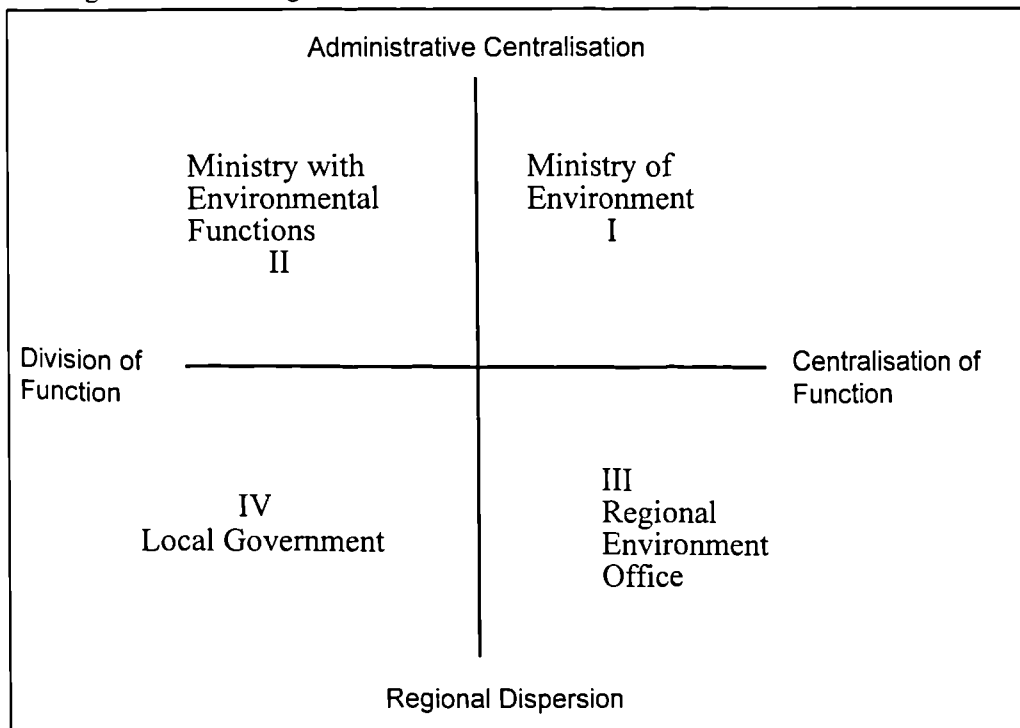
The structure of the environmental management system in Korea can be seen as a functional hierarchy, where the central government agencies and ministries are responsible for policy formulation, and the regional offices and local governments are responsible for the enforcement of the policies, regulations and directives.

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<sup>118</sup> Jessop (1994, p.278) points out that the term 'social mode of economic regulation' is more accurate than variants such as 'social mode of regulation' because it identifies both the manner of regulation and its object.

Problems of effectively protecting the environment stem from the division of environmental responsibility between a host of central government ministries, and at the same time from the lack of devolution of powers to local governments. Figure 6.2.1 characterises the structure of environmental administration, whether centralised or devolved in terms of function and administration (i.e. central government vs. local government). There is limited delegation to the regional offices of the MoE or to local governments, but within the central government, environmental functions are dispersed among 14 ministries and sub-ministerial agencies. By the 1990s, therefore, the environmental administration in Korea was biased towards sector II of Figure 6.2.1.

Figure 6.2.1 Organisation of Environmental Administration



Source: Kim, B-W. (1994), p.89

*Division of Environmental Functions in the Central Government*

The elevation of Office of Environment to full ministerial level as Ministry of Environment in 1990 did not signal a more comprehensive or cohesive management structure. The environmental functions which had been under other ministries were not transferred automatically to the MoE. Although the aim of the MoE was stated as ‘to protect the natural and living environment and prevent the occurrence of pollution’ (Kim, B-W. 1994, p.90), its functions were mainly limited to pollution control. Other functions of the Ministry of Environment were the administration of EIA, environmental education and research and to a



limited degree, the protection of sensitive environments (duplicated by the Ministry of Interior and Office of Forestry) (*ibid.*, p.90).

This was due to the refusal of other ministries to give up their environmental functions. The environment-related responsibilities remained divided between 14 ministries and agencies within the central government. The Ministry of Science and Technology was responsible for nuclear energy use, disposal of nuclear waste material and prevention of nuclear accidents. The Ministry of Interior had responsibility for the protection of nature, the Ministry of Energy and Resources, promotion of alternative energy sources, the Ministry of Construction, for construction of social overhead infrastructure and maintaining water quality. For its part, the Ministry of Health and Social Welfare was in charge of public hygiene, sanitation and health, while the Forestry Administration looked after conservation of mountain and forest land (Lee, D-G. 1991, pp.91-92, Kim, B-W. 1994).

Due to the many water-related environmental incidents, in 1991 the government decided to unify the administration of water quality management. However, the Ministry of Construction's refusal to give up its water resources and sewerage management responsibilities meant these functions were instead contracted out to the MoE. This made the jurisdiction over water quality management more complicated since the Ministry of Construction maintained overall control over decision making (*ibid.*, p.255-6). Its reluctance to give up these responsibilities to the MoE arose because an array of environmental functions brought in revenue which could be deployed in other areas, strengthening the Ministry's hand in the tussle between differing government agencies.

As can be seen in Table 6.2.1, many important environmental functions were located in the other ministries, and some responsibilities were overlapping. The division of environmental functions within the bureaucracy contributed to the ineffectiveness of state environmental policies. The dispersion and division of environmental functions amongst many different ministries, whose main concerns lay elsewhere meant that these functions were not properly carried out. For example, the Ministry of Construction, responsible for land-use management and water resources development, tended to promote infrastructure developments over conservation policies. The National Parks management, also under the Ministry of Construction, promoted recreation and leisure over the conservation of nature (Kim, B-W. 1994). The Ministry of Energy and Resources, in response to growing electricity demand, pursued energy development<sup>119</sup> instead of

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<sup>119</sup> Korea is planning to spend Won 46 trillion (approx. US\$ 60 billion) through to 2006 to build dozens of power stations. The revised plans call for nine nuclear units to be built by the turn of the century and another nine through to 2006. There are nine units in service in South Korea, producing about half the country's electricity. Energy planners are more comfortable figuring out how to build power plants and how to enforce a cult of austerity for South Koreans than finding ways to cut demand without sacrificing comfort. (*Far Eastern Economic Review* 1991, 1 August, p.54-5)

energy efficiency or the raising of energy prices. (FEER 1991, p.54-5). Thus, environmental conservation functions under the developmental ministries became of subsidiary importance to the various ministries which continued to pursue their primary goals (Kim, B-W. 1994).

Table 6.2.1 Division of Environmental Responsibilities between Ministries

Ministries	Responsibilities
Ministry of Science and Technology	Control of regulations on nuclear safety; making and implementation of radiation protection plan; regulation of transportation and disposal of nuclear waste and radioactive materials.
Ministry of Home Affairs (Coastal Police)	Protection of Nature and the running of the Committee for Nature Preservation; surveillance and policing against coastal pollution.
Ministry of Agriculture, Forestry and Fishery (Office of Rural Develop't) (Office of Forestry) (Office of Fishery)	Plan preparation against pollution in the agriculture and fishery sector; work involving industrial pollution; Testing and management of soil conditions, training and education in the use of agrochemicals; Establishment of forestry plan; regulation of protection of wild flora and hunting; protection of forestry; Protection of marine resources and anti-pollution plans.
Ministry of Commerce and Industry	Regulation of import and export of toxic substances and industrial waste; management of industrial waste.
Ministry of Energy and Resources	Supply of low sulphur oil and pollution abatement; research and development of new energy and energy substitutes; safety management of nuclear power stations and disposal and recycling of nuclear waste
Ministry of Construction	Preparation of Comprehensive National Land Development Plan; establishing and operation of National Park; operation of National Land-use Management Act; establishment of greenbelts; preparation and adjustment of Comprehensive Marine Resources Development Plan; management of river tributaries; Complete control of water supply and sewerage system planning; operation of public sewerage system.
Ministry of Labour	Prevention of work-related illness and improvement of the work environment.
Ministry of Transportation (Marine Transport and Ports Authority)	Testing of exhaust fumes; control of noise pollution; location and development of tourist (leisure) centres; pollution prevention in port areas; management of public waters.
Ministry of Culture	Protection and naming of rare fauna and flora
Ministry of Health and Social Affairs	Comprehensive planning and administration for environmental health such as supply and management of drinking water

Note: The names and functions of ministries are based on pre-government restructuring of 1995. For example, since 1995, the Ministry of Construction and the Ministry of Transportation have been combined into one, Ministry of Construction and Transportation.

Source: cited in Noh, Y-H. (1993), p.21. (translated), see Kim, B-W. (1994), pp.91-2

### *International Comparison of Environmental Administration*

An international comparison of responsibility or jurisdiction of the Ministry of Environment conducted by Kim, B-W. (1994) reveals that most of the advanced industrialised countries, especially the European nations had most of their environmental functions under a single central ministry. Enforcement was delegated to local government and autonomous government bodies, as in the case of the Her Majesty's Inspectorate of Pollution in the U.K.. Table 6.2.2 shows that in the case of Britain and Finland all four main environmental functions, and in the case of

Canada, three out of four functions, were located in the environmental ministry. Korea's central ministry, which has taken the US National Environment Protection Agency (NEPA) and the Japanese Ministry of Environment as models, had only one main function (pollution control), although some nature protection came under its control in the early 1990s. Kim stresses in his 1994 study that even in the U.S.A., while only one function was administered under the federal environmental agency (NEPA), at the state level, the Departments of Environment were in charge of environmental resource management functions as well as pollution regulation (ibid., p.85-88).

This suggests that the limited remit of MoE in Korea is wholly inadequate to the task of comprehensive environmental protection (ibid.). The division of environmental functions into 14 ministries has meant that there was no single one which could act as a focus for environmental conservation. The structure of environmental administration caused many inter-ministry conflicts (see Section 6.2.4 below).

Table 6.2.2 International Comparison of Environment Administration

Country	Pollution Regulation	Water Resources Management	Natural Resources Management	National and Development Planning	Comments
Britain	Yes	Yes	Yes	Yes	
Finland	Yes	Yes	Yes	Yes	
U.S.A.	Yes	No	No	No	(Federal Gov't)
Japan	Yes	No	Yes	No	
Canada <sup>1</sup>	Yes	Yes	Yes	No	(Federal Gov't)
Korea	Yes	No	No*	No	(*only in parts)

Note: 1. The Canadian entries based on data from Kim, B-W. (1994), p.88

Source: cited in Kim, B-W. (1994), p.101

#### *Financial Resources for Environmental Protection*

One of the main problems of environmental administration has been the lack of financial resources allocated for environmental expenditure. Although environmental expenditure has been increasing steadily, the amount has remained insignificant and the share of environmental expenditure in total government expenditure has remained low. Korean environmental expenditure in 1990 was 0.147 percent of GNP or 0.92 percent of total government expenditure (see Table 6.2.3) and the Ministry of Environment's expenditure was 0.33 percent of total government expenditure (see Table 6.2.4). If the Korean government's investment in environmental infrastructure and amenities is compared to other countries, we have Japan at 0.34 percent of GNP (2.0 percent of total government expenditure), the USA at 0.57 percent, Sweden

at 1.69 percent and the Switzerland at 1.03 percent. It is apparent that the Korean government's commitment has been wholly inadequate. The meagre size of Korean expenditure is accentuated if we consider that these advanced Western countries had heavily invested in environmental facilities and infrastructure in the 1960s and 1970s. Thus, environmental expenditures of these industrialised countries were mainly operating and maintenance costs and the environmental expenditure in the 1960s and 1970s were in the region of 2 percent of GNP, to cover the capital cost (Lee, D-G. 1991, p.93, Pearce, D. W. 1975, pp.138-139).

Table 6.2.3 Trend in Environmental Expenditure in Korea by Year

(unit: 100 million won)

Year	GNP	Gov't Expenditure	Environmental Expenditure		MOE Expenditure		Environmental Expenditure Ratio		
			(C)	(%) <sup>1</sup>	(D)	(%) <sup>1</sup>	(C/A)	(C/B)	(D/C)
1982	507,246	95,781	285	-	208	1.72	0.056	0.298	72.98
1983	589,858	104,167	378	32.6	207	-0.5	0.064	0.363	54.76
1984	700,839	110,721	640	69.3	343	65.8	0.091	0.578	53.58
1985	780,884	124,064	877	37.0	421	22.6	0.112	0.707	48.00
1986	839,758	137,965	1,017	16.0	433	2.9	0.112	0.737	42.58
1987	975,317	157,945	1,658	63.0	671	55.0	0.156	1.050	40.47
1988	1,285,920	180,250	2,160	30.3	773	15.2	0.171	1.198	35.79
1989	1,371,400	216,531	1,806	-16.4	645	-16.6	0.127	0.834	35.71
1990	1,714,881	274,367	2,524	39.8	902	39.9	0.147	0.920	35.74
1991	2,060,265	313,823	4,963	96.6	2,434	169.8	0.241	1.58	49.04

Note: 1. Percentage growth over the previous year.

C/A = Percentage ratio of environmental expenditure to GNP

C/B = Percentage share of environmental expenditure to Central Government Expenditure

D/C = Percentage share of Ministry of Environment expenditure to total environmental expenditure

Source: Compiled from MoE (1992) Korea Environmental Yearbook, p.597, \_\_\_ (1990), p.596 and Choi, B-D. (1991a), p.33.

Table 6.2.4 National Budget Allocated to the Environmental Agency, 1971- 1990

Year	Amount (100 million Won)	Percentage of Total Government Budget
1972	0.9	0.012
1974	1.1	0.011
1976	13.3	0.059
1978	25.1	0.071
1980	120.5	0.186
1982	207.7	0.216
1984	343.1	0.313
1986	433.0	0.314
1987	670.8	0.418
1988	772.9	0.420
1989	644.9	0.335
1990	902.1	0.329

Source: MoE, (1991) Environmental White Paper, p.38; cited in Shin, D-H. (1993), p.251,  
amended by author

#### *The Problems of Local Environmental Management*

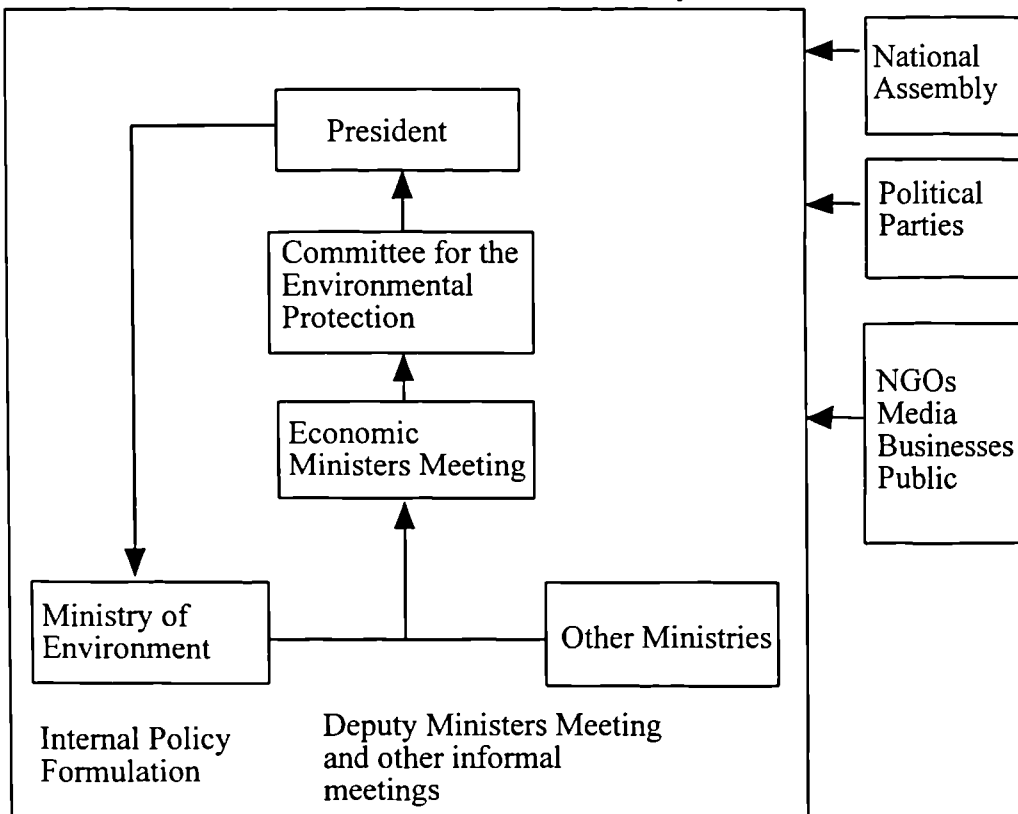
In addition to the problems in the central government, regional and local environmental administration has been fraught with many problems. The administration of environmental regulation in the 1990s is assisted by six Regional Offices under the MoE, as well as by local government departments. The six offices were located in Seoul, Pusan, Kwangju, Taegu, Daejeon and Wonju (MoE 1991, p.71). At this time over seven million tonnes of industrial wastewater were discharged daily from 11,200 point sources, and the Regional Offices and local governments are required to periodically inspect effluent facilities and check their pollution control systems (ibid., p.78). However, there were fewer than 10 officers in each regional office for this monitoring function. Also the whole of the coastal environment, which was divided into 11 regional zones, was monitored by only 6-11 persons per region by the Coastal Police. Thus, even with the assistance of private operators, the public authorities have always been overstretched to deal with large oil spillage and shipping accidents (Konghae Chubang-undong-yeonhap Yeongu-wiwonhwa 1992, p.93). So even though the structure of environmental management exists, the shortage of staff and resources made it impossible to run an effective monitoring and enforcement system.

#### *Policy Formulation Process in the State*

The environmental policy or regulation formulation and implementation process in the state bureaucracy was a highly complicated process compared to other sectoral policies or regulations. This was due to the number of ministries involved in the decision making process. Due to the wide ranging impacts on other sectors, such as manufacturing activities and tax implications, large numbers of agencies were involved in the consultation and decision-making of environmental policy or regulation.

The hierarchical and bureaucratic nature of decision making process meant that any environmental policy or regulation proposed by the MoE having a large impact on the economy or on any particular sector of society became diluted or modified. As can be seen in Figure 6.2.2, the MOE had to consult other ministries during the policy formulation stage, and then the policy had to be approved at the ‘Economic Ministers Meeting’ before it could be reviewed by the *Committee for the Environmental Protection* and endorsed by the President. The role of the President has been key to decision making processes within the state bureaucracy, not least in the initiation of many environmental regulations, mainly to the benefit of industrial capital (Choi, B-D. 1991, Chung, T-S. 1992, 238-9).

Figure 6.2.2 Bureaucratic Process of Environmental Policy Formulation



Source: cited in Chung, J-K. (1991), p.38.

The decision making process within the government has by no means been isolated from outside influences. Although there have been no formal ways of participating in policy formulation processes on the part of businesses, political parties or civil society in general (NGOs and the public), the government has been influenced through various lobbying activities and by networking at a personal level. Clearly, there is selective or inequitable access at work which favours capital rather than environmental groups and civil society (Kim, B-W. 1994).

## 6.2.2 Character and Problems of State Environmental Regulation

By the mid-1990s, Korea had developed a large array of policies, initiatives and regulations for the protection and enhancement of the human and natural environments. As we have already seen in Chapter 5, these varied from nature preservation to control of emission and sulphur content in fossil fuels. Each ministry had its own set of policies and regulations to carry out its environmental responsibilities. However, here we will confine ourselves to environmental regulations under the MoE, these demonstrating the overall character of environmental regulation in Korea.

The majority of the MoE's regulation were restricted to the area of pollution control. Since the early 1990s the environmental regime has been defined by the following: the Air Pollution Regulation, the Water Quality and Pollution Regulation, the Waste Production Regulation, Environmental Impact Assessment, Effluent Charge, Pollution Cost Charge, Waste Disposal Deposit, Garbage Limitation, Environmental Improvement Charge and Eco-Mark System (Kim, B-W. 1994, p.132). Although there were other regulatory mechanisms such as administrative directives to punish polluters by closing down production or even prosecution in the courts, much of the environmental regulation relies on economic measures.

The effluent charge system was designed to induce manufacturers to voluntarily invest in pollution mitigating facilities by taxing those businesses which produce pollutants over the permissible quantity and/or levels, and by allowing them to voluntarily register prior to waste production. However, due to the low levels of charges, this market-led approach failed to induce reductions in pollutant production or voluntary investment in environmental facilities. Instead, most businesses preferred to pay the tax and carry on polluting. Additionally, the tax was based solely on the concentration of pollutants and did not take account of the quantity discharged. Thus, the tax did not reflect the total effects of the waste released (*ibid.*, p.134-5).

The Waste Disposal Deposit System, introduced in 1992, was intended to curb the production and import of commodities which would lead to excessive quantities of waste production, and to direct the economy towards energy and resource conservation by ensuring the collection and disposal of such waste by private businesses through a deposit system. The commodities under this system were those which are harmful to health, present difficulties in safe disposal or recycling, or which may put too great a burden on public waste disposal systems, such as throw away products (*ibid.*, p.135).

These were two out of many attempts to induce businesses to voluntarily reduce pollution and waste by economic measures. But as will be seen below, their objectives were not achieved. A further economic measure was the Environment Improvement Charge System. This capital and

revenue-raising tax system for investment in environmental improvement was aimed at charging businesses and facilities which produced pollutants and waste in 74 location types such as urban areas, special environmental areas, coastal areas, nature conservation areas. The tax was to be levied on businesses, buildings and equipment of greater than specified size in particular categories<sup>120</sup>. This charge system was not however applied to manufacturing plants or factories (ibid., 135-6). Although the system was aimed at small and medium size businesses, the burden of this tax was to be passed on to the public.

One notable non-economic regulatory system was the Environmental Impact Assessment System. This system, in operation since 1981, but changed dramatically under new legislation (the 1993 *Environment Policy Foundation Act*), aimed “to conserve and enhance the quality of the environment by assessment prior to the implementation of development plans. This was intended to ensure that environmental impacts of development, subject to Environmental Impact Assessment, were environmentally sensitive and sustainable”. There were 15 types of developments<sup>121</sup> under the EIA system, and an Environmental Impact Statement (EIS) had to be submitted to the MoE. There were many provisions to control developments<sup>122</sup> and to include local residents’ views (ibid., p.132-3).

There were also other measures of environmental regulation and legislation. The most notable were the imposition of large fines for littering or spitting in public places, and the banning of the use of shampoo in public bath houses.

Intra-governmental conflicts were a significant cause of problems in the implementation of environmental regulations, occurring at various stages in the process. These were apparent in the policy making procedures. Conflicts also occurred during the implementation phase of environmental regulation. Here, there were two main areas of tension: firstly, when the MoE tried to carry out its pollution regulatory functions and was blocked by other ministries, and

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<sup>120</sup> They are restaurants (larger than 48 pyong), public baths and swimming pools (larger than 44 pyong), hotel and other tourist accommodation (greater than 73 pyong), cinemas, wedding halls, art galleries, department stores and other public and cultural facilities (larger than 82 pyong), bus and rail stations (larger than 115 pyong), hospitals and other medical institutions (above 115 pyong), banks and other commercial and clerical offices (above 300 pyong), etc. and equipment such as trucks, articulated lorries and industrial transportation equipment.

<sup>121</sup> The 15 types of developments are urban development, industrial estate development and operation, energy development, road and highway construction, development of marine resources, port construction, railway construction, development and use of rivers, landfill and reclamation, tourist resort development, development in mountain areas, special planning district development and waste disposal facility (Kim, B-W 1994, p.132-3).

<sup>122</sup> The Minister of Environment has the power to order a change of plans to comply with environmental requirements and request additional information. In the implementation and operational stages, the ministry can halt the development or prosecute the developer who does not comply with the EIA recommendations. The maximum penalty is up to 5 years imprisonment and/or a 5 million won fine, if plans have been breached during construction (ibid., p.132-3)



secondly, when the MoE attempted to enforce EIA regulations on the development functions of other ministries (ibid., p.144).

#### *Conflict in the Decision-making Process*

The conflicts between ministries involved in the policy formulation process were recognised as the main reason for the ineffectiveness of environmental regulations in bringing about their stated effects. From the low environmental standards to selective application of regulation, the consequence of bureaucratic politics within the decision making process were numerous.

Kim, B-W. (1994) provides many examples. As mentioned earlier, the ineffectiveness of the 'effluent charge system' in bringing about voluntary investment in environmental facilities on the part of the industries was due to the low levels of charges. In addition, the application of charges was based on the level or concentration of pollutant alone, while ignoring its volume (ibid., p.134). The arbitrary setting of criteria and the low level of charges resulted from the pressures from other ministries, such as the Ministry of Trade and Industry, on the grounds that it would reduce the competitiveness of Korean firms in the international market (ibid.).

Another example concerned the Waste Disposal Deposit System. Due to the pressures from business (particularly from the packaging industry), the Economic Planning Board, Ministry of Trade and Industry and other economic agencies 'advised' the MoE to reduce the number of items and scale of deposits. Thus, 11 categories were reduced to seven (with 27 types of products), and the charge rates were greatly reduced. However, even this was met with severe criticism by the business community and the regulation was further reduced to only include six categories and 19 types of products. In this process, plastic packaging or containers, air-conditioners, refrigerators, automobiles and parts and other disposable products or large waste items were dropped from the list (ibid., p.258 -261). In the policy formulation process, therefore, the MoE was pressurised by more powerful ministries to modify the regulations. Hierarchical relationships (seniority of ministers) or the intervention of the President or Prime Minister with their discretionary powers, usually resolved conflicts within the decision making process in favour of the economic ministries. This reflected the economic prioritism of the state.

However, the influence amongst differing industries was uneven. Chung, T-S. (1992) examines various cases in the industrial waste and pollution regulations, EIA systems, and the closed-door permit procedures for location of plants (for example, Dong Yang Chemical's Kunsan TDI factory) and waste disposal facilities (Anmyon-do nuclear waste treatment plant). This revealed that the government's decision making process and application of environmental regulation were clearly bias towards the *chaebols*. He demonstrates this by analysing the lobbying activities of Jeon Kyong Ryeon (National Association of Business Executives), a *chaebol* dominated group. In 1990, this organisation lobbied the government to drop COD measurements from river water

quality assessment, leaving only BOD criteria. Thus, the 1991 revision of environmental conservation legislation omitted the COD criteria (Chung, T-S. 1992, p.241). This was possible due to the discretionary powers exercised by the President and Prime Minister. The motive of the lobby was to conceal the seriousness of river pollution by heavy metals and chemicals, which could only be measured by COD levels.

*Conflict over Pollution Control*

One of the main functions of the MoE has been the monitoring of pollution activities and enforcing of appropriate regulations. The regulation such as the Effluent Charge System allowed businesses to pollute legally, with only insignificant charges.

When a serious pollution incident occurs, inter-ministerial conflicts inevitably arise over the application of penalties. There have been many such incidents since the implementation of industrialisation in 1962. Table 6.2.5 shows that during the two year period January 1990 to December 1991 alone, there were three major pollution incidents of national concern. All three involved intra-governmental conflict as well as the usual antagonism between social classes and groups.

Table 6.2.5 Pollution Incidents and Social Conflict (Jan. 1990 - Dec. 1991)

Incident	Parties involved
Doosan Electronics Phenol Pollution	MoE, EPB, MoTI, Business Assoc., Local Residents
Taegu Dye Industrial Estate Pollution	MoE, MoTI, Business, Political Parties, Local Residents
Kunsan TDI Factory Gas Release	MoE, MoTI, Local Residents

Source: Kim, B-W. (1994), p.145.

One of the most controversial in terms of inter-ministry conflict was over the enforcement of pollution regulation when the secret discharge of industrial wastewater from the Taegu Dye Industrial Estate was exposed by the Taegu Dye Industry Workers Union (April 1991). It was revealed that the Industrial Estate Management had released 20 - 30,000 tonnes of chemical wastewater daily over 15 months. There was evidence of state collusion in the long term cover up of the pollution activities. Exposed by the media, there followed strong demands from environmental and social groups for quick and firm action by the government. To quote a union spokesman: "This incident is a prime example of pollution which was due to the close relationship between political parties, capital and the state" (Konghae Daechaek, 1991, pp.24-30, Kim, B-W. 1994, pp.259-262). Following the confirmation of pollution activities, the MoE ordered the improvement of wastewater treatment facilities to bring the pollutant levels down

below the environmental limit of COD 100ppm. In addition, production shifts had to be reduced from ten to seven. In order to reduce the level of pollutants from 300ppm, the Dye Industrial Estate invested 3.2 billion won (approx. £3 million) in wastewater treatment equipment. Pollutant levels were brought down to 120 - 150ppm by September 1991, and the restoration of 10 shifts was demanded. However, the MoE refused to allow normal production since environmental standards were not met. The Estate complained that the government was being unfair, since it was not taking similar action on other industrial estates where pollution activities were commonplace. As there was non-compliance with the directives and as pollutant levels started to rise again towards 300ppm, the MoE decided to halt production altogether. However, with pressure from the Ministry of Trade and Industries, from the Economic Planning Board, the Ministry of Internal Affairs, the City of Taegu and other agencies, the decision was suspended (Hangyeorae Shinmun, 9, Oct. 1991). After high-level meetings between ministries and business leaders, the total suspension of production directive was subsequently changed to three shift production. However, this decision was soon overturned when the health and social welfare committee of the National Assembly ordered the issue to be taken out of the hands of local environmental office and be 'politically resolved'. In November 1991, the administrative directive was relaxed and production allowed back to seven shifts (Kim, B-W. 1994, p.262).

In this widely publicised case, the Ministry of Environment was not only pressurised and hindered in the enforcement of pollution regulations, but its powers were removed to the political sphere where representation of capital was strong (ibid., p.144-5). Thus, in order to resolve the matter in favour of the industries, the powers of other ministries and executive offices was capable of being mobilised to undermine the authority of the environmental agencies.

#### *Conflict over the Application of EIAs*

In the application of the EIA system, which aims to limit the environmental impact of large development projects, there was also much conflict not only between environmental agencies and private developers, but also within the government too. In the administration of the EIA system there were two basic problems: the conflict between agencies involved, and the formalistic application of EIA due to bureaucratic procedures and lack of expertise.

Table 6.2.6 shows the list of public projects in which conflicts have arisen between the MoE and the ministries which initiated development projects. Such conflict particularly occurred in the various development projects which the government regarded as hegemonic, to be carried out at any cost<sup>123</sup>. The MoE was not always able to enforce the requirements laid out in the EIA

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<sup>123</sup> In the case of EIA for the Ilsan line of SMA electric railway, the Ministry of Environment requested the Ministry of Transport and Office of Railway to halt their construction work until the EIA has been completed. The Office of Railway argued that the construction work for the Ilsan line had begun on December 1990 before the EIA legislation had come into effect. But, the Ministry of Environment's

legislation. As Table 6.2.7 shows, the number of non-compliance with EIA recommendations by government agencies was considerable in number (Chung, J-K. 1991, p.48, Noh, Y-H. 1993).

Table 6.2.6 Cases of Intra-governmental Conflicts over EIA (Jan. 1990 - Dec. 1991)

Developments	Ministries Involved
Construction of Gas Supply Pipes	MoE, MoER
Large Scale Grass-land Development	MoE, MoAFF
Inner-city Amusement Park Dev.	MoE, MoC
Quarrying near Paldang Reservoir	MoE, MoC, Business, NGO
Construction of SMA Oil Storage	MoE, MoER
Construction of Golf Course	MoE, MoS
Construction of Seoul City Motorway	MoE, SMG
Construction of Seoul Underground Extension	MoE, SMG
Coal Quarrying Work	MoE, MoER
West Coast Motorway Dev.	MoE, MoC
Construction of Ilsan and Bundang Newtown	MoE, MoC, Land Development Corp.

Note: MoER (Ministry of Energy and Resources); MoAFF (Ministry of Agriculture, Fisheries and Forestry); MoC (Ministry of Construction); MoS (Ministry of Sports); SMG (Seoul Metropolitan Government).

Source: cited in Kim, B-W. (1994), p.146

Table 6.2.7 Non-compliance to Environmental Impact Assessment 1992

Developers	No. of Development	No. of Non-complying Developments	Percentage of Non-implementation of EIA
Public Agencies	201	148	73.6
Office of Railway	5	5	100.0
Local Governments	116	87	75.0
Land Development Corp.	41	35	85.4
Road Corp./ Housing Corp.	10	8	80.0
Others	29	13	44.8
Private Sector	81	56	69.1
Total	282	204	72.4

Source: cited in Noh, Y-H. (1993), p.29.

demand was met through various channels of pressure. In this instance, it was politically favourable to comply with the MoE's demand since the public needed to be reassured. However, the MoE's requests for readjustment to development plans was largely dismissed. See table 6.2.7 (Chung, J-K. 1991, Kim, B-W. 1994, Noh, Y-H. 1993)

It is true to say, therefore, that EIA was largely a formality, with little environmental conservation content. The EIA system always came down in favour of development. There were 850 Environmental Impact Statements (EIS) submitted to the MoE between the early 1980s and the early 1990s. The strict application of EIAs would suggest mitigation of environmental degradation, destruction of natural habitats, and so on. But this was not the case. On the contrary, it gave the green light to many large and environmentally destructive developments<sup>124</sup> (Lee, K-J. 1993, p.81-83). Lee, S-D. (1988) also reveals that the outcome of the 57 EIS submitted over the four years (1981-1984) was mostly positive, with development justified on the ground of 'social desirability' and 'development effects', the 'benefits outweighing the costs', and so on. There was not one case which concluded that the development was unsuitable. He concludes that "it is not possible to believe that all the major development projects carried out during that period had no or negligible environmental effects" (ibid., p.40). Kim, B-W. (1994) claims that the formalistic application of EIA has been due to the development prioritism, administrative expediency and bureaucratic opportunism of the state (pp.144-5). Thus, instead of the EIA system ensuring environmental protection, it has been the means by which environmental destruction has been justified and rationalised.

Although the lack of effective protection of the environment stemmed from an ineffectual state structure (division of functions, from over-lapping of responsibilities), from the fragmented nature of policies as well as from the relatively low position of the MoE in the bureaucratic hierarchy, the decisive factor was 'productivist' state goals, and the prioritising of capital accumulation. This was manifested in the permeability of government by capital (Chung, T-S. 1992, Kim, B-W. 1994, pp.146-7), the lack of financial and technical resources directed to environmental projects, and the discretionary powers of key personnel in government offices to ensure environmental regulation did not hinder economic development. Thus, the conflict within the state and the power struggle in the bureaucracy could be seen as another manifestation of the political balance within society at large. The ineffectiveness of administrative structure and the regulatory mechanism has been 'in-bred', in order to tilt the balance of power towards developmental goals.

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<sup>124</sup> An example of how EIA has been used to justify environmentally unsound developments is that of a recreational park in the north Incheon area. The total development area was 450,000 pyong, to contain various recreational facilities, a youth centre, swimming pool, camp site and car parking. The problem was that the development was approved because the woodland was grade 6 rather than Grade 9 or 10, the only forest land considered environmentally important. However, as much of Korean forests were replanted after the Korean War 30 years ago, there were very few forests in the 9 or 10 Grade. Although this woodland was only grade 6, it was developing its own ecosystem and a habitat for many wild fauna and flora. It was one of the few places around Incheon which sustained some level of wildlife at all. However, the development went ahead without even a preliminary site investigation. Instead it relied on the grade system for its justification. (Lee, K-J. 1993, p.81-2).

## 6.2.5 The Character of State Environmental Regulation

The main factors accounting for the nature of the environmental regulation system can be summarised as:

- 1) the division of environmental functions between numerous agencies and the centralisation of powers in Seoul;
- 2) bureaucratic politics, and the top-down nature of policy formulation which largely ignored consultation with the public;
- 3) privileged access to and influence over the government by capital (clientelism);
- 4) lack of financial and human resources, leading to the formalistic operation of environmental regulations;
- 5) the discretionary powers held by key government officials;
- 6) the perversion of the 'polluter pays' principle, to the 'pay as you pollute' principle.

It can be argued that the Korean environmental regulation system is relatively new and time is required for it to become effective and comprehensive. But the government had by the mid-1990s shown little desire to remedy its glaring faults. On the contrary: most policies and regulations tended to shift the burden of environmental costs to civil society (consumers in general, small and medium businesses and above all, the working classes) thus minimising the burden on monopoly capital, especially in the export sector. The structure of state administration allowed the interest of capital to be easily incorporated into the formulation and implementation of policies and regulations, while the interests of the public were marginalised.

The impact of environmental regulations was differentiated between spatial zones. Due to the stricter application of environmental regulations in or around large population centres such as Seoul, Taegu and Pusan, environmental quality improved steadily after 1991. On the other hand, loose enforcement of industrial pollution regulations resulted in deteriorating environmental conditions in semi-peripheral industrial and peripheral rural zones<sup>125</sup>.

Even with the strengthening of environmental policies, the state pursued its growth priority in other sectors. Thus, government policies remained centred around capital, particularly the *chaebols* (Chung, T-S. 1992, p.238). The state has been shown not to be neutral institution promoting economic development and mediating between socio-spatial conflict arising from environmental problems. On the contrary, it protects and promotes the interest of the capital by

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<sup>125</sup> Shin, D-H. (1993) gives the example of the improving water quality of the Han and Nakdong rivers, which flow through Seoul, and Taegu and Pusan respectively, while other major river systems such as the newly industrialising Keum river have deteriorated (p.249). Also he shows that the higher proportion of the residents in industrial cities (93.9%) compared to national average (77.5%) considered that pollution problems were "somewhat" or "very" serious, suggesting that environmental problems are significantly worse in semi-peripheral zones (pp.244-5).

intervening in the process of development and resource use, in order to conceal or resolve the environmental and pollution problems created during the process of capital accumulation. To this end, it employs ideological tools and socialises environmental costs. The discretionary application of environmental regulation by key persons (such as the President) has been used invariably for the benefit of the capital.

### 6.3 Civil Society, NGOs and the State Hegemony

Here we will turn to the manner in which the *social mode of environmental regulation*<sup>126</sup> permeates civil society. We will examine the nature of environmental awareness in Korea, the role of environmental groups, and how state policies and ideology operate to produce the hegemonic bloc<sup>127</sup>. An examination of the operation of the social mode of environmental regulation would reveal the functionality (or the lack of it) of civil society, of NGOs and of cultural norms in general. It should also reveal the role which the social mode of environmental regulation plays in the dominant hegemonic MSR.

#### 6.3.1 Environmental Groups, the Hegemonic Bloc and the State

##### *Environmental Groups*

Environmental groups on the whole reflect public opinion, and they also act as opinion forming and awareness raising organisations. This is certainly the case in Korea. In Korea, they can be divided into two distinct categories - those registered with the Ministry of Environment, (implementing state agendas such as environmental education), and the unregistered groups which are free from such responsibilities. This permits them to freely criticise the state and carry out radical activities, bringing them in frequent confrontation with the government bureaucracy, particularly the Ministry of Environment (Kim, B-W. 1994, pp.218-19).

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<sup>126</sup> The social mode of environmental regulation is the regulation of the environment through social practices and norms. This means that there must be a construction of a social norm through hegemonic ideology and other means to bring about a dominant attitude or consensus towards an acceptable mode of production, reproduction and consumption of the environment and its resources.

<sup>127</sup> The hegemonic bloc is defined as the dominant section of the civil society which supports the hegemonic ideology (see Chapter 2).

Table 6.3.1 Comparison between Registered and Non-registered Environmental Groups

	Registered Groups	Non-registered Groups
Establishment. Legitimacy	Legislation, Civil Law	Popular support
Main Activity	State directed Activity	Anti-pollution and environmental Issues in general
Revenues	State subsidy and other activities	members subscription and fees
Responsibilities	Accountable to related government agency	Not accountable
Character and Role	moderate reforms, suggesting of legislation reform, etc.	criticism of regime and legislation, radical agenda, etc.
Scope of Activities	technical development, survey and research	Anti-pollution, Anti-government and Anti-war activities and research
Central Goal of Activity	Environmental Enlightenment, Education, Publicity and Lectures	Demonstrations, Expose, Public Meetings, Education,

Source: cited in Kim, B-W. (1994), p.219

Kim's (1994) examination of environmental groups reveal that the two types, the registered groups (REG) and the non-registered (NEG) have distinct characters and roles in society, as Table 6.3.1 shows. Their strengths and weaknesses are inherent in the basis of their foundation and their activities. Most of the NEG's activities remained at the level of exposing and publicising environmental pollution incidents without the ability to analyse the causes of environmental problems in a scientific and objective manner. They concentrated their efforts on helping with compensation claims or mobilising popular support for demonstrations. While NEG's were alienated from the state agencies due to their radical political agendas, the REG's were very much part of the state environmental management umbrella. Although the REG's were criticised for their conservative and pro-government views, they represented wide sections of the public and had the most impact in the formation of public views (ibid., pp.222-23).

It is evident that the close relationship between the REG's and the Ministry of Environment resulted in REG's being used by the state as an additional means by which to propagate hegemonic ideologies, including the shaping of public opinion. The NEG's also tried to influence the public, but without co-ordinated environmental campaigns. The success of the REG's' environmental hegemony can be measured by the consumption related environmental issues that became the main cause of public concern. The consumer-related environmental issues promoted by the REG's in the early 1990s, especially by the YWCA and the Consumer Association, showed how government environmental propaganda became dominant. The chief factor behind the growing influence of the state's environmental agenda was the REG's' activity in environmental awareness education and campaigning. The ineffectiveness of the NEG's' agenda arose in part from their lack of resources. It also stemmed from the divisions and ideological



differences between the environmental groups, causing fragmentation of the counter-hegemonic forces<sup>128</sup>.

Although environmental groups were legalised in the late 1980s, in the recessionary period of the early 1990s there was a resurgence of government activity to curb the NEG. According to a survey conducted by the Environmental Policy Research Institute, both REGs and NEG expressed opposition to the government and its interference. Sixty nine percent of the environmental groups stated that there should be more places allocated for NGO representatives in the environment-related government committees, in order to establish formal mechanisms for co-operation and debated (Hangyora Shimmun 1992, 7. June). This showed that the state interfered and controlled the activities of the environmental groups, but does not provide means by which the views of environmental groups could be reflected in state policies (Kim, B-W. 1994). The usual top down approach to environmental regulation was evident.

#### *Media and Environmental Education*

An essential means of propagating environmental ideology was through the mass media and through environmental education in schools. The latter focused on consumption-related issues such as domestic waste production and the importance of recycling. It was used as a propaganda tool by the state to press its own environmental agenda, essential to the formation of a hegemonic bloc, which would not adversely affect the capital accumulation process. Most national newspapers ran their own environmental campaigns (for example, Chosun Ilbo's Save Our Streams Campaign). These newspapers, owned by or associated with *chaebol* groups and tending to be pro-government, focused on environmental issues which were not related to monopoly capitals' activities or government schemes. The media was used to justify state environmental regulations and policies, which tended to privatise environmental costs and responsibilities.

### **6.3.2 Public Attitude and Consciousness on the Environment**

As we have seen earlier, the rise in environmental awareness in Korea was due to the cumulative effects of pollution and environmental disasters, the increasing activities of NGOs and, to government propaganda.

Various studies of the late 1970s and early 1980s show that environmental awareness among the Korean public was very low, and that the public attitude towards nature was found to be one of utilitarianism and domination. The rural population tended to be rather more negative towards

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<sup>128</sup> Kim (1994) claims that there are wide difference in ideology in Korean NEG, which range from gaia to eco-socialism (p.215).

conservation than the urban population, while the working classes were more passive than the middle or upper classes about environmental issues. International comparisons revealed that Korean environmental awareness was lower than in the Western industrialised countries, and even lower than that of Taiwan in the early 1980s. (Yang, J-H. 1992, p.97-8) However, as environmental problems became worse, public concern also became more pronounced. Yang (1992) shows that public concern for environmental protection rose from a rank of seven in a listing of most important social issues to third in 1987 and second in 1990 (p.104). This was confirmed in another study undertaken by Seoul National University in 1984 and 1991 (Shin, D-H. 1993, p.245). With the rise in environmental concerns, the 1990s saw a change in public attitudes towards economic growth. A high proportion of respondents felt that economic growth should be suppressed or slowed down for the sake of environmental conservation (Yang, J-H. 1992, pp.116). Another survey<sup>129</sup> showed that 85 percent of Koreans preferred the national development strategy to be based on ecological or environmental priorities (Lee, D-G. 1991, p.93). This change in attitude can be seen in Table 6.3.2. The 1970s attitude of 'nature exploitationism and utilitarianism' gave way by the 1990s to an emphasis on 'environmental protectionism and co-existence' (Yang, J-H. 1992, pp.116). At the same time, the public's esteem for the government's environmental regulation and protection efforts steadily declined: in 1992, over 78 percent of surveyed persons thought that they were seriously lacking compared to 45.5 percent in 1982 (Shin, D-H. 1993, p.105). Lee, J-J. (1991) reports that 80 percent of the respondent of his survey thought that government and businesses collusion was responsible for river and air pollution (p.11).

Table 6.3.2 Public Opinion Survey of Environmental Conservation and Economic Growth Issue (%)

Year of Survey	Economic Growth at the Expense of Environmental Conservation	Limited Economic Development within Environmental Capacity	Environmental Conservation at the Expense of Economic Growth	Don't Know
1982	14.2	69.9	6.6	9.1
1987	6.0	88.7	2.8	2.5
1992	9.9	25.0	35.1	30.0

Note: MoE (1982, 1987) *Survey of Public Consciousness on Environmental Conservation*, MoE, Seoul; 1992 data based on Yang's own survey

Source: cited in Yang, J-H. (1992), p.106

The development of environmental awareness has shown two trends. On the one hand, there was the widening of social base and the merging of environmental attitude between social classes. On the other there was the increasing importance of environmentally sensitive public attitudes.

<sup>129</sup> See 21st Century Committee, (1991), *Survey of Public Awareness for the 21st Century*, April, Government of ROK

Although environmental awareness differed markedly between social groups until the early 1980s, thereafter this difference started to disappear. Yang (1992) claims that the widening of the social basis of environmental awareness was due to the fact that environmental problems affected all classes. He also claims that environmental reform did not reflect the interest of a particular class, that is, the impacts of environmental problems and mitigating state policies were socially 'neutral'. However, the increase in environmental concern on the part of the working classes resulted from quite the opposite reasons: the financial burden of environmental legislation tended to be higher for lower income earners than for higher income groups (for example, the charging of market prices for domestic waste disposal hit the lower income groups since the use of anthracite briquettes result in high volumes of waste). Another reason for their concern came from the worsening state of the preconditions for their reproduction, such as housing shortages, air and water pollution. The truth was that impact of environmental problems and state regulation were not socially 'neutral', but disproportionately affected the socially powerless.

Even with the change in social attitude towards the environment in the 1990s, Korea continued to rely on technological developments to solve environmental problems rather than on radical alterations in social practices. Yang's 1992 survey shows that to the question of 'can environmental problems be solved or resolved through science and technology instead of changing the character of society', over 47 percent of respondents agreed, while 26 percent disagreed. In the USA, Germany and the UK, the pro-technology responses were 30, 48 and 25 percent respectively. Although Germany had the highest 'yes' response, 44 percent of the German public also responded that the character of the social structure needed to change (Yang, J-H. 1992, p.106). It is not difficult to deduce from this that the public commitment to environmental conservation was likely to extend only as far as it did not affect social and cultural practices. Despite this, over 69 percent of Korean consumers in one survey said that their choices of products has been influenced by environmental friendliness, and 73 percent responded that they were aware of the Eco-Mark system (Konghae Daechaek, 1992, pp.23-33). The remarkable growth of the organic foods company, Pulmuwon<sup>130</sup>, testifies to the rising consciousness of environmental problems and the way in which the Korean middle classes responded. The popularisation of organically grown foods, bottled water, green consumer goods and 'eco-apartments' reflected the growing desire of the middle classes to secure their own environmental needs. This kind of middle class environmentalism gave new impetus to product development and indeed capital accumulation. On the other hand, the Korean's preoccupation with large cars and electrical appliances and their conspicuous consumption of energy, particularly of fossil fuels, point up the contradiction in middle class environmental attitudes. Environmental

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<sup>130</sup> Pulmuwon is an organic foods company, which started in the mid-1980s as a very small business, but has grown to be a multi-million won business and an example of a business miracle story.

awareness has not been translated into collective improvements (Kwon, T-J. 1990), but remained as essentially individual acts by the middle and upper classes to secure their environmental goods, while the poor are left to suffer from deleterious environmental impacts. This has put the environmental movement into question amongst the working classes and alienated social groups.

Thus, as Bae, K-H. (1992) concludes, even though environmental awareness grew steadily throughout the 1980s and the 1990s, Korean consciousness of environmental conservation remained superficial. Therefore, the public consensus for the environment was too weak to establish a foundation for the environmental movement to influence the state and its policies. Instead, public awareness and opinion was moulded by state environmental campaigns. This absence of direction from below was harnessed by the government to justify and legitimise its mode of environmental regulation.

### **6.3.3 Traditional Attitudes, Radicalism and Hegemonic Ideology**

Environmental regulation as a social mode has become an integral part of the main national MSR, stabilising the accumulation regime through the control of social behaviour and consciousness within the environmental field. The shaping of the future social modes of environmental regulation, as well as the MSR, depends on the manipulation of existing dominant social, political and cultural practices and ideology. This section explores the underlying cultural and political traditions of Korea, to assess how they have been used in the past and present MSR, and what role they might play in the future.

#### *Confucianism and Hierarchy*

The mode of social regulation incorporates many strands of cultural and socio-economic ideologies in order to legitimise the state's socio-economic policies and directions. Of the various cultural and political ideological tools, Confucianism, anti-communism, economic development prioritism and nationalism have been prominent. Although Confucianism is one of the less prominent creeds of Korea, it is one of the most culturally embedded. Confucianism has been the cultural ideology that gave legitimacy to the social hierarchy and the top-down command structure of the state bureaucracy. It is responsible for the paternalistic attitude of the government and the general reliance of the public on the state as the benevolent institution and the protector of the national interest. With an emphasis on social conformity and subservience, as well as a strong work ethics and ideas of meritocracy, the modern Korean state has been able to regulate social behaviour in the interest of rapid economic growth.

Confucianist elements were integral to addressing many socio-environmental crises. During the summer months, particularly in 1991, when peak electricity demand threatened to cause

blackouts, the government ordered its offices, large businesses and other public and private institutions to cut electricity use. Air-conditioners, lifts, escalators and lights were turned off to save electricity.

“Government planners, meanwhile, talk proudly of their jawboning campaigns. These efforts involve the time-worn ritual of calling together businessmen, scholars and citizens' representatives to impress upon them the need to save electricity for the good of the country. There is a strong dose of Confucian austerity in this campaigning. Energy planners solemnly ascribe the surge in the electricity growth to 'the extravagant trend of consumption' in the words of a senior Energy Ministry official.”

(FEER 1991, 1. Aug., p.54)

Such ideological manipulation did not mean the end of social discord and resistance. The working classes, super-exploited in the production process, and the rural poor who were being continually alienated from the fruits of rapid industrialisation, staged many public demonstration, especially during slow economic growth periods. When domestic and external forces came to threaten the capitalist accumulation process and the hegemonic ideology, the state employed other, more emotional means, centering on anti-communist and nationalist ideologies<sup>131</sup>.

#### *The Labour Movement and Environmental Activism*

Although the environmental movement had been very closely linked with the pro-democracy and labour movements during the 1980s, the growth of middle class-oriented environmental issues in the 1990s led to environmental passivity as the state began to incorporate their demands. The 1990s issues were fragmented, and environmental groups focused on 'environmental' issues as opposed to 'socio-environmental' issues such as housing problems and the living and working environments. Even the non-registered groups failed to address working class environmental issues unless they were directly affected by pollution caused by large businesses or energy generation plants. The participation of the middle classes and intellectuals in the environmental movement removed its radical edge, and directed it towards issues that concerned the middle classes. From the early 1990s on, environmental groups began distancing themselves from labour and student movements. It is argued that both registered and non-registered environmental NGOs became more and more incorporated into the mode of social regulation.

#### *Korea's New Environmental Hegemony*

From the late 1980s, the state had to quickly established a hegemonic ideology to stabilise the MSR in the face of rising environmental concerns and demands which resulted from political and economic liberalisation. The hegemonic projects initiated within the environmental field

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<sup>131</sup> The labour and pro-democracy student movements were branded communist organisations and nationalist feelings were whipped up against U.S. pressures to open up domestic markets to American cigarettes, beef and other consumer products.

were represented by the reformation of the state environmental machinery and investment in environmental infrastructure. Rather than an antagonistic attitude towards environmental problems and issues, the state saw the opportunity to move towards a new mode of environmental and economic regulation through the propagation of its environmental ideology, through the delivery of economic growth and of private consumption. The mode of environmental regulation on the one hand took a distinctly market-oriented direction; and on the other, through the medium of ideology, it redirected the attention of the public from industrial pollution issues to the environmental problems caused by consumption. The state has been able to socialise environmental costs through selective application of the environmental regulations.

The authorities made use of various ideological devices, prominent amongst them two distinct concepts: the polluter pays principle, and the formula that 'every citizen is both victim and malefactor of environmental pollution'.<sup>132</sup> These two conceptualisations were responsible for the redirection of environmental issues and policies from industrial pollution to domestic waste. The implementation of the polluter pays principle tends to place the burden of environmental responsibility on civil society as a whole rather than on industrial capital. This ensured that *chaebol*-centred economic development policies would be pursued under the aegis of a new environmental ideology (Chung, T-S. 1992, p.241-2).

These new ideologies were responsible for creating the new MSR, legitimising the state environmental regulations of the 1990s. Following the declaration of these concepts in the environmental section of *The Seventh Economic and Social Development Plan* (1991), two notable new environmental regulations were introduced in order to reduce the quantity of waste at source. The first to be implemented was the 'Garbage Limitation System' which restricted the quantity of domestic garbage per household and imposed the use of standard bags issued by the local government. Additional garbage bags could be purchased at a cost which included disposal charge. Also encouraged was the separation of recyclable materials and the reduction of the total amount of garbage to be disposed of. The other new regulatory measure was the 'Environment Improvement Charge System'. The charge was to be levied on large commercial buildings and facilities as well as on large vehicles carrying such goods as petroleum. The MoE stated that it would be able to raise approximately 100 billion won per year - 65 billion from large facilities and 34.2 billion from petroleum transportation vehicles - in order to finance pollution-mitigating facilities, research and the development of environmental technology (Dong-A Ilbo, 10, July, 1992). If one compares this to the total 1991 expenditure of the Ministry of Environment of 85.8 billion won (0.3 percent of total government expenditure), then one can see that the money raised by the new tax system was larger than the ministry's expenditure. Thus, the state pushed the

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<sup>132</sup> See Environment Section in Ministry of Construction (1991) *The Seventh Economic and Social Development Plan*, MoC, Seoul.

concept of 'each citizen as a source of pollution' by levying a disproportionately large charge on the service sector, to be passed on to consumers.

However, in contrast to these new environmental strategies to make the public and consumers responsible for their waste, the state was less enthusiastic in applying the polluter pays principle when it came to large monopoly companies, particularly in the manufacturing sector. The large manufacturing firms continued to be the main contributors to pollution. Regulation remained soft, and fines and charges remained low. The Effluent Charge System was designed to encourage polluters to voluntarily install and operate their own effluent treatment facilities. Instead, it was used by industry to pollute the rivers for a modest fee. Other monetary means of regulating industrial activities also failed to bring about the desired effect due to the low level of fines and charges, and the lack of enforcement mechanisms. The enforcement of environmental regulation was lopsided, and much of the financial burden of environmental improvement and conservation was transferred from industrial capital to civil society by taxing small businesses and the public (Chung, T-S. 1992, pp.239-40).

In the mid 1990s as part of this ideological matrix, the state promoted the concept of a 'high tech' future for Korea. Korea's future is seen as lying in the development of high technology based industries for export, with the state subsidising research into new technology. As the government tried to raise the industrial trajectory, and as industries exploited the high-tech vision for product sales, society as a whole has been mobilised into the building of a technotopia for the 21st Century. The state, capital and society in general seem to share a belief that technology and the market mechanism can solve environmental problems. The Seoul Metropolitan Government's only solution to air pollution was to supply gas as the main heating source and cooking fuel to replace dirtier coal and oil. The government's policy to reduce air pollution from power generation has been to increase the share of nuclear plants rather than installing pollution mitigating facilities or promoting energy conservation which Korea desperately needs as it is a resource poor country.

The mode of environmental regulation in Korea goes beyond the regulatory mechanisms of the state, and the use of ideology and social groups to control social behaviour towards the environment. This shows that the social mode of environmental regulation can be conceived as being an essential part of the national hegemonic MSR, which acts to control the consumption and production behaviour of the society for the reproduction of the accumulation system.

## 6.4 Conclusion

The conjunctural development of environmental activism and state environmental regulation reveals that they have been influenced by the ecological problems and the character of the MSR. Particularly, the political and economic liberalism in the late 1980s, which increased the complexity of environmental issues, signalled a new phase in environmental activism and state responses. It was in the late 1980s and 1990s that the state made concerted efforts to establish a comprehensive environmental regulatory mechanism, with legislation and upgraded administrative structure, in order to deal with growing environmental problems and public demands. However, the effort by the government was inadequate to deal with growing environmental problems and public discontent due to the lack of funding caused by the state's economic prioritisation.

Although many Koreans have become more environmentally aware over the years, the understanding of the causes of environmental justice issues remained shallow. This was utilised by the state to form a new environmental hegemony which was conducive to continued capital accumulation, and the legitimisation of state policies. There has been two distinct mode of state regulation:

- 1) state legislation, regulations and policies
- 2) social regulation through hegemonic ideology and social practices

It is these two modes of regulation that have reinforced the legitimisation of state environmental as well as economic policies.

The state legislative framework is based on the polluter pays principle. Thus, with the exception of the EIA system, all the major environmental regulatory systems revolved around the taxing of pollution sources, or fining those who pollute. These regulations were applied to the manufacturing industries. But they were also extended to small and medium service sector businesses as well as to private individuals. The official line that 'river pollution is due to 55 percent from domestic households and urban businesses and 45 percent from industries', was an attempt to shift responsibility for environmental costs to civil society. The main objective of the financial means of regulation was to oblige the polluters to voluntarily reduce waste, or to invest in waste treatment facilities. However, the low levels of charges and fines, particularly for industrial pollution, rendered the regulations ineffectual. Instead, the regulations allowed industries to pollute for a low fee. The polluters pay principle was in fact operated as a 'pay as you pollute' principle.



Together with these regulations and the shift of environmental costs to civil society, the state started withdrawing public services such as litter bins in urban areas and public parks in order to force people to dispose of their waste within their own garbage disposal allowances. As in all other collective consumption or welfare areas, the government aimed to minimise its expenditure. The realisation of the severity of social and environmental problems did not mean that the environmental expenditure was increased: its share of total government expenditure actually went down during the early 1990s. Instead, it used such tax-raising legislation as the Environment Improvement Charge System to carry out environmental works without diverting funds from economic development projects.

The other main form of environmental regulation required the propagation of hegemonic ideologies to regulate social behaviour and attitudes. The state promoted environmental problems as society-wide issue which transcends class divisions. This concealed the fact that environmental problems were generally caused by the unscrupulous economic activities of monopoly capital and the consumption behaviour of the middle classes, with environmental degradation affecting disproportionately the socially alienated and weak groups who could not afford 'environmental goods'.

The government promoted non-radical social activities such as recycling of waste, cleaning up of nature parks (Dong-A Ilbo, 1994, 4 December) and the use of environmentally friendly products through the Registered Environmental Groups (REGs). 'Enlightening' the public about the environment, and the virtue of environmental technology was an important aspect of the functions of REGs and the MoE. This was designed to deflect NIMBY attitudes towards government projects and to conserve energy and resources. REG-led campaigns resembled the *Saemaul Movement* of the 1970s, which was used to regulate social behaviour and attitudes in the modernisation of rural and later, urban communities. The REGs, which made up the core of the early movement, continued to emphasise environmental justice issues, but they have been sidelined due to the force of the state-sponsored REG activities.

The propagation of hegemonic ideology produced a consensus in civil society, making state environmental regulations and policies acceptable. Thus, the costs of environmental problems have been socialised and the burden placed squarely on civil society. The capital accumulation process was virtually unaffected.

Environmental regulation in Korea thus became a vital part of the mode of social regulation, in that it regulated the social behaviour and norms in both production and consumption areas. The state managed to incorporate the mode of environmental regulation to complement the national hegemonic MSR by socialising the cost of environmental degradation/improvement, while promoting the notion that environmental problems are mainly consumption-oriented rather than

production-related. As we have seen in Chapters 4 and 5, the spatial separation of industries from population centres was not only used to underproduce the preconditions of working class reproduction, but led also to the sidelining of working class environmental issues, particularly industrial pollution. The structure of the state environmental administration has become such that environmental functions and regulations could not detrimentally affect economic development. This was achieved through complex bureaucratic procedures. Thus environmental regulation and administration in Korea in the 1990s has become not merely a window dressing or a legitimisation tool, but an active component of the accumulation strategy.

## Chapter 7

# Conclusion: Reproducibility of the EOI Regime and Sustainable Development

## 7.1 Summary

### 7.1.1 Accumulation Regime, Spatial Structure and the Environment

Korea's postwar economic growth has put the country at the centre of attention of many Western economists. The costs of the economic miracle have been huge, both socially and environmentally. Korea's economic development did not follow a smooth path of growth, but was a succession of growth, crisis and restructuring processes. As in the case of any nation, the accumulation system has been as dependent upon changing global economic conditions as it has been on domestic political economic conditions. The foundation of Korea's post-war economic growth was established during the Japanese colonial period. Essentially, the accumulation regime during this time had the characteristics of EOI directed towards the core consumption market, which was Japan. At first, the export of primary resources such as agricultural produce, timber and minerals was conducted with great efficiency in order to supply the raw materials needed for manufacturing industries in Japan. This type of peripheral exploitation was later replaced by the implanting of indigenous industrial structure through the establishment of light manufacturing, and followed by the introduction of heavy and chemical industries. However, the real legacy of the colonial mode of development to the post-war regime was the means of social, political and economic regulation, characteristics of capital and the industrial trajectory. The similarity between the colonial regime and the post-war regimes is striking. One would list the administrative structure of central bureaucracy, the dominance of *chaebol* or monopoly capital, which is almost identical to the *zaibatsu*, the political and economic exclusion of the industrial proletariat, the coercive means of labour suppression and the sequential deepening of the industrial trajectory. At each restructuring process, these regimes have ascended the industrial or technological ladder as during the colonial period. Thus, we can see that Korea's relationship with the global metropole, of which Japan was one, has had a great influence on its development process.

The postwar accumulation regimes in Korea were as much influenced by domestic political economic conditions as by global economic circumstances. The collapse of one regime and the succession of another has been dependent upon the ability of the state to mediate between global economic forces and internal political and economic needs. The extensive accumulation regime based on the ISI was established soon after the Korean war. The national reconstruction was the

driving force of the ISI regime, which took advantage of American aid through the processing of primary resources such as sugar, cotton and flour as well as timber and minerals. The autocratic state which allowed monopolistic activities of capital soon faced a legitimisation crisis as the exhaustion of the ISI regime of accumulation coincided with the destabilisation of the MSR. This conjunctural crisis not only resulted in the restructuring of the mode of development but also in the transformation of the state and political alliances.

In the early 1960s, an extensive accumulation regime based on labour intensive EOI was established with a competitive regulation mode, which took advantage of the growing dysfunctioning of the Fordist economies of the West. As an export oriented economy, the Korean accumulation regime has been very sensitive to the economic conditions of the major international markets and the changes in the global economic structure. Much of Korea's exports were Own-name Export Manufacturing (OEM) products for American and Japanese companies. Although this extensive accumulation regime coupled with a competitive MSR based on the labour intensive industrialisation was able to stimulate the economy and provide mass employment, the regime was highly dependent upon external market conditions, and required the super-exploitation of the Korean labour force.

The next major economic restructuring came in the early 1970s, which coincided not only with the growing political disenchantment of those alienated from the EOI development process within Korea, but also with the collapse of Fordist regimes in the Western industrialised countries. With tougher export market conditions for labour intensive high bulk products, the corporatist regime based on heavy and chemical industrialisation sought to raise the technological and industrial structure to escape from dependency upon the rising cost of intermediate imports from advanced industrialised countries. Heavy and chemical industrialisation was not a return to an ISI regime, but aimed to promote EOI development by substituting imported intermediate goods with domestic products. Also the development of chemical industries also coincided with the introduction of intensive farming methods to raise the income and productivity of the agricultural sector in order to assure self-sufficiency in food supply. The main problem of the heavy and chemical industrialisation phase was its mode of regulation. On the one hand, this regime brought about a culture of heavy dependence on state subsidy and manipulation of the financial system by monopoly capital, but on the other hand, competitive regulation was enforced on other industrial sectors. This resulted in the over-capacity and uncompetitiveness of the heavy and chemical industrial sector, while the other industrial sectors suffered from the lack of bank loans and higher interest rates. The global recession in 1979 brought the regime to an end.

The dominant global free market ideology was adopted in the period of the peripheral Fordist regime, which promoted competition and productivity. The rationalisation and restructuring of

the industrial system were brought about largely by active state intervention. However, the reduction in state subsidy and import tariffs forced the *chaebols* to look for other ways to raise profits. Apart from raising productivity, the introduction of the production line automation and product development, wages were kept extremely low, with the state willing to use coercive tactics in labour disputes. It was this labour repression that sowed the seeds of the collapse of the peripheral Fordist regime in 1988. The *chaebol* groups, which grew rapidly in size during the corporatist period matured into internationally competitive companies, while diversifying into more profitable areas such as finance and real estate. The oligopolistic domination of the Korean economy by a handful of *chaebol* companies has led to a very high social concentration and centralisation of capital. This not only raised social tension between classes but also became one of the main problems of the Korean economic structure: the sparseness of small and medium-sized industrial firms. This can be compared with the Taiwan development process, which was particularly brought about by the strong performance of specialised medium and small firms in a well established industrial hierarchy. Taiwan's development also contrasts with Korea in terms of the role of Western TNCs, as foreign investment in Taiwan was the main driving force behind the EOI economy (Chou 1994). But in Korea, national monopoly capital has been the dominant economic force with insignificant foreign investment.

International pressures for political reform and economic liberalisation and rising labour discontent due to poor wealth distribution brought the peripheral Fordist regime to an end and ushered in the neo-Fordist regime, which allowed for higher working class consumption, but with competitive mode of regulation still in force. The gradual opening up of the domestic market to overseas competition and the increase in Korean labour costs have intensified the accumulation process. Thus, the state in the early 1990s started to play a greater role in socialising the cost of reproduction of labour by implementing medical insurance and pension schemes in order to reduce wage rise pressures. This did not signal the start of a welfare state, but instead a workfare state, where social welfare is purchased individually through a national programme of insurance schemes. Those who were unemployed or unable to work were excluded from the social safety net. However, this new regime did not end the repression of labour by the state. As working class wage-rises and the global recession of the early 1990s started to threaten competitiveness of Korean firms, and national capital accumulation, the state resumed its coercive tactics. The construction of the 'workfare' system on the one hand and the strong-arm tactics in labour management on the other, worked well as a legitimisation strategy, where the dominant hegemonic bloc composed of middle classes feared the loss of their economic stability.

During this process, Korea underwent many social and spatial transformations: urbanisation of the population and industrialisation of the countryside through the spatial expansion of manufacturing and the spatial division of labour and classes. The transformation of the spatial

structure has been in dialectical relationship with the restructuring of the accumulation regime. The blockage to further accumulation was due to both the exhaustion of the accumulation strategy and the emergence of spatial barriers or constraints. Thus, the contradiction in the capital accumulation process had to be overcome not only by the restructuring of the *accumulation system*, but also of the spatial structure. However, the old socio-spatial form and relations also constrained the possible new spatial - accumulation strategy combination. The new spatial arrangement, which is the product of new accumulation strategy and the old spatial structure, helped to overcome the accumulation blockage, but intensified existing socio-spatial problems.

The emerging social, spatial and environmental problems were the outcome of the sedimentation of intensifying spatial forms upon existing ones. The national space-environment has been used ever more intensively as the accumulation system intensified under the state spatial and land development strategy. In the 1960s, the labour intensive export oriented development was implemented under a spatial strategy of concentration in the two largest cities with good transport infrastructure, Seoul and Pusan. The Taylorist EOI regime was exhausted not only by the dysfunctioning of global Fordism, but also by the spatial barriers to the capital valorisation process. The concentrated spatial strategy stimulated rural-urban in-migration at a phenomenal rate, causing urban overcrowding, squatter settlement and high urban unemployment as well as rising industrial land prices. In the 1970s, the heavy and chemical industries in search of scale economies were located in the provincial, purpose built industrial towns in the Southeast, creating a new industrial space. In order to relieve the overconcentration of population and congestion, the state also implemented a policy of industrial decentralisation. However, the decentralisation of industries to the provincial areas of Pusan and Seoul did little to relieve population migration into the primate city and their satellites. Instead, this was the start of suburbanisation of industrial development in the surrounding areas of Pusan and Seoul. Few industries moved to other provinces at this time. The intensive methods introduced into the agricultural sector, and the spatial policies prohibiting industrial activities in rural zones, effectively sowed the seeds for rural underdevelopment and regional inequity. Thus, the country was divided into two functional zones; the industrial urban zone and the rural zone. Geographically, the country took on a 'bi-polar' development form, with Southeast and Northwest (Capital) regions receiving much of the investment in fixed capital and manufacturing industries as well as population in-migration.

The introduction of free market competition and a new industrial trajectory in the peripheral Fordist regime of the 1980s which intensified competition at all levels of society stimulated the disintegration of production and control-marketing functions, particularly among *chaebol* groups, giving rise to a tripartite spatial structure. The de-industrialising city of Seoul with concentrated control functions and business services became the CCZ, the suburban provincial

areas of Southeast and Capital regions with concentrated production functions became the SIZ and the remaining areas which were for agricultural production became the PRZ. De-industrialisation and the rise in the business-service sector of the CCZ turned this zone into a middle and upper income class zone, with increasing private consumption. The SIZ on the other hand, which received high government investments for productive infrastructure to promote efficient industrial and export activities, became populated by an industrial proletariat, with the conspicuous absence of the middle classes. Within the expanding SIZ, there was a two-tier development. The emerging high-tech and precision machinery industries were located in the prime industrial sites, whereas the low value-added declining industries were displaced to the peripheral areas of the SIZ. Rising land prices in the industrial zones and falling transport costs were the main factors. Since the 1980s, the PRZ and its population has been alienated from the development processes as state subsidies were cut and market competition introduced into the agricultural sector. Thus, the pursuit of the high growth EOI strategy with competitive regulation and efficiency-oriented land and resource development strategies, resulted in a highly uneven spatial and social structure.

The division of national space into tripartite zones meant that there existed different social relations and institutional forms within and between these zones. One can therefore presume that differences in production activities, in consumption levels and political inclusiveness would suggest quite differing social and environmental conditions. As we have seen in Chapter 5, the dynamics of each zone within the overall national accumulation regime have created distinctive environmental problems. Capital concentration and centralisation into the CCZ resulted in the overheating of the urban economy alongside high levels of consumption. One of the most serious problems of this capital and population concentration was the competition over land. The demand for business and office space and middle class housing led to continuous eviction of the urban poor from the city centre to the outskirts. However, the huge shortage of land within the city led to the suburbanisation of housing and office developments to the satellite cities. The greenfield sites on the urban periphery have been capitalised and commodified, widening the pollution effects. The rapid increase in water and air pollution due to the rise of mass consumption of cars and other commodities under the neo-Fordist regime completely overwhelmed the collective consumption infrastructure. The low standard of environmental regulation added to the current problems.

The SIZ, the production core of the Korean EOI regime, received very little surplus capital. The siphoning out of capital to the CCZ resulted in the SIZ being relatively underdeveloped, particularly in the consumption field. The spatial division of labour of the Fordist production process has accounted for the lack of capital accumulation in the SIZ. It was also responsible for the flight of the managerial class to the CCZ. With only the industrial proletariat in this zone, the state and capital was able to treat it as 'the production line' with little consideration of the

reproduction needs of labour. The environment was also seriously degraded by industrial pollution, impacting on the health of the working classes. Industrial capital was able to externalise its production costs to the environment due to the limited political voice of the working classes and the benevolent attitude of the state. Through the competitive mode of regulation, which rests on the market mechanism and on the private provision of environmental needs, the state was able to transfer its environmental responsibility to capital and to civil society. Monopoly capital was disinclined voluntarily to provide pollution mitigating facilities. And civil society was unable to protect the environment or guarantee wide circulation of environmental goods. Only when environmental disasters brought a public outcry did the state act towards regulating industrial activity, or invest in consumption infrastructure.

The introduction of intensive agricultural production through high chemical input in the 1970s trapped the farmers in a vicious cycle of debt repayment and agrochemical use due to the state reduction of subsidies and market-led pricing. Farmers were forced to use increasing amounts of agrochemicals to raise productivity, leading to deteriorating soil fertility and acidification. The health problems associated with chemical use was serious, and in many cases fatal. The increase in wealth of the middle classes brought new pressures on the PRZ environment in the form of leisure developments. The destructive construction process, as well as operation of golf courses in particular, compounded rural problems. Instead of bringing much needed economic growth to the region, the *chaebol* dominated leisure industry brought exploitative practices of casual and seasonal employment. Surplus capital was again siphoned off to headquarters in the CCZ. The underdevelopment dynamics of the PRZ was further deepened by the lack of state investment in either productive or consumptive infrastructure such as transport and communication links, medical and social welfare needs and environmental health amenities.

While each zone had its own environmental problems created by particular production and consumption structures, these could not be contained within the zones. The industrial discharges affected water for agricultural use, and industrial and agricultural pollution combined threatened the quality of drinking water for the urban population. The cumulative effects of industrial, agricultural and domestic waste water seriously affected coastal water quality and marine life. The severity of coastal water pollution by land-based sources was well demonstrated by the appearance of *Jeokjo* (red tide; poisonous algae) in most of the coastal areas of Korea, destroying billions of won worth of fisheries and marine life. Air pollution, causing health problems and a decline in crop yields affected much wider areas by the spread of acid rain in non-urban and non-industrial areas. Thus environmental problems in Korea as a whole are far greater than the sum of those in each zone.

The uniqueness of the Korean development process lies in the discrimination of state interventions between production and consumption. That is, the state in Korea played a limited



role in the domestic management of aggregate effective demand, but took full charge of collective productive goods which are less profitable from the point of view of capital, but nonetheless essential to the functioning of capitalist production. Discrimination in state intervention is particularly characterised as between differential expenditures in state investment and social consumption. Expenditure on social investment has been overwhelmingly directed towards the process of production. These investments, since the First Five Year Economic Development Plan in 1962, have taken the form of constant capital investment in either the provision of infrastructure (for example, transportation and communication, power and water supply), or the improvement of labour productivity (education, science and technology). As in other NIEs, the central government in Korea intervened massively in private production activities and has indeed constituted a key agency in the promotion of productivism<sup>133</sup>. In contrast, the delivery of social consumption means has been subordinate. Throughout the EOI period, total government expenditure on social consumption, including social development and housing, environmental protection and public health was less than expenditure on 'economic services'<sup>134</sup>. In this situation, it is hardly surprising to discover that less than 31 percent of Korea's domestic sewage was subject to primary treatment. Another example of central productivism can also be seen in the marked contrast between state intervention in the provision of public housing and in the development of industrial zones, both of which was afflicted by spiralling land prices which have themselves been driven by rampant speculation to levels comparable to those in Tokyo. As noted in Chapter 4, the central government has taken full charge of providing sufficient industrial estates throughout the country, while public housing was for the most part entirely neglected. In the competitive mode of social regulation, the socialisation of collective consumption means is a hindrance to capital in its search for profits. Accordingly, the delivery of such social consumption means as housing was overshadowed by activities serving capital accumulation. Throughout the post-war period the state provided less than 29 percent of mass housing requirements, in which low-income rental housing was virtually non-existent until 1990<sup>135</sup>. We have seen that the inadequate provision of public housing as well as slum redevelopment crudely transferred the vast majority of ordinary people to 'the second circuit of exploitation' of competitive property capital. Social tension over the housing shortage, particularly in the Seoul metropolitan area was a major source of the state's legitimation crisis.

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<sup>133</sup> Term used by Chou (1994) which originated from Lipietz (1989b).

<sup>134</sup> This term is used to describe all expenditure which is used to aid economic growth in all sectors like transportation and communication, roads, electricity and water developments as used in the Korea Statistical Yearbook (1993). Figure 3 in Appendix 6 shows that the hegemonic projects and productive expenditure (police, education and economic services) of 1991 accounted for 70.4 percent of the total general government expenditure while expenditure on social consumption means stood at 24.4 percent (including environmental expenditure).

<sup>135</sup> Although the state constructed 'public housing', these were sold at subsidised rate. However, the urban poor were unable to afford to buy them. The real need for rented accommodation for the urban poor was not met. Even when in 1990, public rental housing was first constructed, the numbers were very small.

As for environmental protection and provision of recreational space, the shortage of large open green spaces in urban areas has choked the city and its residents with air pollution, and the sensitive nature parks in the countryside has been commercialised and capitalised by both public and private organisations as tourism and leisure activities increased.

### 7.1.2 Environmental Ideology, MSR and Accumulation Strategy

As we have seen above, the transformation of space and the production of environmental problems in Korea was due to the productivist interventions of the state as well as the dynamics of capitalist accumulation. The state, however, has not only intervened in the restructuring of accumulation regimes, but it has also been the main propagator of the MSR. The central state in Korea tried to ensure the stabilisation of the accumulation regime-MSR coupling through political and ideological manipulation. The predominantly competitive social regulation mode which was pervasive throughout society, influencing the behaviour of individuals, was used to justify its economic, social and environmental policies.

The economic growth prioritisation, and the imbalances between productive investment and collective consumption means, has been justified by the 'trickle down' concept of liberal economic philosophy. Under the competitive economic and physical development policies and plans, it is clear that both capital concentration in the hands of *chaebol* groups and widening income gaps was justified. At the same time, the environment has been heavily abused. Environmental destruction on a vast scale was claimed to be a necessity, an unavoidable side effect, that had to be endured if economic growth were to be achieved. The polarisation of wealth between social groups and between regions was justified as a natural development of capitalist society. Instead, there was a promotion of Confucian work ethics as a means to a better living standard. In the early 1990s, with growing working class discontent and radicalism, the construction of a 'workfare state'<sup>136</sup> was pursued. The workfare state arose from the competitive market oriented social system where welfare is purchased through a national system. This is distinctly different from the welfare system of Western European countries since it resembles private pension and protection schemes rather than social security. Moreover, the national pension scheme is not universal but is restricted to those in formal sector employment. The competitive MSR, the lack of universal social welfare, increasing social polarisation and the growing dominance of ideology of free market individualism has deepened the fragmentation, competition and antagonism in society which lowered the 'socially-conscious solidarity to the family level'<sup>137</sup>. With the prevalence of such ideology and social norms, the state was able to

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<sup>136</sup> The term has been borrowed from Jessop (1992).

<sup>137</sup> Phrase owed to Chou (1994)

privatise social and environmental costs to the public, where each individual is responsible for the provision of his or her own social and environmental needs. Under the current mode of social regulation and rapidly declining public concern for social justice issues, it is unthinkable to implement a social welfare system where the benefit of the contribution would accrue to others less fortunate or to those who do not contribute at all. Thus, the state was able to underproduce the means of collective consumption, and forced the public to provide for themselves. So, the provision of *clean* drinking water became another item that private households had to secure from the market instead of being able to rely on public services. The attraction of environmental goods by the middle classes had less to do with environmental justice, and more to do with how they could avoid environmental maleffects. This has opened up new avenues for capital accumulation through the increased popularity of green products, as well as spurring a whole new sector of environmental technology and services for domestic and industrial consumption. However, the lower sections of society were unable to afford environmental 'goods', while suffering from growing environmental 'bads', resulting from the rapidly increasing consumption activities of the well-to-do classes, as well as industrial pollution.

Under a competitive MSR, environmental regulation therefore followed the same pattern as the provision of social consumption. The regulatory mechanism of environmental protection was formulated under the dominant ideological framework using a market approach. This mode of environmental regulation was inherent in the state strategy to 'privatise' environmental costs by introducing measures such as the polluter pays principle. The 1990s environmental ideology, which focused the blame for environmental degradation on consumption activities, was a means of regulating social behaviour and legitimating state environmental regulations. The state, naturally, applied the polluter pays principle unequally, lessening the burden on monopoly capital and shifting the costs to civil society. Thus, the environmental cost of capital has been subsidised by the public. As we have already seen, the fines and taxes on industrial pollution discharges were low and not strictly enforced, while the environmental improvement taxes on small businesses were high and vigorously applied. The large leisure developments by monopoly capital in sensitive natural environments were allowed with minimal assessment, but small extensions of farmhouses or other such developments in greenbelts saw the full force of the law. Thus, the MSR regulates social behaviour for economic development, and through environmental ideology forms a social consensus for the mode of environmental protection, designed not to hinder the regime of accumulation. On the contrary, environmental ideology and policies have been so manipulated to enhance capital accumulation while pacifying social demands.

The historical transformation of Korea's regimes of accumulation, modes of social regulation, nature and form of the state, industrial trajectory, spatial structure and environment is summarised in Table 7.1.1.

Table 7.1.1 The Transformation of Postwar Korea

	Extensive Regimes			Intensive Regimes	
	ISI (1950s)	Taylorist EOI (1962-1972)	Corporatist EOI (1972-1980)	Peripheral Fordist EOI (1981-1987)	Neo-Fordist EOI (1988- )
Industrialisation and Global Capitalism	<ul style="list-style-type: none"> <li>* reconstruction with American aid</li> <li>* sub-Fordist easy ISI of Department I</li> <li>* capital accumulation through monopolistic rent-seeking</li> </ul>	<ul style="list-style-type: none"> <li>* new international division of labour under the dysfunctioning Fordism</li> <li>* Taylorist regimes of extensive accumulation through the sweatshop system</li> <li>* "free world" markets</li> </ul>	<ul style="list-style-type: none"> <li>* flexible international labour division under crisis and transformation of global Fordism</li> <li>* implementation of ISI of intermediate goods for higher value added EOI</li> <li>* accumulation through protectionist measures, extensive capital investment and reducing dependency</li> <li>* "free world" markets</li> </ul>	<ul style="list-style-type: none"> <li>* global economic boom led by Western Industrialised countries</li> <li>* regime of intensive accumulation, seeking balances between production and consumption in the global system</li> </ul>	<ul style="list-style-type: none"> <li>* protectionism and the formation of economic blocks</li> <li>* opening up of and disintegration of Soviet communist block</li> <li>* flexible regimes of intensive accumulation with seeking balances between production and consumption in the global system</li> <li>* globalisation of Korean industries and opening up of Korean domestic market</li> </ul>
MSR	corporatist	competitive	corporatist	competitive	Neo-competitive/ workfare state
Industrial Trajectory	<ul style="list-style-type: none"> <li>* monopolistic domination by regional enterprise</li> <li>* basic ISI industries, food processing, coal and mineral production, textile etc</li> </ul>	<ul style="list-style-type: none"> <li>* NIDL industries, footwear, clothes, electronic assembly etc</li> <li>* OEM production in export industrial estates</li> </ul>	<ul style="list-style-type: none"> <li>* state led heavy and chemical industries</li> <li>* dominated by large-scale corporations, the <i>Chaebol</i></li> </ul>	<ul style="list-style-type: none"> <li>* state led restructuring of economy and rationalisation of industries</li> <li>* production of Fordist consumer goods, electronics, machine tools, automobile, ship building, etc</li> <li>* dominated by large-scale corporations, the <i>Chaebol</i></li> </ul>	<ul style="list-style-type: none"> <li>* dominated by large-scale corporations, the <i>Chaebol</i></li> <li>* state promotion of small and medium firms</li> <li>* capital and technology intensive industries, electronics and communication equipment, etc</li> <li>* rise of commerce and services</li> </ul>
Production Process and Consumption	<ul style="list-style-type: none"> <li>* based on scale economies</li> <li>* state guaranteed monopolies</li> </ul>	<ul style="list-style-type: none"> <li>* based on scale economies</li> <li>* based on urban and rural surplus labour force</li> <li>* competition through wage control</li> </ul>	<ul style="list-style-type: none"> <li>* based on scale economies</li> <li>* oligarchic competition through state protectionism</li> <li>* accumulation through rent-seeking</li> </ul>	<ul style="list-style-type: none"> <li>* based on scale economies</li> <li>* oligarchic competition through state protectionism</li> <li>* introduction of Fordist production processes</li> <li>* competition through wage control and productivity increases</li> <li>* mass consumption suppressed</li> </ul>	<ul style="list-style-type: none"> <li>* based on scale economies</li> <li>* deregulation and liberalisation of domestic market</li> <li>* increasing flexibility of production</li> <li>* competition through product development, productivity and market share</li> <li>* productivity- wage linkage and rise of mass consumption</li> </ul>
Labour and Social Development	<ul style="list-style-type: none"> <li>* organised labour market and unions</li> <li>* high unemployment and no job security</li> </ul>	<ul style="list-style-type: none"> <li>* relatively free union movement</li> <li>* free press</li> <li>* limited democracy and labour inclusivity</li> <li>* rural alienation</li> </ul>	<ul style="list-style-type: none"> <li>* growing labour repression</li> <li>* production of working class elite in big companies, super exploitation of other industrial proletariat</li> <li>* rural modernisation and industrialisation of food production</li> <li>* suppression of democracy and social consumption</li> </ul>	<ul style="list-style-type: none"> <li>* labour repression severe and growing militancy of labour unions</li> <li>* alienation of agricultural sector</li> <li>* polarisation of wealth between social classes</li> </ul>	<ul style="list-style-type: none"> <li>* increasing gap between skilled working classes and casual or unskilled workforce</li> </ul>
State	<ul style="list-style-type: none"> <li>* nationalist state</li> <li>* non-interventionist</li> </ul>	<ul style="list-style-type: none"> <li>* anti-communist policies</li> <li>* limited democracy</li> <li>* legitimisation rooted in EOI</li> </ul>	<ul style="list-style-type: none"> <li>* authoritarian interventionism</li> <li>* legitimisation rooted in nationalism and military</li> </ul>	<ul style="list-style-type: none"> <li>* authoritarian interventionism</li> <li>* legitimisation rooted in EOI</li> </ul>	<ul style="list-style-type: none"> <li>* limited intervention</li> <li>* legitimisation rooted in the EOI</li> <li>* democratisation</li> <li>* flexible diplomacy</li> </ul>
Space	<ul style="list-style-type: none"> <li>* dispersion of war refugees</li> <li>* agrarian society</li> <li>* low urbanisation level and rate</li> </ul>	<ul style="list-style-type: none"> <li>* rapid urbanisation and industrialisation of primate cities</li> <li>* rural underdevelopment</li> </ul>	<ul style="list-style-type: none"> <li>* large scale Industrial decentralisation to provincial areas of primate cities</li> <li>* creation of dipolar spatial development</li> <li>* polarisation of regional economy</li> </ul>	<ul style="list-style-type: none"> <li>* consolidation of industrial space</li> <li>* spatial displacement of declining industries</li> <li>* new spatial division of labour and the formation of tripartite zonal spatial hierarchy</li> <li>* population suburbanisation in Capital region</li> <li>* regional growth centre and population dispersal policy</li> <li>* polarisation of regional economy</li> </ul>	<ul style="list-style-type: none"> <li>* megalopolisation of Seoul as a global-regional business centre</li> <li>* development of West coast as part of enlargement of Capital region for trade with China</li> <li>* population and industrial accommodation policies for Capital region</li> </ul>
Environment	<ul style="list-style-type: none"> <li>* war devastation, colonial natural resource depletion and continued exploitation of environment for survival</li> </ul>	<ul style="list-style-type: none"> <li>* problems of sanitation and environmental health associated with rapid urbanisation and industrial concentration</li> </ul>	<ul style="list-style-type: none"> <li>* spatial enlargement of and toxification of pollution from heavy and chemical industrialisation</li> <li>* continued growth of slum in primate cities</li> <li>* declining soil fertility and river pollution from toxic agrochemicals</li> </ul>	<ul style="list-style-type: none"> <li>* urban redevelopment and eviction of slum dwellers</li> <li>* increased toxic industrial discharges under competitive economic environment</li> <li>* intensification of agrochemical use and rural pollution</li> </ul>	<ul style="list-style-type: none"> <li>* problems of housing shortage, construction and suburbanisation</li> <li>* problems of mass consumption and automobile use</li> <li>* rural alienation and agrochemical pollution</li> <li>* continued externalisation of production cost to the environment by industries</li> <li>* problems of tourism and leisure development</li> </ul>
Ideology	<ul style="list-style-type: none"> <li>* anti-communism and dependency</li> </ul>	<ul style="list-style-type: none"> <li>* capitalist internationalism, anti-communism and democracy</li> </ul>	<ul style="list-style-type: none"> <li>* Korean nationalism under 'self-reliance' ideology</li> </ul>	<ul style="list-style-type: none"> <li>* internationalism, anti-communism, austerity and economic prioritism</li> </ul>	<ul style="list-style-type: none"> <li>* globalism, democracy, and free market individualism</li> </ul>

## **7.2 Contradiction of Sustainable Development and the EOI Regime**

As we have seen above, Korea's political, economic, social, spatial organisation and environmental conditions underwent many transformations associated with both the evolving internal crises and the transition of the world economies. Successive intensifying phases of accumulation regimes and the dialectical structuration of the national space at each stage of economic restructuring resulted in deteriorating social and environmental conditions under the strategic intervention of the state. In these economic-political conjunctures, the competitive mode of social regulation has consistently played a strategic role in organising the accumulation regime in postwar Korea.

Following the political and economic restructuring of the late 1980s, a number of developments occurred simultaneously: democratisation, the rise in mass private consumption, rationalisation of the central state apparatus, granting of local autonomy, the de-industrialisation of downstream, labour-intensive manufacturing, the globalisation of Korean capital, deregulation and the opening up of domestic markets, implementation of 'social welfare' and even the improving of relations with the residual socialist states. Superficially, these unprecedented developments in Korea's history indicate that a new national formation is in the making. However, Korea's adjustments of politics and economics simply represent the defensive strategies against conjunctural crisis in the context of the global experiments of post Fordism since the late 1980s. The pressures of the crisis have been filtered, moulded and translated through the prevailing political and ideological hegemony of the then development mode of EOI. The adjustments in Korea's polity and economy only reasserted the continued and deepened reproduction of the intensive accumulation regimes through flexibilisation of EOI.

The changes in the 1990s in global economic structure posed a new problem of accumulation at the national level, and signalled a change in the regularities in the institutional forms in Korea. Here, we review the implications of the changing position of Korea and its integration into the world economy for socio-spatial and environmental conditions. The competitive mode of regulation and free market philosophy of state policies are inadequate in dealing with the social and spatial polarisation that will accompany the penetration of international capital into Korea, as well as the globalisation of Korean capital. The activities of environmental groups in the 1990s and the 'sustainable' strategies of various parts of Korean state do not appear to be confronting the scale of the issues, let alone future developments.

## **7.2.1 Globalisation, the EOI Regime and State Environmental Hegemony**

With the opening up of the domestic markets and the influx of global capital, there has been an intensification of competition as well as the penetration of post-Fordist social relations, encompassed by the concept of flexibilisation.

In the last years of the century, these developments will have the effect of reinforcing the tendency of capital concentration in Seoul and its surrounding region. The competitive MSR and the flexibilisation of labour and inter-firm relations mean that face-to-face contact will continue to be essential, identified as the main reason for the megalopolisation of Neo-Fordist regimes such as the United Kingdom, France and United States in the Western Industrialised countries and Thailand, Malaysia, China and other NICs (Lipietz 1992, Peck and Tickell 1992a). The urbanisation of the Seoul Metropolitan Region will intensify, thus bringing more urban environmental problems as well as relative underdevelopment in other regions. Moreover, the present mode of environmental regulation which is market competitive and promotes private provision of environmental and social consumption goods, could not be sustained as flexibilisation of productive forces and relations are introduced. As 'job for life' practices are eroded and structural unemployment problem rises, as has been seen in Western industrialised countries, the public will not be able to shoulder the burden of environmental degradation or provide privately the necessary environmental services and goods. Indeed, it is possible that the spiralling cost of environmental goods and worsening wage conditions and social polarisation will sooner or later force the state to assume the responsibility for collective consumption needs.

The current institutional forms characterised by a hierarchical social structure, centralised economic and political forms, polarised wage relations and consumption and free market competitive individualism are likely to be intensified, posing barriers to long term sustainable development. Although there have been moves towards political and bureaucratic decentralisation (establishment of local councils) and a growing social and environmental justice movement (as well as increasing government interest in sustainable development principles), there has been little change in the industrial trajectory or the hierarchical nature of social regulation. This is particularly seen in the top-down approach to economic, social and environmental planning, which are the antithesis of sustainable development principles.

The opening up of the Korean economy and its integration into the global system in the late 1990s will continue to bring profound changes to the mode of development in Korea. The role of the state and national monopoly capital will significantly change, as will the nature of accumulation. The intensification of the accumulation process and the environment-threatening spatial primacy of the SMA will bring further complications in the sustainability of political, economic and environmental development.

## **7.2.2 Sustainability of the EOI regime and Sustainable Development: The Contradiction**

The issue of sustainable development must be discussed within the context of the changing economic reality. As we have seen, the degradation of the human and natural environment is a function of the accumulation process, as well as the mode of social regulation. This is codified in the institutional forms or social regularities such as official ideologies and regulations (economic and environmental), spatial differentiation, consumption norms and competitive social (wage) relations. Thus, sustainable development principles are inseparable from the various levels of social reproduction. However, efforts to address the development and environment dichotomy through sponsorship of sustainable development strategies represents an attempt to legitimise growth oriented policies and to diffuse political pressures. The sustainable development strategies proposed by the Korean state would regulate social and environmental conditions without a corresponding regulation of economic dynamics.

However, in order to achieve the sustainable development objectives as first suggested in the Brundtland report, there has to be profound changes to the mode of development in Korea. Particularly, an alteration in the mode of social regulation is of prime importance since this is the mechanism by which social norms and institutional forms can be significantly changed. To address the basic criteria of 'meeting the needs of the current generation without undermining the needs of the future generation' the following are demanded: a) long term strategies for reproducibility of the accumulation regime, b) meeting the basic needs of the individuals as well as of society as a whole, and c) a MSR which will guarantee these two conditions.

The combination of the EOI regime, which necessitates the need to keep production costs low, and the competitive MSR, which promotes short term profit motives and externalisation behaviour can be said to be the antithesis of sustainable development principles. The competitive free market philosophy combined with a hierarchical social structure tend to justify income differentiation and social polarisation, which not only fail to cater for the needs of the underprivileged, but also lead to exploitation and poverty. Accompanied by the high growth development mode, high disparities in wages and consumption levels lead to social instability. When this social dysfunction is spatialised, there occurs regional antagonism as well as population migration. Thus, capital and population concentration in developed regions leads to intensifying competition over environmental goods while other regions suffer from exploitation and underdevelopment, both bringing environmental degradation.

The contradiction between the dynamics of the EOI regime based on a competitive MSR and the sustainable development could not be greater. The historical absence of a monopolistic MSR in

the postwar development process of Korea means that there is a lack of the social welfare and infrastructural foundations that exist in Western Industrialised countries. In effect, like the other NICs, Korea with its late development jumped from an extensive accumulation period to the post-Fordist period. Although the rapid economic growth was made possible by the skipping over the Fordist mode, the social and environmental problems latent in the mode of development came to light. However, without a structural crisis in the mode of development, there is in the 1990s little possibility of a 'New Deal' for the Korean people. Any 'New Deal' in the 21st Century would have to be based on the sustainable development principles, which bring both social justice and environmental justice.

Sustainable development demands a fundamental change in the MSR, which needs deep political commitment from all levels of society. However, in order to make changes to the MSR, political and economic strategies must tackle the concrete manifestation of the MSR, the institutional forms. Of these, the most important is the 'role and nature of the state' in the case of Korea. As we have seen the state has been the main propagator of MSR. However, it is not without constraints, particularly those of ensuring continued capital accumulation and social cohesion. With the slow disintegration of the welfare states in the Western industrialised countries, it is difficult to foresee that Korea's workfare state could be transformed into a welfare state in Korea. Nevertheless, we should not underestimate the scope of state intervention that can be deployed to redirect the mode of development. Particularly, the economic, regional and urban planning mechanisms that the central government possesses could be made to mediate the consequences of intensifying accumulation dynamics.

### **7.2.3 Towards a Sustainable Society and Accumulation Regime**

As discussed, sustainable development strategies must address institutionalised forms. Instead of dealing with social and environmental consequences of rapid economic development, problems must be dealt at a deeper level. Thus, the institutionalised regularities in Korean mode of development that need to be changed are:

- 1) the nature of the state and its intervention;
- 2) the centralisation of economic and political powers and social and cultural amenities;
- 3) the competitive mode of regulation and the political exclusion of weak social groups;
- 4) the dominant hegemonic ideology based on free market philosophy and Confucianism;
- 5) adjustment of wage relations and consumption norms.

The main adjustment that has to be made in terms of state intervention is the disproportionate capital investment in the productive sphere, at the expense of collective consumption demands. The concentration of disproportionate levels of investment favouring the developed and



industrialised regions must also be readdressed if population and industrial over-concentration are to be dealt with. Furthermore, regulatory mechanisms in the economic, social and environmental sphere would have to be changed. Particularly, the environmental regulations governing resource use and conservation, which favour capital accumulation as opposed to ecological and social needs must be redirected. Here, the power balance between developmental ministries and welfare-environmental ministries would need to be readdressed while better mechanisms of development control and participation would be required.

The limited impact of population and industrial decentralisation policies have largely been the result of the social and spatial centralisation of capital, that is, in a small number of *chaebol* groups whose headquarters are primarily located in Seoul. The reliance on a handful of *chaebol* groups for national capital accumulation should be replaced by a much wider web of economic agents, that is, small and medium business enterprises. Access to financial loans should also be widened to support regional businesses and developments.

As for competitive regulation, it has underpinned industrial capital's externalisation of environmental costs, and assisted in the formation of social behaviour and the mentality of free market individualism. This mode of social regulation has produced an exclusionary political environment, neglecting social justice issues such as wealth redistribution and the provision of social welfare. The political consensus has focused around dominant middle class issues, whereas the issues for the fragmented working classes, and the urban and rural poor have been swept aside. The transformation in the MSR must be matched by a change in the hegemonic ideology. Korean society is not only competitive and free market oriented, it is deeply hierarchical. This hierarchy exists in the family unit as well as in all forms of public and private organisations. This has justified the high differentiation in wealth as well as uneven access to economic and political power. Only the replacement of the hegemonic ideology will permit a change in the cultural practices governing social justice and welfare. Thus, control of socio-environmental welfare (regulation of social and environmental systems) can be addressed collectively rather than individually.

As a part of this change in the mode of competition and ideology, new wage relations would have to be established. The labour movement in the late 1980s was unsuccessful in establishing a satisfactory capital-labour relationship. Although the violent struggles had produced some monetary concessions, they failed to establish mechanisms for collective bargaining or any social contract. A tripartite contract between state, capital and workers unions would be required to guarantee the social wage. Although the increase in wages has increased private consumption, it has not only failed to raise the standard of living as a whole, but also resulted in intensifying environmental problems. By this we mean, job security and workers rights, medical care and safe and healthy living environment should be guaranteed ahead of the conspicuous consumption of

goods. Extensions of consumer society which make high resource demands are detrimental to the environment as well as to the fabric of society.

When such adjustments have been made in the mode of competition, ideology, the state and economic institutions, through meso and micro level strategies, then we may be able to see a more successful implementation of green urban development and transport policies, spatial decentralisation strategies and egalitarian social and regional programmes.

### **7.3 Concluding Remarks and Future Research**

Historical materialist, geographical and statist analyses were employed in this study of the environmental problems in Korea. The historical materialist analysis focused on the social and economic imperatives of capital's restructuring processes, while spatial analysis provided the linkage between capitalist accumulation dynamics and the differentiation of environmental problems over space. The analysis of the state and its role in the economic, spatial and environmental spheres was central to revealing the causal mechanism of environmental degradation. The analyses were conducted through the meta-theoretical framework of the regulation approach, which allowed the study of the qualitative transformation of Korea's environment within the wider historical context of the globalisation of capitalist development, while taking into account the country's unique political, economic, social, spatial and ideological development process.

The study has revealed many features of the Korean development process and mechanisms of environmental transformation. At the global level, the development of Korea's capitalist accumulation system reflects continual adjustment towards the changing global economic climate. The accumulation regime based on the EOI meant that it had to continually raise the industrial trajectory as global competition intensified. In this context, the state had to regulate wage relations, provide infrastructure, sponsor R&D and protect domestic capital and markets from international capital. As a late developing country, the state provided the preconditions for accumulation by actively intervening in private sector decision-making. Since the inception of the capitalist mode of production and social relations the restructuring of the accumulation system in Korea has been dependent upon state interventions to stabilise the linkage between modes of regulation and regimes of accumulation. However, as an integral part of restructuring the state as an object of regulation, as well as an agent, underwent a functional re-configuration at each crisis. That is why political transformation accompanied the transformation of each accumulation system. State strategies promoted rapid capital accumulation at a national level through the agents of national monopoly capital known as *chaebol*. The competitive regulation

of economic activities has induced industrial and property capital to externalise their environmental costs in order to keep their production costs as low as possible.

The spatial transformation of Korea was shaped by the state interventions through industrial location policies, demand-led spatial strategies and selective infrastructure developments. The state interventions in spatial development aimed to secure appropriate spatial conditions in the resolution of crisis-ridden capitalist development in preparation for a renewed bout of accumulation. However, the capital concentration tendencies and the functional zoning approach to the development of industrial space conflicted with regional equity and population decentralisation strategies. The phases of concentration, dispersal and spatial reconcentration were a consequence of dialectical relationship between space and the developing accumulation regimes and MSR. Competitive regulation, state intervention in infrastructure development and the introduction of industrial organisation, as well as the historical legacy of centralised political, economic and cultural systems in Korea's capital led to an overwhelming concentration of industries and population in the Capital and Southeast regions. Spatial transformation is of vital importance to environmental conditions since the character of the space-economy determines the interaction between society and environment. In other words, the 'spatial fix' of capital is concretely manifested in the development of the physical environment (urban development, and the construction of infrastructure and industrial estate).

In Korea, the superimposition and sedimentation of spatial forms upon intensifying spatial arrangements under heightening accumulation regimes have produced a highly uneven and differentiated spatial development, increasing the expropriation of the environment. The main features of uneven spatial development have included wide regional economic and social disparity, and high concentration of population in industrialised regions and cities, particularly Seoul. There was also a distinct spatial differentiation of production and consumption. The efficiency driven spatial strategies and new division of labour which segregated the commerce/control function, manufacturing and agricultural activities into functional zones created specific environmental problems associated with the particular social relations and regulations of each zone. The causal mechanisms of environmental problems in each zones are as complicated as the historically contingent process of Korean development.

In the Korean case, the state has taken a pivotal role in the restructuring of the accumulation regime and in stabilising and shaping the MSR. Added to the disparate intervention between production and consumption spheres, investments have been spatially unequal, heightening spatial and socio-environmental disparities. Thus, in the face of an increasing legitimisation crisis stemming from social polarisation and environmental degradation, the state was forced in the 1990s to implement socio-ecological projects to pacify public discontent. Working class demands forced a rise in wages, which helped to boost domestic consumption to prop up falling

exports in the global recession of the early 1990s. As for environmental problems, the liberal market polluter pays principle was introduced as a hegemonic concept placing the blame for the environmental crisis on high consumption as well as the production processes. However, the lopsided operation of environmental regulation as in other fields, placed the burden of environmental costs disproportionately on civil society relative to monopoly capital. Thus the state has used ideological and institutional means to resolve successive crises of legitimation and capital formation. In this respect, state accumulation strategies have not been confined to the economic sphere, but extended to the spatial, social and environmental spheres. This is not to say that the state is a direct instrument of capital, but rather due to the necessity of capital accumulation for its own legitimation and social cohesion, the state has been forced to intervene in the economy as well as the civil society. As we have seen in Figure 2.2 (page 48), the unique position of the state in the pyramidal relationship not only allows the state to regulate the economy and politics, but also the utilisation of the space/ environment for capital accumulation and for labour reproduction. The use of environmental hegemony in the 1990s has not been implemented out of concern for the environment, but as a mode of social regulation to reconcile the interest of both capital and civil society.

The intensive regime based on EOI cannot be reconciled with social and environmental justice under the neo-Fordist mode of social regulation. Any attempt to establish a more sustainable mode of development would fail due to the contradictions between sustainable development principles and the EOI regime based on competitive regulation. Sustainable economic and environmental development can only occur with a de-coupling of the intensive accumulation regime from the competitive MSR. This would only arise through a structural crisis stemming from social and environmental problems, perhaps with the introduction of monopolistic regulation.

Through the regulationist framework, the study has revealed the unique process of environmental transformation associated with the political, economic, social and spatial changes in Korea within the changing global economic order. The diverse claims of the causes of environmental degradation which range from human greed, ideology, the capitalist mode of production, industrialisation and the failure of market and/or state have been, at the same time, refuted and confirmed. It has been shown that environmental degradation has been due to the complex interrelationship of many of these causal factors under the mode of development, driven by the accumulation regime and mode of social regulation. This framework can be translated to a global spatial scale to understand the highly differentiated environmental problems in the world today. The wide gap in the perception of environmental problems between developing and industrialised nations stems from the failure to understand capitalist spatial dynamics and the uneven spatial development it produces.

The naivety of current debates about sustainable development strategies currently stem from the ignorance of how social forces are regulated. As we have seen, the mode of social regulation in determining many facets of capitalist development has to be the main fulcrum of change.

This study has restricted its focus to the Korean development process, and this may be seen as one limitation. Further research which may be suggested, include the analysis of the globalisation of capital and global environmental problems with particular reference to TNCs, or other national case studies at different stages of development. The use and adaptation of this framework could reveal commonalities and differences in the mode of environmental transformation, these being essential to the identification of truly sustainable development strategies.

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# APPENDICES

## Appendix 3

### Section 1 General Economic Statistics

Table 1.1 Urbanisation and Economic Growth: Major Indicators

	1960	1970	1980	1985	1990
Total Population ('000)	24,989	31,435	37,407	40,448	43,411
Urban Population ('000)	6,999	12,986	21,434	26,442	32,308
Ratio (%) (I)	28.0	41.1	57.2	65.4	74.4
(II)	35.8	49.8	66.7	74.0	79.6
Primacy index (I)	2.10	2.86	2.65	2.74	2.79
(II)	1.09	1.53	1.43	1.39	1.35 <sup>a</sup>
Economic Structure					
Total Employment ('000)	7,036	10,153	12,682	14,970	18,036
Primary	65.7	50.8	37.8	27.1	18.7
Secondary	7.5	15.2	22.8	24.2	26.9
Tertiary	26.8	34.0	39.4	48.7	54.4
Total Production					
(Billion Won)	247	2,724	37,820	67,071	131,502
(Million U.S. Dollar)	2,331	7,951	62,233	83,214	163,152
Primary	34.1	26.5	14.2	13.6	10.5
Secondary	14.0	22.3	29.7	29.9	33.0
Tertiary	51.9	51.2	56.1	56.6	56.5
Per capita GNP (1000 Won)	10	85	976	1,610	4,007
(U.S. Dollar)	94	248	1,605	1,998	5,659
Export (Million \$)	32	835	17,505	30,283	65,016
Import (Million \$)	240	1,984	22,292	31,135	69,843

Note: 1) Urbanisation Rate (I) is based on Shi; (II) is based on Shi and Eup with population over 20,000

2) Primacy index (I) is  $p1/p2$ , (II) is Davis Index

3) 1990 data added to Appendix table 1 in Hwang and Choi (1988), p.54.

4) a) data from Kwon, W.Y. (1991), p.185

Source: EPB, (1970, 1985) *Major Economic Indicators*; Hwang and Choi (1988), p.54; NSO, (1993) *Statistical Yearbook*.

## Section 2 Concentration of Capital

Table 2.1 Export shares of Korea's ten largest export categories, 1970-1986 (%)

	1970	1980	1986
Textiles	40.8	29.5	25.2
Electronics	3.5	10.6	19.1
Steel Products	1.6	10.5	7.2
Footwear	2.1	5.0	6.1
Ships	0.0	6.7	5.2
Automobile/parts	0.0	2.6	4.8
Machinery	1.1	2.7	3.0
Synthetic Resins	1.3	2.9	2.7
Toys/Dolls	0.1	1.6	2.1
Metal Products	1.5	2.7	1.8
Subtotal	52.0	74.8	77.2
All Export	100.0	100.0	100.0

Source; Korea Trade Association, Export Statistics, cited from Steinberg (1989) p.144.

Table 2.2 Structure of Manufacturing Industry: 1970, 1977 and 1982

Year		Monopoly	Duopoly	Oligopoly	Competitive	Total
1970	No. of Commodities	442	279	495	276	1,492
	(% share)	(29.6)	(18.2)	(33.2)	(18.5)	(100)
	Shipments <sup>a</sup>	110	204	439	498	1,252
	(% share)	(8.8)	(16.3)	(35.1)	(39.8)	(100)
1977	No. of Commodities	667	425	674	343	2,219
	(% share)	(31.6)	(20.1)	(32.0)	(16.3)	(100)
	Shipments <sup>a</sup>	2,264	1,536	4,716	5,404	13,920
	(% share)	(16.3)	(11.0)	(33.9)	(38.8)	(100)
1982	No. of Commodities	533	251	1,071	405	2,260
	(% share)	(23.6)	(11.1)	(47.4)	(17.9)	(100)
	Shipments <sup>a</sup>	5,649	3,275	24,967	15,481	49,372
	(% share)	(11.4)	(6.6)	(50.6)	(31.4)	(100)

Note: <sup>a</sup> Billion won.

Concentration ratios (CR):

Monopoly (one-firm CR accounts for a market share of more than 80%)

Duopoly (two-firm CR accounts for a market share of more than 80%)

Oligopoly (three-firm CR accounts for a market share of more than 60%)

Competitive (three-firm CR accounts for a market share of less than 60%).

Source: Compiled from the Census of Manufacturing data base, Economic Planning Board, by K.U. Lee et al (1986), cited in Amsden (1989), p.121.

Table 2.3 Combined Sales of Top Ten Chaebols, as Percent of GNP,<sup>a</sup> 1974-1984

Groups	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
1	4.9	4.3	4.7	7.9	6.9	8.3	8.3	10.5	10.4	11.8	12.0
3	9.0	9.8	11.3	16.0	16.9	17.6	23.9	27.6	27.4	30.5	35.8
5	11.6	12.8	14.5	19.8	22.9	24.6	35.0	41.3	42.2	46.7	52.4
9	14.7	16.7	19.3	25.2	28.9	31.6	46.0	53.3	55.1	59.8	64.8
10	15.1	17.1	19.8	26.0	30.1	32.8	48.1	55.7	57.6	62.4	67.4

Note; <sup>a</sup> (Aggregate net sales of the largest ten groups/GNP) X 100 for each year.

Source: Seok Ki Kim (1987), cited in Amsden, A. (1989), p.116, recompiled by author.

### Section 3 Socio-economic Data

Table 3.1 Comparative Growth Rates of Farm Household Income and Debt, 1975-1985

	1975	1980	1981	1982	1983	1984	1985
Income	873	2,693	3,688	4,465	5,128	5,549	5,743
(in 1000 won)							
Growth Rate (%)	-	-	36.9	21.1	14.8	8.2	3.5
Debt	33	338	437	830	1,285	1,784	2,024
(in 1000 won)							

Source: Park, Chan-Hee, 1987, 'The reality of the Four Trillion Won Farm Household Debt', *Chosun, March*, cited in Bello and Rosenfeld (1990), p.87



## Appendix 4

### Section 1 Urbanisation

Table 1.1 Increases in Urban Centres, urban population and the Ratio of Urbanised Population Between 1949 - 1985

Period	Increase in the No. of urban centres	Increase in urban population	Increase in the ratio of urban population to total population
1949-1955	0	10,523,767	5.5
1955-1960	29	2,519,062	6.0
1960-1966	22	3,463,213	6.8
1966-1970	3	3,082,279	7.6
1970-1975	27	4,858,597	8.5
1975-1980	-4	4,631,803	8.1
1980-1985	19	5,107,025	7.7

Source: Kwon (1991), p.72; partial.

Table 1.2 Urbanisation and Industrialisation

Year	Urbanisation Level (A)	Industrialisation Level (B)	Difference (A-B)
1966	42.1	42.1	0.0
1970	49.8	49.6	0.2
1980	66.7	66.0	0.7
1985	73.8	75.1	-1.3

Note: \*the industrialisation level means the ratio of manufacturing and service sector employment to national total employment.

Source: EPB, (1986) *Major Statistics of Korean Economy*, cited in Kwon (1988b), p.107.

Table 1.3 Urbanisation in Korea and Population Concentration in Seoul

	Total Pop. (in 1000 persons)	Urbanisation Level (%)	Percentage of Concentration in Seoul	Davis Primacy Index
1960	24,989	35.8	9.8	1.09
1970	31,434	49.8	17.6	1.53
1975	34,707	58.4	19.9	1.51
1980	37,436	66.7	22.3	1.43
1985	40,467	73.8	23.8	1.39
1990	43,520	79.6	24.4	1.35

Source: EPB, (various years) *Population and Housing Census*, cited in Kwon, W. Y. (1991), p.185

## Section 2 Regional Share of Infrastructure and Production

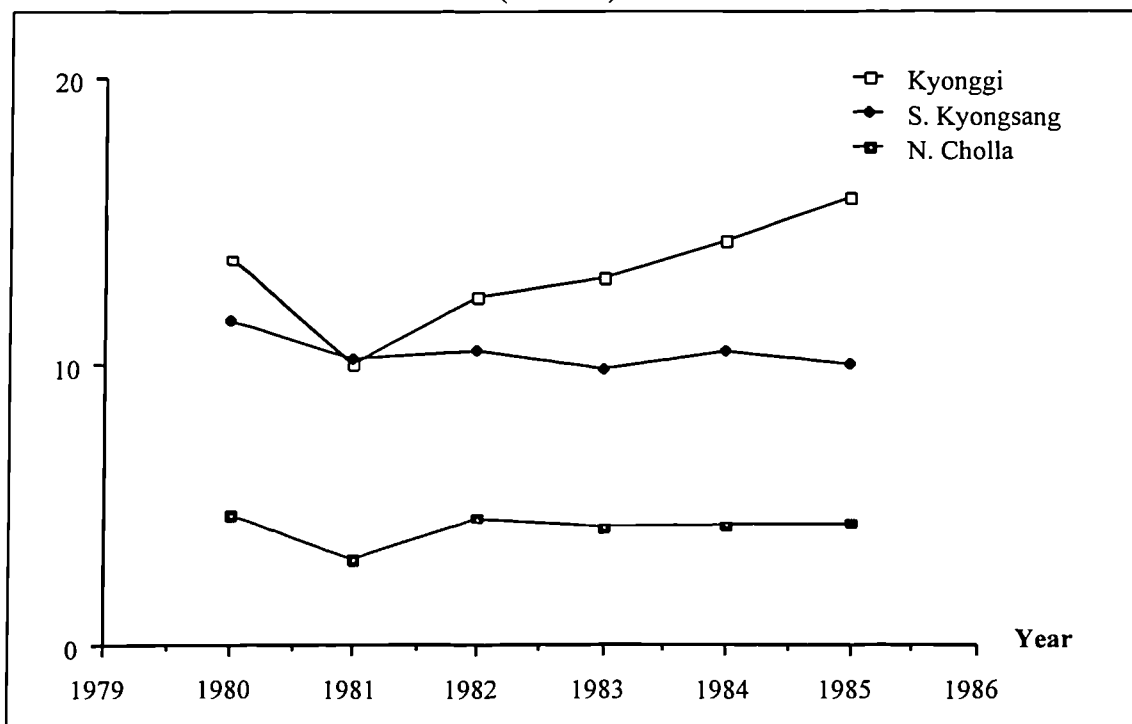
Table 2.1 Regional Share of Service Sector GRP (1968-76)

	1968	1970	1972	1974	1976
Seoul	43.1	41.2	26.5	44.5	44.0
Pusan	9.8	9.9	12.1	9.8	10.1
Kyonggi	7.5	7.8	10.2	7.7	8.1
Kangwon	4.2	4.4	5.2	3.7	3.6
North Chungchong	2.9	3.1	3.8	2.6	2.6
South Chungchong	5.3	5.4	6.5	4.9	4.6
North Cholla	4.2	4.3	5.6	3.9	4.0
South Cholla	6.3	6.9	8.3	6.2	6.6
North Kyongsang	9.4	9.6	11.9	9.1	9.0
South Kyongsang	6.5	6.5	8.3	6.6	6.4
Chaeju	0.9	0.9	1.6	0.9	0.9
Total	100.0	100.	100.0	100.0	100.0
Total Amount	2,551	3,189	3,677	4,388	5,244

Note: GRP based on 1975 constant prices (unit; billion won)

Source: Kim, Y-J. (1992), p.24.

Figure 2.3 Three Region Comparison of the Construction, Electricity and Water Production Share of GNP (1980-85)



Source: cited in Kim, Y-J (1993), p.32.

Table 2.2 Share of Infrastructure Investment by Major Cities and Provinces

Region	Cities	1965	1975	1985
SMR	Seoul	69.06	49.57	43.10
	Incheon	4.06	2.02	4.80
.....		.....		.....
Southeast Region	Pusan	13.31	7.21	21.87
	Daegu	2.64	9.34	5.07
	Pohang	0.37	1.21	0.88
	Ulsan	0.42	0.75	1.10
	Masan	0.35	1.10	1.05
	Changwon	-	-	0.58
	Kumi	-	-	0.28
	Sub-total	90.21	71.20	78.73
N. Cholla Province	Jeonju	1.17	1.22	0.88
	Iri	0.42	0.82	0.54
	Kunsan	0.44	15.83(0.63) <sup>3</sup>	0.35
	Namwon	-	-	0.05
	Jeongju	-	-	0.15
	Sub-total	2.03	17.87(2.67) <sup>3</sup>	1.97
Other Regions	Daejeon/ others	7.76	10.93	19.30
Total		100.0	100.0	100.0
Total Expenditure in billion won		4.5	106.5	1686.3

Note: 1) Construction expenditure at each year current price.  
 2) The collective consumption goods included in the figure are roads, sewerage, port facility, dams, works to river banks, piped water provision, bridge construction, urban planning costs, land adjustment costs, and the construction of public housing, market places and parks.  
 3) The large share of infrastructural investment in Kunsan in 1975 was due to the concentrated efforts to re-construct a water mains system. This was an unusual amount of investment peculiar to that year, and cannot be taken as showing the normal trend. The figures in the brackets represent the normal figures after subtracting the water works investment.

Source: cited in Kim, Y-J (1993), p.50, corrected for errors and inconsistencies.

Table 2.4 Distribution of Manufacturing Employment and Population Between Seoul and Gyeonggi Province, 1973-91

		1973	1978	1983	1991
Manufacturing Employment					
Seoul	(%)	70.6	52.3	45.7	30.4
Gyeonggi	(%)	29.4	47.7	54.3	69.6
Total	(%)	100.0	100.0	100.0	100.0
Number		580,844	1,031,328	1,019,413	1,367,700
Population					
Seoul	(%)	63.2	63.7	62.3	57.1
Gyeonggi	(%)	36.8	36.3	37.7	42.9
Total	(%)	100.0	100.0	100.0	100.0
Number		9,959,396	12,274,866	14,782,854	18,586,128

Note: Manufacturing establishments with 5 or more employees.

Population data for 1991 is based on 1990 census data.

Source: EPB, (1983) *Mining and Manufacturing Census*, Seoul and Gyeonggi, (1984) *Statistical Yearbooks*, N.S.O. (1993) *Korea Statistical Yearbook*, cited in Kwon (1988b), p.115, and amended.

Table 2.5 Regional Distribution of the Manufacturing Industry, 1984

	Industrial Site (thousand m <sup>2</sup> )	Number of Establishments	Number of Workers ('000)	Value of Shipments (billion won)	Acquisition of Tangible Fixed Assets (billion won)
Whole	237,588	43,483	2,540	71,359.8	3,968
Country	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)
Capital Region	74,075 (31.2)	22,653 (52.1)	1,129 (46.1)	28,472.2 (39.8)	1,641 (41.4)
Central Region	18,299 (7.7)	2,847 (6.5)	151 (6.2)	4,115.8 (5.8)	228 (5.7)
Southwestern Region	26,064 (11.0)	4,186 (9.7)	139 (5.6)	6,817.9 (9.6)	185 (4.6)
Southeastern Region	114,147 (48.0)	12,480 (28.7)	1,057 (39.0)	30,405.3 (42.6)	1,724 (43.5)
Other Region	5,003 (2.1)	1,317 (3.0)	74 (3.1)	1,548.8 (2.2)	190 (4.8)

Source: EPB (1984) *Census of Mining and Manufacturing Industry*; cited in Kwon (1988a), p.72.

### Section 3 State Spatial Strategy

Table 3.1 Growth Management Strategies and Programs for Subregion in the Capital

Region

Subregion	Major Cities and Towns	Location	Growth Management Strategies and Programs
I. Restricted Development Subregion	Seoul, Euijongbu, Kuri, Wondang	Core areas and inner ring with radius of 15 Km, located North and South of the Han River	Dispersal, decongestion and decentralisation 1. denial of new factory construction 2. relocation of pollution-generating manufacturing plants 3. dispersal of population and control of immigration 4. selective dispersal of educational facilities
II. Controlled Development Subregion	Incheon, Suwon, Anyang, Banwol	Suburban areas South of seoul ring with radius of 35 km, and Suwon as the Subregion's centre	Control of population growth and avoidance of urban sprawl 1. limitations on new factory construction 2. accommodation of some of the displaced industries from Seoul 3. suspension of disorderly land use practices 4. managing density development with the aid of the green belt
III. Encouraged Development Subregion	Pyeongtack, Anjung, Ahseong	Southern part of the outer ring with radius of 70 km, New growth potential for peripheral development	Intensive and extensive development 1. new town development such as campus towns 2. expansion of existing cities and towns as growth centres 3. development of industrial estates in Ahsan Bay
IV. Environmental Protection Subregion	Gapyeong, Yangpyeong, Yeosu	The fringe areas of the outer ring located in the basin of upstream Han River	Preservation, conservation and protection 1. prevention of pollution in the upper Han River basin to maintain water quality 2. water resources development 3. natural resources preservation and promotion of recreational activities 4. promotion of dairy and vegetable farming including industrial crop
V. Special Development Subregion	Gangwha, Munsan, Dongducheon, Pocheon	The fringe areas of the outer ring located North of Seoul and south of DMZ	Reserved for future development 1. buffer for national defense 2. limited development of agro-industries 3. conservation of forestry and other natural resources 4. promotion of truck farming and livestock farming

Source: Korea Research Institute for Human Settlement (1981)

## Appendix 5

### Section 1 Urban Density and Housing Statistics

Table 1.1 Population of World Major Cities

Rank	Country	City	Year	Population	Area (Km <sup>2</sup> )	Density
1	India	Bombay	1990	12,571,720	438	28,703
2	Japan	Tokyo	1990	11,855,563	2,166	5,430
3	Korea	Seoul	1992	10,969,862	605.4	18,121
4	Mexico	Mexico City	1988	10,263,275	1,483	6,922
5	Brazil	Sao Paulo	1990	9,386,129	1,509	6,220
6	India	Delhi	1990	8,910,000	1,483	6,008
7	Russia	Moscow	1989	8,875,579	1,059	8,381
8	China	Shanghai	1990	7,834,000	749	10,460
9	USA	New York	1990	7,322,564	800	9,153
10	China	Peking	1990	6,995,100	4,568	1,531

Source: SMG (1992) *Comparative Statistics of Major Cities*, p.349-391,

Table 1.2 Population, Households and Housing Stock in Cities and Rural Areas

		Unit	1960	1970	1980
Country as a Whole	Population	1000 Persons	24,989	30,882	38,124
	Households <sup>1</sup>	1000 Units	4,018	5,375	7,331
	Number of Housing Units	1000 Units	3,464	4,360	5,463
	Housing Supply Ratio <sup>2</sup>	%	86.2	81.1	74.5
Urban Areas (Cities as Administratively designated)	Population	1000 Persons	6,997	12,710	21,826
	Households <sup>1</sup>	1000 Units	1,131	2,264	4,197
	Number of Housing Units	1000 Units	783	1,398	2,542
	Housing Supply Ratio <sup>2</sup>	%	69.2	61.7	60.6
Rural Areas ( <i>Gun</i> )	Population	1000 Persons	17,992	18,172	16,298
	Households <sup>1</sup>	1000 Units	2,887	3,111	3,134
	Number of Housing Units	1000 Units	2,681	2,962	2,921
	Housing Supply Ratio <sup>2</sup>	%	92.0	95.2	93.2

Note: 1) Indicates the households that would require a separate living quarter on their own. The figure excludes one-member households and legally undefined, quasi-households.

2) Calculated on the basis of one-household-one-unit assumption; i.e., total number of housing units/ total number of households x 100.

Source: Ministry of Construction (1982), p.69.

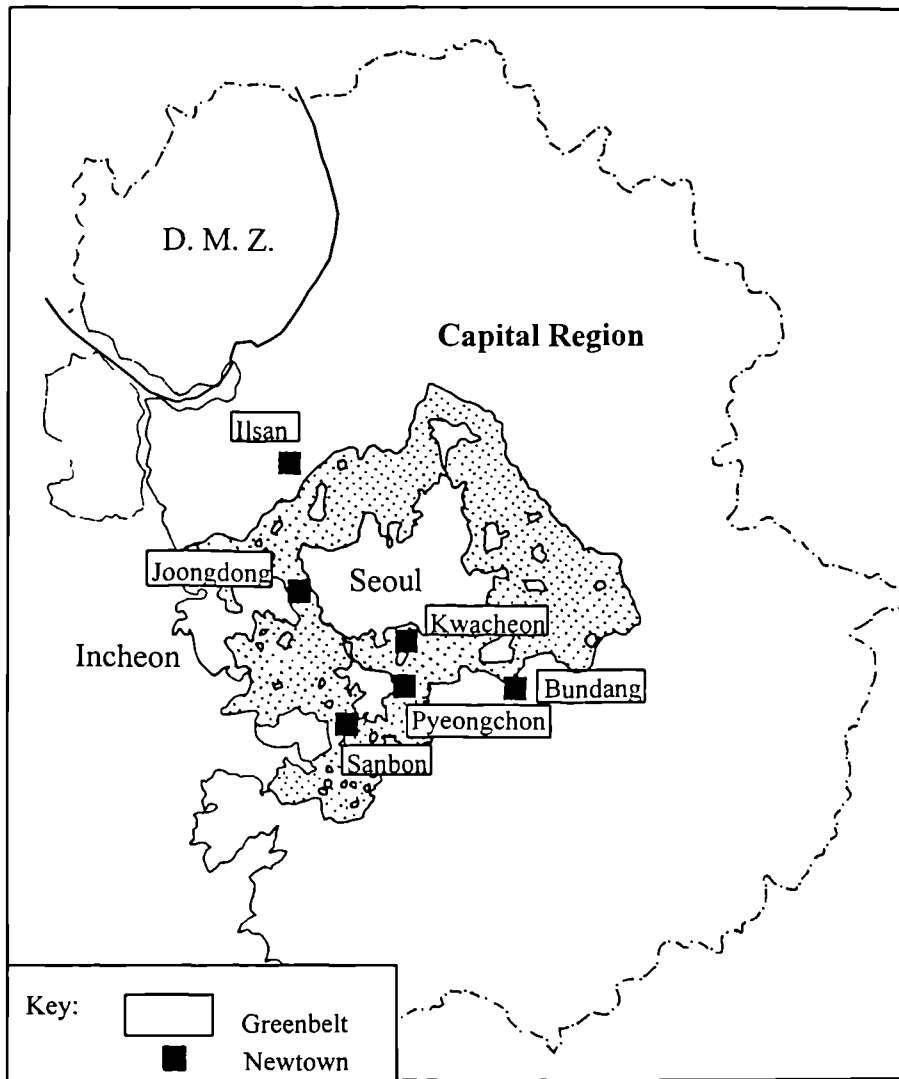
## Section 2 Abuse of Greenbelt

Table 2.1 Government Developments within Greenbelt Areas

Development	Place	Area
Reunification Training Centre	Mt. Bukhan	16,000 pyeong
Army Barracks	Naegokdong, Seochogu	56,000 pyeong
Korea Highways Corporation	Yangjaedong, Seochogu	68,000 pyeong
Korean Development Institute	Umyondong, Seochogu	-
The 2nd Government Building Complex	Kwacheon	-
Seoul Grand Park	Kwacheon	-
Taenung National Sports Training Centre	Kongrungdong, Nowongu	-

Source: Park, C-J. (1991), p.247.

Figure 2.2 Locations of New Towns in Seoul Metropolitan Area



### Section 3 Energy, Air Pollution and Acid Rain

Table 3.1 Electricity Production and Consumption by Source (1970-89)

(unit: 100 million Kwh)

Year	Electricity Production				Electricity Consumption			
	Hydro	Fossil Fuel	Nuclear	Total	Manu- facturing	Domestic	Service	Total
1970	12.2	79.5	-	91.7	49.8	8.0	9.1	77.4
(%)	(13.3)	(86.7)	(0.0)	(100)	(64.3)	(10.3)	(11.8)	(100.0)
1980	19.8	317.8	34.8	372.4	220.3	53.2	33.3	327.3
(%)	(5.3)	(85.3)	(9.8)	(100)	(67.4)	(16.3)	(10.2)	(100.0)
1989	45.6	425.5	473.7	944.7	500.5	151.8	115.8	821.9
(%)	(4.8)	(45.0)	(50.2)	(100)	(60.9)	(18.5)	(14.1)	(100.0)

Source: EPB (1990) Major Economic Indicators, p. 106, 110. cited in Choi, B-D. (1991a), p.29.

Table 3.2 Volume of Pollutants by Sector (Year: 1990)

Pollutant		Heating	Industry	Transport	Electricity	Total
SO <sub>2</sub>	Nation	337,160	736,805	132,651	239,194	1,445,810
	Seoul	104,120	31,853	11,878	3,358	151,810
	Composition <sup>1</sup>	23%	51%	9%	17%	100.0%
TSP	Nation	105,877	136,000	35,731	108,003	385,612
	Seoul	35,230	2,053	7,087	218	44,587
	Composition <sup>1</sup>	28%	35%	9%	28%	100.0%
CO	Nation	911,538	36,288	574,747	7,061	1,529,634
	Seoul	307,860	3,250	7,087	371	482,449
	Composition <sup>1</sup>	60%	2%	38%	0%	100.0%
NO <sub>x</sub>	Nation	53,359	70,280	933,069	68,842	1,121,550
	Seoul	16,501	7,898	187,647	7,276	219,331
	Composition <sup>1</sup>	5%	6%	83%	6%	100.0%
HC	Nation	26,384	37,184	114,687	12,933	199,190
	Seoul	8,811	494	29,337	72	38,714
	Composition <sup>1</sup>	14%	19%	60%	7%	100.0%

Note: 1. Composition is sectoral composition of national total.

Source: MOE data, cited in Chung, H-J. (1993), p.65.



Table 3.3 Air Pollution of Seoul, 1965-1980 Unit: 1,000 ton/year

Years	Total Pollutant*	Sulphur Dioxide	Nitrous Oxides	Carbon Monoxide	Hydro-carbons
1965	140.7	26.4	18.0	66.6	9.6
1970	347.4	94.4	50.1	141.4	26.5
1975	530.1	135.9	79.6	215.9	56.0
1980	618.4	156.9	81.9	260.3	71.3

Note: \*Figures based on the amount of fuel consumption.

\* The tonnage for the four pollutants do not add up to the total because certain pollutants, notably particulates and aerosols, have been omitted from the detail.

Source: Seoul City Government (1981) *The Report of Seoul City Administration*, p.372.

Table 3.4 Changes in the TSP Levels in Seoul Subway Stations (microgram/m<sup>3</sup>)

Line	Station	1988	1989
1	City Hall	481	459
	Seoul Rail Station	311	525
	Dongdaemun	689	710
2	City Hall	480	443
	Uljiro 3 ga	455	462
	Dongdaemun Stadium	551	799
	Gyodae	598	455
	Sadang	314	531
4	Seoul Rail Station	244	418
	Dongdaemun	389	362

Note: Korean environmental standard for Daily Level of TSP is 300 microgram/m<sup>3</sup> and 150 microgram/m<sup>3</sup> for average annual level.

Source: Joongang Ilbo, (1990. 9. 21), cited in Park, C-J. (1991), p.238

Table 3.5 Consumption Pattern of Domestic Fuel in Seoul (unit: 1,000 tons)

		1986	1987	1988	1989
Total No. of Household		2,428,000	2,518,000	2,658,000	2,816,000
Heating	Anthracite	2,074 (85.4)	2,117 (84.1)	2,076 (78.1)	1,962 (69.7)
	Coal				
	Oil	334 (13.7)	351 (13.9)	501 (18.8)	696 (24.7)
	Gas	20 (0.9)	50 (2.1)	81 (3.1)	158 (5.6)
Cooking	Anthracite	677 (27.9)	545 (21.6)	447 (16.8)	280 (9.9)
	Coal				
	Oil	338 (13.9)	278 (11.1)	255 (9.6)	212 (7.5)
	Gas	1,413 (58.2)	1,695 (67.3)	1,965 (73.6)	2,324 (82.6)

Source: cited in Oh, J-J. (1991), p.43

Table 3.6 Acid Precipitation in Major Cities in Korea (unit: pH)

Cities	1985	1986	1987	1988	1989	1990	1991
Seoul	5.5	5.3	5.1	5.7	5.6	5.0	5.4
Pusan	5.1	5.2	5.4	5.2	5.2	5.2	5.1
Taegu	5.4	5.4	5.3	5.6	5.3	5.7	5.9
Kwangju	6.1	6.1	5.8	5.7	5.7	5.5	5.5
Daejeon	5.7	5.4	5.5	5.7	5.8	5.4	5.6
Ulsan	5.0	5.2	4.9	5.1	5.6	5.6	5.7

Source: MOE (1992), Korea Environmental Yearbook, p.121, cited in Lee, S-D. (1992), p.717.

Table 3.7 International Comparison of Environmental Standards on Air Pollution

	Sulphur Dioxide (ppm)			TSP (ug/m <sup>3</sup> )		
	1 hour Max.	Daily Max.	Yearly Max.	1 hour Max.	Daily Max.	Yearly Max.
Korea	-	0.15	0.05	-	300	150
U.S.A	0.5 (3 hr)	0.14	0.03	-	150	50
Canada	0.34	0.11	0.02	-	120	70
Taiwan	0.25	0.1	0.03	250	-	130
Japan	0.1	0.04	-	200	100	-
WHO	-	0.052	0.022	-	230	90

Source: cited in Park, C-J. (1991), p.237

## Section 4 Water Pollution

Table 4.1 Changes in Water Quality of Major Rivers

River	Places	Env. Standard		1989	1990	1992
		Grade	ppm			
Han	Ui-am	II	< 3.0	1.2	1.3	1.7
	Chungju	II	< 3.0	1.3	1.1	1.2
	Paldang	I	< 1.0	1.2	1.0	1.3
	Noryangjin	III	< 6.0	3.6	3.4	4.4
	Kayang	IV	< 8.0	6.4	4.7	5.2
Nakdong	Andong	I	< 1.0	0.8	1.0	1.3
	Koryong	III	< 6.0	13.9	5.4	6.6
	Namji	II	< 3.0	4.7	3.2	4.7
	Mulgum	II	< 3.0	3.7	3.0	4.0
	Kupo	II	< 3.0	3.9	3.3	4.1
Kum	Okcheon	I	< 1.0	1.4	1.5	1.7
	Daecheong	I	< 1.0	1.6	1.7	1.9
	Cheongwon	III	< 6.0	2.6	3.1	3.5
	Kongju	II	< 3.0	3.0	3.2	4.0
	Puyo	II	< 3.0	3.5	4.5	3.8
Yeongsan	Damyang	I	< 1.0	1.8	1.2	1.7
	Kwangju	II	< 3.0	3.9	3.4	4.1
	Naju	II	< 3.0	6.2	6.7	6.7
	Yeongsan	II	< 3.0	1.3	1.2	2.4
	lake					

Source: MOE data, recompiled from Chun, S-H. (1993), pp. 127, 132, 133, 134, and Lee, M-H. (1992), p.12

The seriousness of river pollution can be seen in the high levels of BOD in up- and mid-stream locations. Ui-am and Chungju locations in Han river should have lower than 1ppm BOD level and the water standard should be set at that level instead of 3ppm. The river water quality standard at Koryong and Cheongweon which are mid-stream locations should be set at lower than 3ppm instead of the current 6ppm. The government has lowered the water quality standard to make the pollution at these locations more acceptable.

Table 4.2 Water Supply and Consumption by Source (1980-1991)

(unit: 10 million m<sup>3</sup>)

	1980		1989		1991*	
<b>Production</b>						
River	1,282	(73.3)	1,750	(63.4)	1,830	(60.5)
Under Ground	136	(7.8)	160	(5.8)	174	(5.8)
Reservoir	331	(18.9)	850	(30.8)	1,020	(33.7)
<b>Total</b>	<b>1,750</b>	<b>(100.0)</b>	<b>2,760</b>	<b>(100.0)</b>	<b>3,024</b>	<b>(100.0)</b>
<b>Consumption</b>						
Domestic	230	(13.6)	510	(17.6)	567	(17.9)
Industrial	72	(4.3)	260	(8.8)	291	(9.2)
Agricultural	1,081	(64.0)	1,280	(43.5)	1,348	(42.5)
Others	305	(18.1)	890	(30.3)	971	(30.6)
<b>Total</b>	<b>1,688</b>	<b>(100.0)</b>	<b>2,940</b>	<b>(100.0)</b>	<b>3,170</b>	<b>(100.0)</b>
<b>Surplus</b>	<b>62</b>		<b>-180</b>		<b>-153</b>	

Note: \* 1991 data is an estimated projection.

Source: cited in Choi, B-D. (1991), p.28 (re-tabulated).

Table 4.3 State of Sewage Pipe Installation in Korea (1989)

(Unit: km)

Total		Rain Pipes		Sewage Pipes		Remarks
Planned Length	Installed Length	Planned Length	Installed Length	Planned Length	Installed Length	
70,750 (100%)	37,532 (53%)	49,141 (100%)	34,475 (73%)	21,339 (100%)	3,057 (14%)	Target year of planned length is 2001

Source: MOE (1991), p63

Table 4.4 Excrement and Sewage Treatment Plants

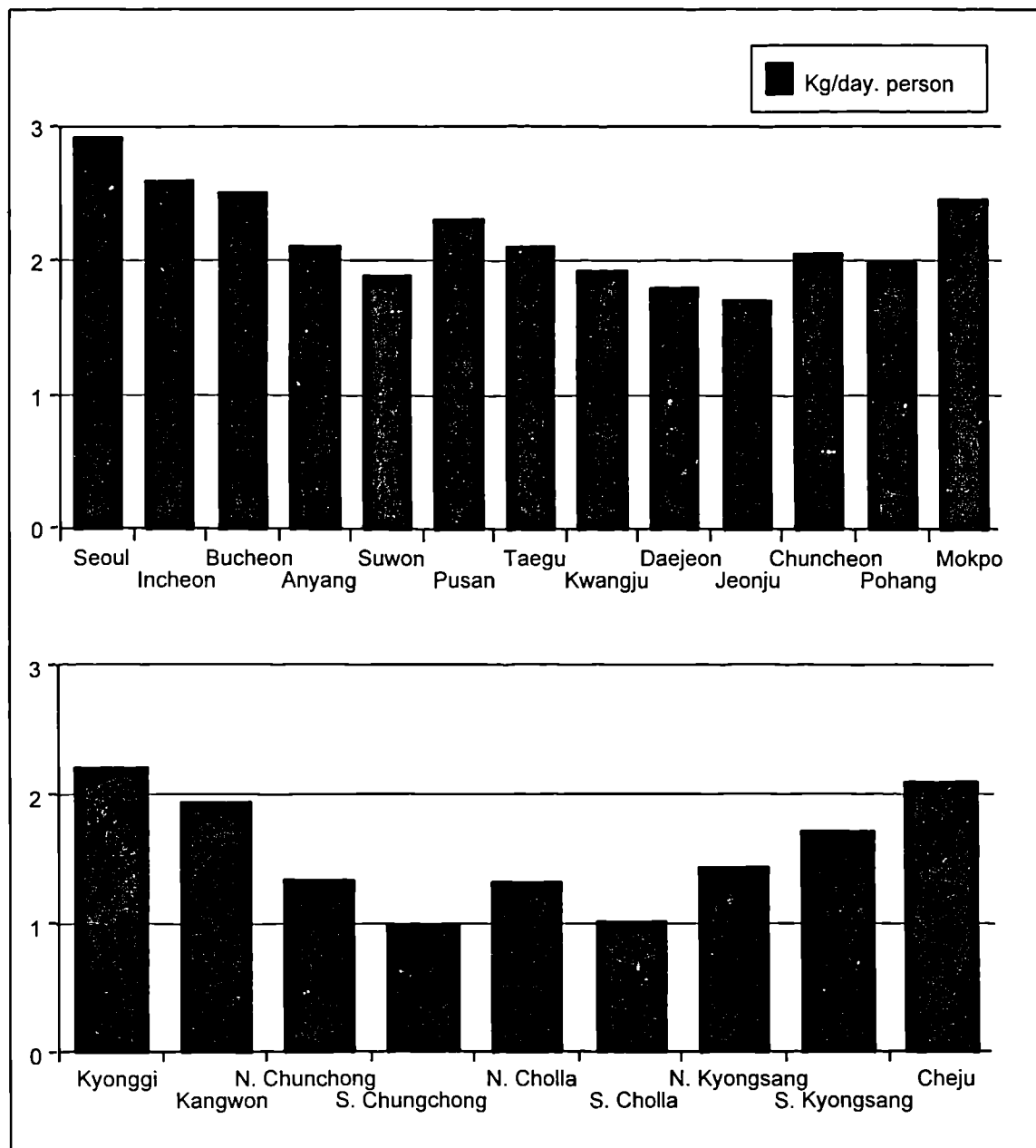
Name of Plant	Year of Foundation	Capacity (1000 m <sup>3</sup> /day)	Treatment Method	Output Water After Primary Treatment	Quality After Secondary Treatment
Pukpu	1975	400	Active Sludge	70	
Chungnang	1979	1,000	Digestion	20	
Anyang	85 - 88	2,000	Concentration and Digestion	140	20
Tancheon		500 (600 by 1991)	Secondary Treatment		
Nanji		1,000	Concentration and Digestion	140	20
<b>Total</b>		<b>4,400</b>			

Source: SMG (1990a), p.88-9, 118

**Section 5 Solid Waste**

**Fig. 5.1 Production of Domestic Solid Waste per Capita by Cities and Provinces**

Year 1992



Source: NSO. (1993) *Korea Statistical Yearbook*, MOE (1992) *Korea Environmental Yearbook*, p.533-535 and SMG (1992) *Comparative Statistics of Major Cities*, p.82

Table 5.1 shows that there are areal differences which stem from the differences in consumption levels between CCZ, SIZ and PRZ. Among cities, Seoul, Incheon and Bucheon which are SMA cities representing CCZ have highest levels of garbage production followed by Pusan, Taegu and Mokpo which are regional consumption centres. SIZ cities such as Anyang, Suwon, Chuncheon show higher levels than PRZ cities such as Jeonju. The provincial production of garbage is lower

than that of the cities, but it also shows that developed regions have higher values than underdeveloped provinces; Kyonggi province having the highest and South Chungchong and South Cholla provinces, the lowest. Interesting revelation is that Kangwon and Cheju provinces have rather high levels of garbage production considering their relative underdevelopment. This is due to its high concentration of leisure industries and tourism which attract many tourists and holiday makers from CCZ.

## Section 6 Road Construction and Automobile

Table 6.1 Statistics on Road Construction and Increase in Automobiles in Seoul by Year

Year	Road Length (km)	Road Area (km <sup>2</sup> )	Road Ratio (%)	Investment (million Won)	Number of Automobiles	*Annual Increase in Automobile (%)
1984	6,843	59,960	16.01	229,895	377,220	-
1985	6,975	62,248	16.62	281,397	445,807	18
1986	7,058	93,758	17.02	121,254	521,521	17
1987	7,137	64,744	17.29	101,400	601,561	15
1988	7,250	66,734	17.82	180,200	778,940	29
1989	7,322	67,682	18.77	161,500	991,270	27

Note: \*data for Annual Increase in Automobile Numbers has been recalculated

Source: SMG (1990) *Seoul Sijeong* (Seoul Metropolitan Administration), p.126

Table 6.2 International Comparison of Average Travel Distance of Automobile per day (Year: 1981, Unit: Km)

Country	Average Travel Distance per Vehicle per day
Korea	109.5
U.S.A.	45.2
United Kingdom	41.4
Denmark	38.1
West Germany	32.6
Japan	24.1
Spain	18.6

Source: Chung, H-J. (1993), p.67.

## Section 7 Coastal Water Pollution

Table 7.1 Coastal Pollution due to Oil Spillage by Port Areas (Spillage unit: kl)

Place	1986		1987		1988		1989		1990	
	Incident	Spillage	Incident	Spillage	Incident	Spillage	Incident	Spillage	Incident	Spillage
Incheon	31	6.0	26	88.6	36	14	52	26	56	1884
Kunsan	5	0.3	5	0.2	4	3	8	1.4	6	0.8
Mokpo	10	4.0	11	6.4	13	7	15	194	14	24
Yeosu	9	647	10	114	11	1	12	25	20	1.3
Pusan	54	1778	53	255	42	21	53	108	41	35
Pohang	14	6.0	12	7.4	9	1003	30	5.6	39	16.2
Donghae	9	86	9	2.1	5	0.2	7	0.2	6	0.2
Sokcho	6	0.3	-	0.6	6	0.3	15	0.4	14	0.5
Cheju	2	1.0	4	0.6	13	8	11	6	17	74.5
Chungmu	18	0.6	22	6.2	11	0.7	6	0.6	22	386
Anhung	-	-	-	-	-	-	13	1	33	3.2
Total	158	2529	152	482	158	1058	200	368	248	2421

Source: Konghaechubang-undong-yeonhap Yeongu-wiwonhwa (Research Committee for Association of Anti-Pollution Movement) (1992) *jeonguk Hwangyong Oyeom Hyeonhwang (State of Environmental Pollution of Korea)*, R.C.A.A.P.M., Seoul, p.94

Table 7.2 Coastal Water Quality by Coastal Region (Year:1990)

	No. of Coast Areas	No. of Monitoring Points	Class			Class 3rd Coasts	Class Comments
			1st Coasts	2nd Coasts	3rd Coasts		
West Coast	7	49	25	13	11	From Incheon to Mokpo	
South Coast	13	98	25	47	26	From Cheju Island to Pusan	
East Coast	8	52	16	20	16	Sokcho to Onsan	
Total	28	199	66	80	53		

Source: Konghaechubang-undong-yeonhap Yeongu-wiwonhwa (1992), p.71

## Section 8 Industrial Pollution

Table 8.1 The Chemical composition of soil condition in Ulsan Area by damaged area

Area	Year	pH	Organic Composition (%)	Ca <sup>++</sup> (m.e./100g)	Mg <sup>++</sup> (m.e./100g)
Severely damaged area ( up to 0.5 km)	1982	4.00	1.41	1.30	0.83
	1987	4.10	2.70	0.30	0.15
	1991	4.65	2.60	0.71	0.24
Medium affected area (1.5 - 2.0 km)	1982	4.20	3.46	2.51	0.49
	1987	4.42	1.93	0.35	0.35
	1991	4.26	1.51	0.33	0.12
Lightly damaged area (2 - 3.5 km)	1982	4.60	6.83	2.58	1.30
	1987	4.80	1.70	0.78	0.55
	1991	4.85	1.16	1.43	0.48

Source: Lee, K-J. (1993), p.81

## Section 9 Nature Parks

Table 9.1 The State of Nature Parks in Korea

	National Park	Provincial Park	County Park	Total
No. of Parks	20	20	26	66
Land Area (km <sup>2</sup> )	3,786.75	732.48	232.06	4,751.29
Sea Area (km <sup>2</sup> )	2,653.70	-	3.77	2,657.47
Total (km <sup>2</sup> )	6,440.45	732.48	235.83	7,408.76
Percentage of total park area (%)	86.9	9.9	3.2	100.0
Percentage of total land area (%)	3.8	0.7	0.2	4.7

Source: based on Ministry of Construction working document; cited in Lee, K-J. (1993), p.89



## Appendix 6

Table 1 Details of the Demands of the Citizens

Area of Concern	Needs	Percentage
Roads and Transportation	Construction of Roads and Subway Adjustment of Bus Traffic Signals Control of Illegal Parking	40.1
Housing and Construction	Construction of Rental Housing Lifting of Redevelopment Plan	15.7
Health and Environment	Street Cleaning, Pollution Control. Control of Moral Decadence	11.5
Public Safety and Security	Enforcement of Crime Control Establishment of New Police Sub-stations	9.5
Water and Sewerage	Complaints on Water Supply Adjustment of Fares Installation of Sewer	8.9
Commerce and Finance	Lifting of the Integrated Billing System. Consumer Protection	2.8
Others	Establishment of New Schools. Installation of Public Phones	11.5

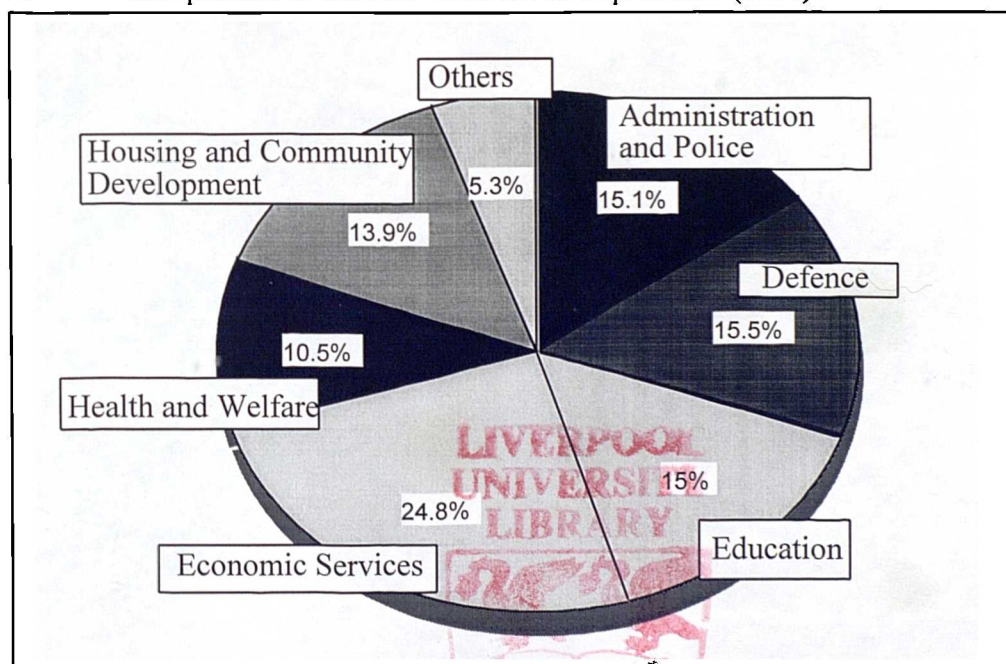
Source: Seoul Municipal Government (1990), p.18

Table 2 International comparison of ratio of environmental investment to GNP (unit: %)

Japan	Sweden	U. K.	U.S.A.	Switzerland	Korea
0.34	1.69	3.74	0.57	1.03	0.16

Source: OECD, (1985) Environmental Policy and Technical Change, Paris.

Figure 3 Composition of General Government Expenditure (1991)



Source: NSO (1993) *Korea Statistical Yearbook*, p.350