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# **Paradigms of Development: Issues in Industrial Policy in India**

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*This paper presents empirical evidence on the cement industry in Gujarat to support the argument that the state still has an important role to play in determining the development path of India.*

*A detailed case study of the impact of two cement plants on their localities includes the consequences for employment generation, land markets, farmer livelihoods, labour markets, environment and pollution. The author concludes that public action is required in order to achieve sectoral balance, secure adequate environmental protection and correct factor market distortions*

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**Introduction**

With the explicit initiation of the economic reforms in 1991 India has adopted a new development paradigm. Instead of inward looking government-led development, India is now seeking outward looking market-led development, and instead of remaining what Anne Krueger called "a rent seeking society" (Krueger 1974), India has now adopted the structural adjustment package designed by the International Monetary Fund and the World Bank to move towards a deregulated open economy to get integrated with the global economy as a solution to its basic problems of low growth and structural mass poverty. Development policies including industrial policy in India in the post reform period have been formulated according to this paradigm.

There is considerable discussion in the literature regarding the role of the government in general and in the industrial sector in particular under the new paradigm. On the one hand it is argued that the government has no role to play except for providing essential public goods as the costs of such interventions will be very high (Lal 1997, Tsai 1997), while on the other hand it is felt that the government has a role to play (though not for wholesale or inefficient intervention), particularly to improve the technical capabilities of the sector (Lall 1994 and 1996). It is also argued that even in "the miracle countries" on the basis of whose experience the new paradigm gets its empirical support, the state has played a crucial role in directing and promoting industrial development (Krugman 1994, Mommen 1996).

Here it will be argued that the issues in industrial policy are much more complex than what is assumed under the neo-liberal paradigm when one studies the recent industrial experiences of some of the industrially fast growing states/regions in South Asia in general and India in particular. Based on the experiences of post-liberalisation industrial development in one of the industrially fast growing states in India (Hirway and Shah 1998), it will be shown that there are quite a few issues that call for a review of the neo liberal development paradigm in the context of industrialisation in this region.

The paper is divided into three sections. Section One discusses the theoretical context of the new paradigm and its implications for state policy; Section Two deals with the empirical study; while Section Three draws implications for the industrial policy and the development paradigm based on the earlier discussions.

### **Theoretical Context of the Neo-liberal Paradigm**

Historically speaking, development economics offered several theories to developing economies in 1950s and 1960s the application of which was intended to enable them to overcome the problems of low growth and high poverty. Briefly, prominent among these were the theories of development presented by "the pioneers of development economics" such as, Clark (1957), Hirschman (1959), Lewis (1956), Nurkse (1953), Myrdal (1968), Prebisch (1969), R.Rodan (1964), Lebenstein (1963), Rostow (1960), Singer (1966), and Tinbergen (1958). Though these theories differed considerably within themselves, there were certain unmistakable commonalities: they all recommended an inward looking development path with a leading governmental role in growth process. As regards the industrial sector they recommended an ISI (import substitution based industrialisation) policy that encouraged the promotion of production of goods that substituted for imports, control of imports from outside and relative neglect of exports. However, the overall outcomes of these strategies were not encouraging in the sense that these developing economies which furthered this path did not experience a consistent high growth or drastic reduction in their poverty levels. These theories were therefore challenged in the 1970s and 1980s by what is now called the counter-revolution in development economics (Lal 1997, Bauer 1972, Little 1977 and Balassa 1982). The major attack of the counter revolution was on the key role of the government in development theories (The counter revolution viewed government as ineffective in achieving objectives, counter productive with undesirable side effects and excessively costly as well as a breeding place for immense corruption.) and on the neglect of the market which was seen as an efficient allocator of resources at the macro level and minimiser of production costs at the micro level. In other words, on the one hand, the government failed to deliver the goods particularly in trade and industry, while on the other hand, the neglect of the market forces led to the neglect of competition with implications for efficiency and incentives.

The supporters of the counter revolution therefore predicted the collapse of the earlier generation of theories and victory for the neo-liberal paradigm. The latter paradigm views the state as "bungling, blundering and botching" and the market as an efficient allocator of resources, provider of incentives and a vehicle of growth (Srinivasan 1994, Auroi 1995, Singh 1994, Smith 1995, World Bank 1991, Amsden 1989, Hill 1996 ). The role of the state under the new paradigm therefore has to be mainly market friendly -- to facilitate the functioning of the markets. That is, the state is expected to manage a stable macro framework, ensure competitive markets, invest in human capital and arrange safety nets for the poor and the weak. Vigorous competition in free markets is expected to be the key to prevent the concentration and abuse of economic power. (Srinivasan 1994) In the field of industrial policy the new development paradigm recommends export-led industrialisation (ELI) in the place of import substitution based industrialisation (ISI). That is, instead of putting trade barriers to protect domestic import substituting industries, it recommends promotion of export-based industries that would lead to competitive efficiency in the exporting industries on the one hand and the pattern of industrialisation based on comparative advantages of the country on the other hand.

Several other theories of development have been presented after and simultaneously with the counter revolutionary theories. The main ones among them are neo-marxist theories, the Basic Needs Approach, human capital and R&D theories, new institutional economic theories, sustainable development theories and human development approach. None of these theories, however, has been sustained for long because each is incomplete, or not useful as a policy tool, or too descriptive and less analytical or it has not proved acceptable on ideological grounds. Consequently, "at the end of the eighties, the only group of theorists that has managed to survive in the sense of getting the support of the premier global institutions are the neo-liberal adherents of the open market ideology" (Schuurman 1993) . This is the paradigm which is accepted and recommended for the world economy and for national economies as a solution to the ills of both, the developed as well as the developing economies.

Some of the relatively new insights, achieved through empirical evidence, into the process of development that seem to have led to the wide-spread rejection of the earlier state dependent view of development and to have promoted the neo-liberal paradigm can be listed as follows:

- (a) Capital accumulation is not the key to economic development as was assumed by the early growth theories, but it is human capital that is crucial to it.<sup>1</sup>
- (b) Related to the first, social development need not wait for economic development, and in fact, it helps economic development.
- (c) There is no significant trade off between the present and the future, that is, there is no need to sacrifice today for a better tomorrow,<sup>2</sup>
- (d) Growth need not lead to inequity, in fact, both equity and growth can be complementary to each other.
- (e) Political freedom and civil rights which are conducive to the growth of a market economy, need not be sacrificed for economic development as both can complement each other.<sup>3</sup>

These insights have strengthened the faith in the liberal view of development, that is, they reject the controlled strategy of development, and also encourage the rejection of the earlier theories of development.

### **Empirical Basis of the Paradigm**

It is to be noted that the neo-liberal paradigm has been derived from neo-classical economics and dosed with neo-classical political philosophy ( Lall 1996). As argued by Sanjaya Lall, the main elements of this paradigm are as follows:

1. Markets are basically efficient and the government is inefficient.
2. Resource allocation is optimised by agents responding to free markets.
3. The best development policy is to remove all interventions in the functioning of the free markets.

These elements, particularly the first one is based on empirical evidence, including those of the east Asian "miracle" countries and are not necessarily a part of the neo-

classical theory as such. But does the empirical evidence including those of the miracle countries support the above assumptions?

The discussion on this in the literature is divided into two broad views. On the one hand, neo-liberals consider the east Asian experience as a success story of neo-liberalism. Though the role of the state is not denied in the success, it is seen as the contribution to the removal of obstacles to the functioning of the market in these economies. It is believed that the East Asian economies were more successful than others in terms of long run growth because they followed the prescriptions set forward by neo-liberal theory and neo-classical economics. As J. Page puts it, in the view of the neo-liberals, growth is a natural property of capitalism and governments have an important role in providing enterprises with those public goods and macro-economic stability that firms need in order to be successful, but beyond that point governments should not involve themselves, except in the case of market failures (Page 1994). The World Bank's famous study on the Asian Miracle considers that the East Asian experiences is a recognition of the importance of markets and incentives, and an indication of the limits of the government interventions and of central planning (World Bank 1993). It is also believed by the neo-liberals that the East Asian experiences show that human capital is as important (if not more) as physical capital though they do not see any scope for governmental interventions in acquiring technological capabilities. As argued by Pan Long Tsai, no government in the developing world is likely to be successful in this task when the international economic order is very difficult for these countries, where intellectual property rights are protected and protected trade blocks are emerging in the North. Tsai therefore believes that governments in developing economies are not capable of accessing the right skills, technologies and institutions for technological capabilities in these countries (Tsai 1997). These governments therefore should refrain from making any selective interventions in the market for promoting industrial development.

On the other hand, there are others who believe that the East Asian countries do indeed provide grounds for careful government policies to overcome market failures (though not for wholesale and inefficient intervention), particularly for acquiring technical and related capabilities (Lall 1994 & 1996). Lall, for example, argues very

strongly that one can evolve a capability approach from these experiences, since they indicate that the state has an important role to play to promote technical capabilities. He also argues that these interventions need not necessarily be "functional", market-friendly interventions, but they could also be "selective" in character, (though he states that theoretically it is not always possible to distinguish between functional and selective interventions) (Lall 1996 & 1997) so according to Lall, the East Asian experiences do indicate that there is a need for some state interventions to promote the export-led, market friendly growth in developing economies.

Andre Mommen has recently done a careful and critical re-assessment of the East Asian "miracle" countries, (Mommen 1996). He argues that the mere adoption of the ELI strategy along with predominance of private enterprise and efficient macro economic management does not mean that countries are following the neo-liberal paradigm. This is an achievement that owes a lot to the coercive role of the state. The state intervened in a highly selective fashion using repression of interest rates, directed credit, selective industrial aid, export promotion, selective prices and distorting incentives to promote economic growth in these economies. In other words, it was the state that provided decisive momentum in the successful process of industrialisation (Mommen 1996). In addition, the other factors that helped the rapid industrial growth of these economies were geographical (proximity to Japan), historical (successful land reforms and in most cases sound agricultural growth), as well as the favourable global environment (availability of global markets for the export products), (Mommen 1996).

It seems to us that the East Asian experiences do not support the neo-liberal paradigm in its purest form. The state had to intervene in several areas to promote and support rapid industrial growth. There is no denying, however, that the success was rooted in the ELI strategy, the predominance of the private enterprise, the high investments in human capital and efficient management of the macro economy.

Another important assumption of the neo-liberal paradigm concerns corruption and the inefficiency of the government under state-led development. Is this assumption valid empirically? It is argued that competitive markets tend to destroy the basis of the rent seeking corruption of bureaucracy and politicians, and that liberal systems,

particularly under democratic frameworks, tend to make the system more accountable and transparent and to lower incentives for corruption. However, it is also possible that bureaucratic corruption may increase under liberalisation when there is less responsibility and less political controls on the bureaucracy. The decentralisation of economic powers may generate more incentives and more opportunities for corruption. In fact, studies in China, India and Latin America in the post liberalisation period show that there is an increase in the levels and intensity of corruption in these countries after liberalisation. (White 1997, Harriss-White 1997, M H Khan 1997, W Little 1997). As observed by Barbara Harriss-White and Gordon White, it is no longer correct to assume that in the long run corruption will die away due to some overall systemic changes like economic liberalisation, political democracy or social modernisation. Though these changes can have some positive impact on the reduction of corruption, the crucial factors are the nature of the state, the character of markets, and human agency. (Harriss-White and White 1997). In short, the task of combating corruption has its own autonomous status.

In other words, neither the assumption that the government is more corrupt under the non-liberal regime than in the neo-liberal regime is empirically validated, nor as we saw above, is the proposition that the market forces, without any intervention of the government, led to the Asian miracle.

We can now turn to examine the post liberalisation industrial growth in India in order to understand its dynamics and to assess its implications for the role of the state in industrial development in the country.

### **The Case of India in the Post-liberalisation Period**

With the introduction of the economic reforms in 1991 Government of India decided or was forced to decide to shift to the ELI strategy of industrialisation from the earlier ISI strategy. The declaration of a new industrial policy was therefore an important task for the government. The government of India therefore declared its new industrial policy incorporating the new norms of liberalisation, deregulation and privatisation in 1991. (Government of India 1991)



## **The New Industrial Policy of the Government of India**

The main objectives of this new industrial policy as laid down by the government are as follows:

- To build on the gains already made in the industrial sector,
- To correct the distortions or weaknesses that may have crept in the old policy
- To maintain a sustained growth in productivity and gainful employment,
- To ensure utilisation of human resources,
- To attain international competitiveness in the industrial sector, and
- To transform India into a major partner and player in the world trade arena.

The major instruments of the new industrial policy primarily aimed at reducing the barriers that were created in the name of protecting industries in the earlier period. These were as follows:

- Reduction in industrial licensing
- Relaxation in industrial location policy,
- Encouragement to private sector initiatives in core industries (which were so far reserved for the public sector)
- Allowing entry of large sector enterprises into the SSI (small scale industrial sector) sector under certain conditions,

Other sets of active policy instruments relating to special incentives and concessions in order to attract investments to the industrial sector from within India and outside. These included sale tax exemptions and concessions, transport subsidies, capital subsidies, and other incentives to foreign capital and technology, exporting units and EOUs (export oriented units), to non-resident Indians and to the Indian corporate sector for specific areas (mainly backward areas) and specific industries.

In addition, the industrial policy also incorporated several promotional and developmental activities in terms of infrastructural support, the setting up of growth centres and industrial estates, and the supply of information about projects and related matters to potential industrialists in India and abroad, (Government of India 1991) .

Thus the major policy instruments included (a) measures for deregulation, liberalisation and privatisation for unleashing market forces; (b) incentives, concessions and subsidies for potential producers and (c) promotional and developmental measures for supporting and encouraging industrial activities.

Since industrial policy instruments were drastically liberalised and decentralised (industry is in the concurrent list of the Indian constitution implying that both, the Central as well as the state governments can formulate industrial policy, but state policies have to be in line with the central policy) several state governments were encouraged to formulate their independent industrial policies to promote industrial growth in their respective states. These were essentially based on the central policy framework, deregulating the market further along with providing extra incentives and concessions to attract industrial investments. In fact, the competition for attracting new industrial investments has been so stiff among some of the prominent states, such as Gujarat, Maharashtra, Karnataka, West Bengal etc that it has been virtually a race among the states in offering incentives and concessions to new industries. Consequently, the levels of incentives have gone up fairly high in several states.

Gujarat state which was already among the industrialised states in India has emerged as one of the winners. In 1996-97 it attracted the highest industrial investment in large and medium industries among the major states in India (Government of Gujarat 1997). We have therefore selected Gujarat state for empirical study of the post-reform industrial growth in India.

**Industrial Policy in Gujarat:** As seen above, Government of Gujarat is one of the few state governments to announce its own industrial policy after the reforms. In fact, it announced three consecutive industrial policies for the periods, 1990-95, 1995-2000 and 2000 AD and Beyond respectively. According to the state government, "the new

climate has opened up new opportunities " for industrial growth and the state's approach will be to take maximum advantage of this new climate, to emerge as an Indian Tiger ( Index(b) 1996)

All the industrial policy statements of the government of Gujarat aim at attracting new investments to the state from the Indian corporate sector, non-resident Indians and from outside firms. In order to understand the latest policy thrusts we discuss below the most recent industrial policy announcement of the state, namely, the policy for Gujarat: 2000 AD and Beyond. The main objectives of the policy are as follows:

- Accelerated development of the backward areas of the state,
- Creation of large scale opportunities to absorb the swelling ranks of the unemployed,
- Increase in the total flow of investment to the industrial sector,
- Achieving sustainable development, and
- Encouraging entrepreneurship and developing technology to promote "swadeshi" (nationalist ) spirit.

As in the case of the central government, the main policy instruments of the state government are deregulation and liberalisation of the different markets, incentives and concessions to potential industrialists in India and abroad and promotional and developmental work. The focus of the policy, however, has been on incentives and concessions and on promotional and developmental work .

To start with, the government has devised a generous package of incentives and concessions that includes exemptions and concessions in turnover tax and sales tax on a whole range of goods , such as raw materials, intermediary goods, packing materials, processing materials, consumable goods, by-products, scrap and waste materials. In addition, there is a transport subsidy and capital investment subsidy on a large number of products. These incentives are given at the block level with 128 blocks and 8 backward regions of the total 184 blocks of the state entitled to these

incentives. In other words, about 74 per cent of the area of the state is eligible for the generous package of incentives.

Some industries, viz. electronics and "thrust industries" which are mainly export industries like gems and jewellery, garments, leather products, rubber, and agro processing and food processing industries are entitled to these benefits all over the state. Also, Premier Units (industrial units having a project cost exceeding RS 5,000 m, i.e. about US\$ 140m, are granted the status of Premier Units . There will be one Premier Unit in each block) and Prestigious Units (Prestigious Units are units with the project costs between RS 1,000m to Rs 2,000 m. in three categories of areas. There can be any number of prestigious units in a block.) are entitled to these concessions all over the state. In addition, there are special incentives for NRIs (non resident Indians) that range from cash subsidies, tax concessions, out of turn allocation of sheds, power, and other infrastructure, to various types of escort services like providing facilities to the families and children of investors (Indext(b) 1996).

Realising that subsidies and concessions are not adequate to attract industries to the state if the required infrastructure is not available, the state government has given a high priority to the promotion of infrastructure in the state. The government has recently set up the Gujarat Infrastructure Development Board for formulating a long term policy and an action plan for promoting infrastructure for rapid industrial growth. The government has invited the private sector to construct roads, power plants, ports and jetties and to set up new growth centres and industrial estates to attract new industries. In addition, the state government has also provided special concessions to new industries in the acquisition of power, land, water and other infrastructural support, and has assured these supplies within a limited time.

The state government has also made special efforts to provide all the required information to prospective industrialists and has used the media extensively for the purpose. It has given huge advertisements (by hiring private advertising companies) in Indian and outside media on the state policy and supports. The Indext (b) (Industrial Extension Bureau) which was set up by the government in the eighties, has now expanded considerably in terms of staff and activities.

To sum up, the state government has been aggressive and has made determined efforts to attract industrial investments particularly in medium and large industries to the state (Hirway and Shah 1998).

### **The New Pattern of Industrialisation in Gujarat**

The new policy has given rich dividends in terms of attracting industrial investments to the state, particularly in the large and medium industries (Table 1). Sanctioned investments in the large and medium industries in the state during 1991-1997 were worth more than RS 1,700,000 m (approximately, US \$ 48, 570 m ) one of the highest among the major states in India. In terms of investment sanctioned per year the increase was from RS 26,700 m ( US\$ 760 m) between 1983-1990 to RS 319,260 m (US\$ 9,000 m between 1991-1997., which is a more than 12 times increase! The number of the large and medium projects sanctioned per year increased from 110 to 649 during the same period, and the number of jobs per year increased from 17,704 to 158,287. The data indicate that new industries were more capital intensive than previously.

The new industrial investments are likely to introduce a set of new characteristics in the industrial scene in Gujarat: (a) to start with , the new investment is likely to push up the rate of industrial growth in the economy. As seen above, there has been a quantum jump in committed industrial investment in the state with the compound average annual rate of growth per year in the committed investments in large and medium industries jumping from 10.4 % during the pre-reform period (1983-90) to 15.9% in the post-reform period (1991-1997); (b) the location pattern of industries has changed and is likely to change further with the coastal Saurashtra region attracting 21 per cent of the total investments compared to the 2 per cent.in the earlier period (Table 2); (c) the new investments are much more capital intensive than before, particularly in Saurashtra and Kate regions (Table 3);<sup>4</sup> (d) the investment proposed is focused on mineral based industries, particularly in Saurashtra and Kachchh, (e) there is an export-orientation in the new investment;<sup>5</sup> and (f) the investments proposed have a large proportion of capital allocated to pollution-prone industries. Historically,

pollution-prone industries such as dyes & chemicals, drugs & pharmaceuticals, petrochemicals etc. have dominated the industrialisation of Gujarat. In the new environment now there will be an addition of mineral based industries, (Table 5).

### **A Field Case Study in Saurashtra**

The purpose of the paper as mentioned at the start is to examine the assumptions behind and the predictions of the new paradigm. In order to study the likely impact of this new investment, we selected the cement industry in coastal Saurashtra. The reasons for selecting this industry were: (a) this is (and is going to be ) one of the fastest growing industries in the region, (Table 4) and (b) there are some old cement units in the region which enabled us to study the long term impact of the industry on the region.

The reasons for the fast growth of the new investment in this industry in this region can be listed as (a) the availability of limestone (according to the department of mines and minerals, the supply of limestone in the region is "abundant") with a liberalised policy for its use, (b) the new liberal environment with regard to the policies relating to ports, jetties and exports, (c) the proximity of the sea coast for the easy transportation of cement and (d) the incentives and facilities provided by the state government. These factors are therefore, natural, market related and state related. Our field study examined the impact of selected cement units on the economy of coastal Saurashtra region

**Saurashtra Region In Gujarat:** Before we discuss the results of the study, it is necessary to know about the major features of the Gujarat economy and particularly of the regional economy of Saurashtra.

As seen above, Gujarat is one of the relatively more industrialised states in India. The economy of the state of Gujarat, however, is peculiar in some ways. On the one hand, it has a relatively high per capita income (4th rank among the major states in India), diversified income sources (78 % of the state domestic product is from non-primary sector against 66% for All-India ), diversified work force (40 % of the work force is in

the non-primary sector against 32% in All-India ) and relatively developed capital and financial markets. On the other hand, it has unevenly distributed and degraded natural resources. Stagnant (long term) agriculture with production fluctuating from year to year and wide and widening regional disparities of growth. The industrial growth in the state, however has been above 7 % since the 80s, and it is expected to rise further with the rising investments. On this count alone Gujarat would have got NIC status. It seems that the relatively high growth of the state, particularly since the eighties, is originating largely from the secondary and tertiary sectors (Table 6).

The Saurashtra region which has experienced a very big jump in committed industrial investments is primarily characterised by a high degree of environmental degradation: The region receives about 600 mm of average annual rainfall (which is highly erratic with a CV of 40 per cent) and has only about 5% of its area under forests thanks to the degradation of the forests in the area during the last half a century. Since there has been overdrawing of the ground water in the region, not only the water tables have gone down but salinity has ingressed from the coastal side .The salinity ingress has indeed acquired serious dimensions in the region, and if not controlled, about 30 % of the region is likely to be affected by excess salinity by 2001 AD. (Gujarat Ecology Commission 1997) More than 80% of the blocks in the area are declared as drought prone or desert areas., and about 95% of the villages are declared as No Source Villages (villages without any dependable source of drinking water ), (Table 7).

The fragile ecology is also reflected in the non sustainability of agriculture in the region: there has been a decline in the net sown area as well as in the cropping intensity in the region between early eighties and early nineties. Also, there has been a decline in the numerical strength of the milch animals between 1881 and 1992. Though the agriculture is fairly commercialised thanks to the enterprise of farmers, it is not sustainable as it is using up the ground water without adequate recharge.<sup>6</sup>

In short, the region is likely to reach a point of no return soon if adequate action is not taken. The heavy dose of industrial investment in the region should be seen from this perspective.

In order to examine the likely impact of the new investments in the region, we studied the working of two well known cement plants, namely, Gujarat Ambuja Cement Company, a relatively modern unit in technology and Saurashtra Cement Company, a unit with a lower level technology, but trying to modernise. We also conducted a primary survey of 401 households in four villages (two selected nearby and two distant villages) and organised focus group discussions in 11 villages to understand the household level impact of the industry we examined the village level impact of the units by analysing block and village level data on the land use. The units selected are relatively old ones, set up in 1984 and in 1961 respectively (though they have expanded and modernised in the recent years), which allowed us to study their long term impact on the region (Hirway and Shah 1998).

### **Major Results Of The Study**

The major results of the study are discussed below:

**1. Employment Generation:** The cement industry has generated new employment in the region. As our household survey showed, the selected units employed about 23% of the workers of the sample households. Some of these workers were engaged on their family farms (which they sold to industries) before they took up employment in these units, while others were either underemployed, mostly in agriculture, or were unemployed earlier. The new employment has generally raised the income levels of these households.

It has been estimated that production of 1 m tonne of cement, on an average, generates direct employment for about 700-800 persons (including technical and professional persons). If indirect employment is included, along with its long term impact, which includes trading, transporting, services as well as construction industry when the cement is used, the employment generation goes up to about 0.1 m persons (Pranav Consultants 1996). However, this impact goes down considerably if the cement is exported.



**2. Land Acquisition and the Land Market:** Cement factories need land for quarries, for setting up the factory and jetty and for township building for the staff. As per the official policy, the industry is expected to give preference to government wastelands for this purpose, and then go in for private lands, village grazing lands or forest lands. The units studied, however did not follow this practice. The Gujarat Ambuja Cement Company which is located in the Nagher region, one of the few green regions in coastal Saurashtra, has acquired large farm lands from farmers under the Land Acquisition Act turning green agricultural lands into drab quarries. They have also acquired forest land for quarries under the same act, and got hold of village common

lands or village grazing lands for quarries and for the township by bribing or giving extra favours to the leaders of the village bodies.<sup>7</sup> Most of the villages which have sold common land are left with much smaller territories for their animals.

The Saurashtra Cement Company which is located in an arid region has largely acquired government waste lands and some village grazing lands. As in the case of Gujarat Ambuja, many of the villages that sold their common land to the Saurashtra Cement Company, were left with much reduced land for grazing than what is required as per the norms.<sup>8</sup>

The methods of acquiring land (particularly from farmers and village level bodies) have been highly dubious. Industrialists tried to pay minimum prices by keeping the deals secret, by using government pressure through the Land Acquisition Act or by threatening the farmers, frequently through local government officials and local politicians.<sup>9</sup> As a consequence, the land prices are determined largely by the bargaining strengths of two highly unequal parties, namely, the industrialist and the farmer. We observed multiple prices for the same type of land in the same village during the same period, with smaller farmers receiving low prices and relatively large farmers receiving higher prices.

### **3. Loss of Livelihood**

Our study showed that most of the sellers who lost all their land and became landless were small and marginal farmers belonging to low castes. They also received lower prices for their land due to their low bargaining strength. The return received from the sale of their land could not provide them with any alternative sustainable livelihood. Rather, the income was used up either on some consumption - social functions, medical or other needs, or on paying old debts. Though each of these households was promised a job in the cement company, the job was either not given or was casual intermittent work which was undependable. In other words, they lost their permanent livelihood on the one hand and did not get any reliable employment on the other.

It should be noted, however, that those land holders who sold only a part of their land, and did not become landless, were in a better position as they usually got a higher price for their land and frequently a long term employment in the cement factory. Most of these farmers were obviously better off and belonged to higher castes.

**4. Environment and Pollution:** We used the expertise of geologists and geo-hydrologists as well as studies conducted by the agricultural college in Junagadh University and other organisations in India to understand the impact of the quarrying on the land and aquifers and the consequences of cement dust on vegetation and animal life in the region. Our study showed that the cement industry has adverse externalities.

The Government of India has laid down detailed rules and regulations about the quarrying of limestone and other raw materials in the country. These rules include instructions like removing and storing top soil, rocks and other waste etc. before quarrying, (to be put back after the quarry is used up), controlling dust and noise pollution while quarrying, regenerating the used-up quarries systematically by water recharging and plantation, and using surface quarrying as far as possible etc.<sup>10</sup> Our study, however, showed that these rules were not followed by any of the selected units. Gujarat Ambuja-used surface quarrying, but not fully. Since surface quarrying machinery was expensive, Saurashtra Cement Company used blasting which created dust, noise and vibrations, all of which were found to be harmful. To compensate,

Gujarat Ambuja has started some rural development work recently which includes minor irrigation, social services etc.

As regards pollution control within the factory, we observed that Gujarat Ambuja Cement Company more or less observed pollution control measures (In fact, the company has received several awards from the central government for this). The Saurashtra Cement Company was, however, far from satisfactory in this respect with the result that there was a lot of cement dust flying within the factory premises. It was argued by the company that the pollution controlling equipment raises the production cost by about 8% to 9% which they can not afford. This neglect had obviously harmful effects on the health of the workers.<sup>11</sup> Though it was difficult to establish a one to one relationship between the occupational hazards and the health problems of temporary workers in the selected units, the data with local medical doctors and discussions with them suggested that there were serious health hazards for the workers, particularly in the Saurashtra Cement Company. Our study also showed that the pollution in and outside the factory had a negative impact on animal health and vegetation in the region.<sup>12</sup> Our household survey showed that a majority of milch animal owners complained about cement dust making fodder non-palatable. They also complained that the cement dust reduced the productivity of crops by about 15% to 17%. This observation was supported by a scientific survey conducted by Varshneya elsewhere in India, (Varshneya 1997).

Discussions with scientists also revealed that the quarrying, particularly near to the sea coast, frequently resulted in saline ingression. In other words, though limestone was abundant in the region, it was necessary to control the sites of quarries.

In short, the cement industry has had some negative impact on the regional environment. With the quantum jump in investment in this industry, the impact is likely to acquire serious dimensions in the future.

**5. Labour Market Operation:** The two units, like other large/medium units in the region, have adopted a strategy for acquiring labour. These firms primarily employ three categories of employees: (a) technical and professional persons, (b) production

workers under the Wage Board <sup>13</sup> and (c) "other workers" which includes quarry workers, sweepers, and other unskilled workers. The first category of workers which includes scientists, technicians, supervisors, managers, accountants etc are usually from outside the district or outside the state. They are well protected under social security and welfare measures and they receive high salaries. The second category of workers whose terms of employment are determined by the government Wage Board are skilled and semi skilled workers. About half of them are from outside, as their skills are not always available locally. They are "permanent workers", and receive fair wages as well as some other benefits of social security. The third category of workers which constitute about 55% to 60% of total employment is that of unskilled workers coming from local and nearby villages. They are casual workers or contract workers. They have no regular employment and they receive low wages without any social protection, not even health protection.

There is not much mobility across the three segments of the labour market in the short run. And as no serious attempts are made to train local youths through technical schools or polytechnics etc. to absorb them in higher level jobs in the factories, the prospects for their integration with the core labour market are not very bright.<sup>14</sup>

To sum up, our study shows that the units exploit the local non renewable resources of the region without regenerating the ecology and without controlling the pollution generated by the production process: they exploit the local land market to minimise the cost of acquiring land, and distort the already distorted labour market to minimise labour costs. The units have remained alien to the region without establishing strong developmental linkages with the local regional economy (except for generating unskilled employment for locals and promoting some petty trade and services in the region). It seems that the industry is moving towards using cheap local resources so as to export the finished goods abroad without adequate benefit to the hinterland. This neo-colonial industrial growth is clearly non-sustainable and it has no capacity to take the economy on a "high growth path ". In fact, it is a means of exploiting the region rather than developing it. And this has been achieved through a state policy that has not only encouraged the market forces but has also pushed industries in the region through incentives and concessions.

It will not be out of place here to mention the work of local resistance groups who have tried to organise people around the issue of the adverse impacts of the cement industry. These groups have tried to (a) prevent the setting up of cement factories in the green Nagher region, (b) protest against the adverse impact of the environment of industries on the region, (c) take legal action against the forced purchase of land by industries from small farmers and (d) demand the "sustainable development" of the region. Though some small successes have been achieved by these groups, they have not been able to make any significant impact at the regional level or at the policy level so far. Also, these groups frequently lack information, and get emotionally carried away by micro level incidents to demand things that can not be justified logically. There is no doubt, however, that these movements have a potential of generating a strong people's movement in the region (Hirway and Shah 1998).

### **Implications for Policy and for the Paradigm**

The study has several implications for development and industrial policy as well as for the new developmental paradigm.

**Development Strategy:** Can we leave the decision about the development path to markets? Our study shows that unleashing market forces by liberalisation and private industrialisation does not assure a desirable pattern of development. The current developmental strategy calls for much more attention of policy makers.

For example, Gujarat state including the Saurashtra region a sustainable form of development which prioritises agriculture and the environment (Mellor 1970 and Adleman 1995). Since the environmental protection and ecological regeneration of the region are not market friendly activities (as the huge investments needed for the purpose are not likely to generate any significant direct returns to the investor) these cannot be left to the market. Preventing salinity ingress by large scale bunding on the sea coast and undertaking large scale plantation to prevent desertification from the north will need huge investments which will have to come from the government. Improvements in the management of land and water resources in the region also will

not be possible without the intervention of the state as macro and meso watershed development needs state intervention, even though micro watershed planning may be left to private farmers.

An "Environment First and the Agriculture First" strategy would have long term impacts on the course of development of the economy. These strategies will tend to make the development employment intensive and broad based, participative and equitable.

The state, however has gone in for a dose of heavy industrialisation in the region without worrying about the regional priorities. Subsidising industrial growth in an environmentally degraded region that is likely to degrade further is clearly a non-sustainable proposition. In other words, it is important that the development strategy is designed in a sound fashion, with environment/agriculture first approach as a sound basis of development.

Secondly, questions are raised about the policy of the central and state governments of promoting industrialisation in backward areas, mainly by providing extra incentives to potential industrialists without concern for externalities. Since this is a major plank of governments in developing countries for promoting industrial development, it needs the more critical attention of policy makers.

Thirdly, this study also has general implications for the pattern of industrialisation in India in the post liberalisation period. Theoretically there are two broad approaches to industrialisation, namely, "textile first" and "machinery first" strategies. In the context of Saurashtra the two alternatives are: to promote the already existing industrial impulses which have grown autonomously, which are spread over several centres and which consists of small scale units; or to promote large, capital-intensive, high-tech industries which can contribute to exports and which use non renewable resources and generate pollution that is not controlled adequately. The Saurashtra region had (and has), in addition to the cement and other mineral based industries, several other industries spread over industrial centres like Rajkot, Jamnagar, Morabi, Jetpur, Bhavnagar, Than, Surendranagar etc. producing diesel engines, small engineering

products, textiles, garments, tile and pottery, watches and clocks etc. Were (are) there any strong grounds to push the second kind of industrialisation so hard in the region, or was it more appropriate to promote the first kind of industrialisation by providing the required infrastructural support ? An expert committee which was set up in 1989-1990 to suggest measures to promote industrial growth in Saurashtra had clearly recommended the first approach (Lakdawala 1994). The committee had recommended expansion and diversification of the existing industrial impulses in the region by undertaking large investments in infrastructure and other promotional measures. The committee had also recommended an investment of RS 20,000 m in protecting the regional environment and regenerating the ecology.

One can not deny the growth of the cement industry in the region where limestone is an abundant natural resource and when cement is an important input in the development of infrastructure in the country. In fact, at present the cement industry can be considered as a core industry in India in the light of the fact that the country has to improve its infrastructure drastically in the coming years. The real issues, however, are first whether the industry should be subsidised through special concessions and incentives without making it make compensating payments for the environmental losses that it creates, and second, whether this should be encouraged when half of its production is likely to be for exports. While the industry should be allowed to grow, it should be made to pay for the costs of the ecological regeneration that will be needed because of its operation.

**Environmental and Ecological Issues:** Environmental issues do not figure in the neo-liberal paradigm for the simple reason that it assumes that the resources are scarce but do not create externalities. This is not only not true, but the issue of externalities is of utmost importance to India, especially in Gujarat where environmental degradation has acquired serious dimensions. Another major issue for industrial policy therefore concerns environmental and ecological constraints on industrialisation. The study shows that natural resources constrain on the pattern of development including industrial development.

According to the neo-liberal paradigm, prices of factors of production should reflect their relative scarcity. Because of official policy regarding the use of mineral resources, however, their prices are much lower than what they should be, with the result that they are used much more freely than what the market forces by themselves would have allowed. When to this fact is added the neglect of environmental laws, the consequences may involve widespread environmental destruction. Environmental aspects of industrialisation therefore ought to be routinely considered by planners.

To start with, natural resources place restrictions on location. In this case, cement units should not be located in Nagher region (which is one of the few green regions left) though the region has the required raw materials. Also, quarries should not be located right on the seacoast as it may accelerate salinity ingress in the region.

The cement industry should pay for environmental losses. As seen above, industry should be forced to install equipment for pollution control, should be asked to use surface quarrying equipment, and should be made responsible for the regeneration of used quarries. In other words, instead of receiving special concessions it should pay the market or state-regulated prices for the environmental losses for which it has been responsible.

Are the concerns for the environment a luxury that a poor country can not afford? It is frequently argued that a poor country should not bother about pollution etc. as long as growth takes place and employment is generated for the unemployed. However, this argument does not bear scrutiny when it is realised that the poor are the worst sufferers of pollution.. In the light of the fact that there is a gradual shift of pollution-prone industries to the third world countries, it is important to see that environmental rules are enforced.

**Intervention in the Land and Labour Markets:** State interventions are needed both in the land and labour markets if the industrial growth is to be integrated with the regional economy.



The land market in India is highly imperfect due to the lop-sided socio-economic structure as well as the state controls and interventions in the land market. On the one hand, the state has put restrictions on the buying of land (for example, land can only be purchased within 8-10 km around the buyer's residence) and selling of land (for example, you cannot sell the land if it is given under some redistributive land reforms) while on the other hand it uses the Land Acquisition Act to acquire land for "public utility" which includes private industry. The 1984 amendment of the act, which allows private industries (as public utilities) to acquire land at the price determined by the government forces farmers to sell the land at a low price. That is, the Act does not allow landowners to earn the market price which goes up the moment the cement industry enters the market. The government of Gujarat has removed some of the restrictions on buying and selling of land in the post-liberalisation period to enable industries to buy land when needed (Hirway and Shah 1998). However the Land Acquisition Act is now implemented more intensively to help new industries. Since the land transactions in the market by industries are secretive and exploitative, and the land acquisition under the Land Acquisition Act are at low prices, land owners and particularly small farmers belonging to low castes get low returns from selling the land. It is important therefore that the state government intervenes in the land market in a different way to liberalise the market.

The state interventions are needed in the "land market" to make it more efficient so that the owners receive undistorted prices and the right signals are given about the allocation of the land to various alternative uses. The steps that are needed in this case are (a) there should be transparency in land transactions for all to know the prices at which land is bought and sold in the region, (b) legal procedures is followed for acquiring village common lands and transparency should be practiced in these transactions so that these are not made in secrecy by the rich and the powerful and (c) the Land Acquisition Act should not be misused to subsidise land purchase by industrialists at the cost of peasant farmers. If the land prices are going up in the region due to industrial development, the benefits should accrue to all the land holders. Removing legal obstacles to the operation of the land market is one thing, but subsidising land transactions to industries at the cost of peasants and other land

owners is altogether another thing. The former helps the land market, while the latter obstructs its operation.

In the same way, state intervention is needed to integrate the cement industry with the local labour market. The role of the government here should be to promote education and skill development in the region so as to allow local labour to take advantage of the new employment generated. The private units are not much likely to undertake this job as skilled labour is available from outside and the further segmentation of the already segmented local labour market so as to acquire cheap unskilled labour minimises labour costs. In other words, the distortions in the labour market are not likely to be corrected by "market forces" even though the demand for skilled labour is increasing.

It is accepted that new employment generated in a labour surplus economy can not be at high wages or with high terms of employment. Should the state intervene here? Some minimum labour standards need to be observed at least to protect the health and safety of workers. These could be with respect to minimum wages and minimum social protection (occupational health and safety included). There is considerable literature on the contents of a minimum package of social security that a country like India can afford. Without going into the details of this literature we will only mention that there is an agreement about the inclusion of occupational health and safety in this package.

**The Role of the State:** Our empirical study suggests that the state still has to play an important role in determining the development path in a country like India. Though the neo-liberal development paradigm expects that the role of the state is to undertake "market friendly" interventions so as to enable markets to operate efficiently, our study suggests that the state may have to go beyond these limits to ensure that the development is sustainable, participative and broad based. Our study shows that there is a need for the state to intervene (a) to correct the strategic course of the development (such as, determining the points of the environment and agriculture strategic), (b) to take care of the environmental issues in industrial development, and (c) for to correct the functioning of the factor markets so as to integrate them with the development process. In short, as in the case of the East Asian countries, the state has to play a role in directing the process of development.

Amartya Sen divides the nature of state intervention in two categories, namely, overactive state (excessive controls) and underactive state (intervening much less than what is needed - for example in social development) (Sen 1997). But the states in India in the post-liberalisation period seem to be over active in an altogether different way! They are offering excessive concessions and subsidies to attract industrial investment. This new interpretation of the neo-liberal paradigm in India and perhaps in all the developing countries competing stiffly for FDI (Foreign Direct Investment) and for the consumer markets in the developed world has distorted the factor markets leading to negative impacts on the local economies.

The role of incentives in terms of subsidies and concessions for industrial growth, and particularly for exports has been accepted as a part of the neo-liberal paradigm. (Srinivasan 1994, World Bank 1993 and others ). Theoretically speaking, incentives also are distortions in the market and they could be tolerated in a market-friendly paradigm only to the extent that they do not give wrong signals for the allocation of resources. Our study shows that so-called "incentives" can create market imperfections. In short, like the state-led development paradigm earlier the neo-liberal paradigm in the present global context forces developing economies to distort markets.

As far as the role of the state is concerned, it is important to remember that the state intervention is not only performed by the national government (central or the state governments in the case of India). The local government is also important, particularly in taking decisions and implementing decisions. These governments tend to be more accountable, more informed, more concerned and more participative in functioning than higher levels of the state. Though these governments develop gradually (during the early transition period these local bodies are likely to be dominated by the rich and the powerful, and also are likely to be least accountable to the general public) and acquire strength with the growth of people's organisations, their potential as a force to make the government accountable and effective should not be undermined. With the development of the decentralised democracy in South Asia and particularly India, it will be necessary to give due importance to these governments.

In the same way, it is necessary to recognise the role of people's organisations and NGOs as means of making the government accountable and participative. Such people's organisations are growing in many developing countries including India. They can not be ignored as an insignificant force any more. As we have seen above in the case of the cement industry in Saurashtra, they have started playing a small role already.

At the end of the 20th century the issue is not whether we are for or against a state dependent view of development or a market-dependent view of development. The history of development economics shows that if the earlier development economists can be accused of "theoretical curiosities", that is, perversions of standard economic principles based on mis-interpretations of observed facts ( Lal 1997), the economists of the counter revolution also can be accused of the same fault. They can also be accused of reading the East Asian miracle wrongly.<sup>15</sup>

To conclude, the issues in industrial policy in South Asia present one more example of the constraints not of the state but instead of the market; and the need for the state interventions. Though one can not reject the role of the market (as an efficient allocator of resources), private enterprise (for competitive efficiency and incentives) and the efficient management of the macro economy in promoting development, one can not also undermine the role of the state in directing the path of (industrial) development.

## **Notes**

<sup>1</sup> The human capital theories and the R & D theories of the 1980s and early 1990s have postulated that human capital as equally important for economic growth.

<sup>2</sup> The thinking that the present generation has to sacrifice for the future generation is not considered valid any more as it is realised that the economic productivity of the work force in the present depends also on their health, education, nutrition and welfare status. The choice is therefore inter temporal balancing.

<sup>3</sup> It was G. Myrdal who stated that the political and civil rights of a "soft state" hamper economic growth in the early stages and therefore these rights must be controlled (Myrdal 1968). However empirical evidence suggests that the countries with civil and political rights do not suffer from famines as elected governments can not afford to allow the population to die. (Sen 1997a ). There is also no evidence that shows a negative and causal relationship between political/civil rights and economic growth.

<sup>4</sup> The statistics on sanctioned investments show that the average investment per sanctioned project in Gujarat for the period 1991-96 was RS 381 m.

<sup>5</sup> About 80 % of the new investment was in industries (at the two digit level of classification) which were exporting their products. In the case of the cement industry the domestic market is not growing fast. Most cement units including the selected units are planning to export around 50 % of the production. (Hirway and Shah 1998)

<sup>6</sup> Agricultural growth in Saurashtra in the 60s and 70s was good when the farmers used up the sweet ground water regime of the coastal region and other ground water resources in the region leading to serious depletion of ground water in the region. In spite of this, however, even today the agriculture in Saurashtra is largely depending on ground water. This is clearly not sustainable as even today the recharge is far from adequate.

<sup>7</sup> Our village level study showed that the general method of acquiring village common lands is to offer some lucrative contract for business to the local elite/ the village head man. He then helps in acquiring the village land. He also helps in other matters.

<sup>8</sup> The 10 villages that lost some of their common land to Gujarat Ambuja Cement Company now have 13 % to 69 % of the required common land as per the norms of the common lands (based on the number of the milch animals in the village ). It should also be mentioned that not all villages have

adequate common lands otherwise (Hirway and Shah 1998).

<sup>9</sup> Our study showed that the selling prices of land in the same village in the same year varied widely, from RS 21,000 per bigha to RS 100,000 per bigha in Vadnagar, one of our selected villages.

<sup>10</sup> The Government of Gujarat has formulated 'The Mineral Conservation and Development Rules, 1988' based on such rules in advanced countries. These rules have laid down detailed procedures about removing and utilisation of top soil, storage of over burden, waste rock etc., reclamation and rehabilitation of used quarries, protection against ground vibrations, precaution against air pollution, discharge of toxic liquids, precaution against noise, permissible limits and standards, restoration of flora etc. There are rules regarding penalty and fines also. But these rules are not enforced seriously.

<sup>11</sup> It will not be out of place to note here that another cement Company, namely, the Digvijay Cement Company, was closed down for a few days under the order of the district collector after the official investigation was carried out regarding its adverse impact on health. However the company restarted later on.

<sup>12</sup> Our household survey showed that a majority of milch animal owners complained that fodder with cement dust in it was unpalatable to animals. The loss of crop productivity due to cement dust was estimated to be in the range of 15-17 per cent. This was the perception as well as the result of a scientific survey conducted by Varshneya. Refer to Varshneya (1997), The Effect of Air Pollution on Crop Plants, paper presented in the National Workshop on Impact of Air Pollution on Agriculture, New Delhi, 1997

<sup>13</sup> The cement industry is covered under the Wage Board that covers only the permanent production workers of the industry. The Gujarat Ambuja Cement Company has about 430 technical and professional employees, 290 wage board workers and about 1000 other casual, contractual and temporary workers. The Saurashtra Cement Company has 260 technical and professional employees, 200 wage board workers and about 700 other workers.

<sup>14</sup> The two units (both of which are large units) have neither set up technical schools nor contacted local schools for undertaking skill training programmes nor made any other efforts to train local youths in technical lines so as to use them later on. Recently, the Gujarat Infrastructure Development Board, a government organisation, has undertaken a project to estimate the demand for various skills in the industrial sector in the coming years.

<sup>15</sup> While discussing "The Development Thinking at the Beginning of the 21st Century" Amartya Sen presents two views of development, namely, the fierce process of development of blood, sweat and

tears (BLAST) and a friendly process of development of taking little help from others - markets and public services - that is "getting by a little assistance" (GALA). Sen favours GALA, the friendly process of development which according to him is neither a shift against a state dependent view of development nor a move towards a market reliant view. As he puts it, this should be seen as a rejection of the "blood, sweat and tears " view of development in favour of "celebrating people's agency and co-operation and the expansion of human freedom and capabilities." He considers that though the market as an institution fits well in this new thinking, it is in no way a rejection of state intervention. In the final analysis, he argues that the development is essentially a process of expansion of peoples capabilities and development strategy should help people in getting these capabilities. (Sen 1997a and 1997b).

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**Tables**

Table 1

Industrial Investments: Sanctioned Projects in  
Large and Medium Industries in Gujarat  
1983-1990 and 1991-1996

	During 1983-1990	During 1991-1996
Projects Sanctioned		
Total Number	886	4423
No per year	110.75	649.25
Investment(RS m)		
Total	213,860	1,701,169
Inv per Year	26,722	319,266
Employment		
Total No	141637	843673
Per Year	17,704	158,287

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Source: Indext(b), Government of Gujarat, Ahmedabad. (1996)

Table 2

Location of the Sanctioned Industrial Investment  
 In Large and Medium Industries  
 1983-1990 and 1991-1996 ( % to the total)

<b>Region</b>	<b>1983-1990</b>	<b>1991-1996</b>
<b>Central and South</b>		
<b>Region</b>		
Projects	70.31	76.08
Investment	92.61	69.41
Employment	69.87	69.41
<b>North Gujarat</b>		
Projects	13.31	13.17
Investment	4.13	4.62
Employment	15.31	13.01
<b>Saurashtra</b>		
Projects	6.99	9.66
Investment	2.15	21.20
Employment	7.94	15.81
<b>Kachchh</b>		
Projects	6.98	1.04
Investment	0.48	4.65
Employment	4.47	1.75

Source: Indext(b), Government, Ahmedabad (1996)

Table 3

## Investment and Employment Per Project

1983-90 and 1991-1996

Region	1983-90	1991-1996
<b>Central &amp; south region</b>		
Investment per project (RS m )	31.79	36.28
Employment per project	158.86	165.29
Investment per employment (RS m)	00.200	00.219
<b>North Gujarat</b>		
Investment per project (RS m)	7.48	13.95
Employment per project	183.80	178.94
Investment per employment (Rs m )	00.041	00.077
<b>Saurashtra</b>		
Investment per project (RS m)	7.44	87.25
Employment per project	181.61	296.58
Investment per employment (RS m)	00.041	00.294
<b>Kachchh</b>		
Investment per project	1.69	177.02
Employment per project	103.98	303.52
Investment per employment (RS m)	00.016	00.583

Source : Indext(B) Government of Gujarat, Ahmedabad

Table 4

## Growth of Cement Industry in India and Gujarat

Year	Production (m tonnes )	Exports (m tonnes )
1960-61	7.97	nil
1980-81	20.91 (1.71)	0.003
1990-91	46.15 (4.27)	0.18
1994-95	62.35 (9.69)	2.28

Note: The figures in the brackets indicate production in Gujarat. It is to be noted that after the sanctioned projects are implemented, the production is likely to go upto 35.00 m tonnes

Source: Index(b), Government of Gujarat, Ahmedabad (1996)

Table 5.

## Percentage share of major pollution prone industries in Gujarat

Sanctioned investments in major and medium industries ( 1983-1990 and 1991-1996 )

Industry group	1983-1990	1991-1996
Fuel and fertiliser	3.16	11.70
Chemical dyes and drugs and pharmaceuticals	57.08	44.70
Mineral based	4.43	8.80

Source : Index(b), Government of Gujarat, Ahmedabad (1996)

Table 6  
Sectoral Growth Rates in Gujarat

	1960-61 to 1970-71	1970-71 to 1980-81	1980-81 to 1990-91	1980-81 to 1994-95
Primary sector (agriculture)	2.91 2.27	4.15 4.22	-2.60 -3.9	0.01 0.006
Secondary sector (manu )	3.62 3.62	5.64 5.64	7.26 7.26	7.13 7.45
Tertiary sector	3.51	5.86	7.50	7.75
Gujarat-total	3.32	4.95	3.08	4.95
India	3.17	3.66	4.78	5.36

Source :National Income Statistics, Central Statistical Organisation, Government of India  
New Delhi, 1995-96

Table 7  
Some Environment-related Characteristics of Saurashtra  
(1995-96)

District	Av. Annual rainfall (mm)	Area under forest (%)	Blocks under DPAP/DDP %	NoSource villages (%)	% change in livestock (1981-92)
Jamnagar	497.2	4.0	100	99.80	-4.7
Rajkot	621.2	3.1	84.61	98.92	-0.4
Surendrangr	507.0	4.7	100	98.30	-3.7
Bhavnagar	595.9	3.2	58.33	99.08	-13.6
Amreli	545.5	6.0	90.00	98.99	-6.3
Junagadh	881.1	18.9	46.67	94.10	-1.9
Gujarat		10.00		53.78	82.80

Source: Socio economic review, various issues, Directorate of Economics and Statistics.Gandhinagar.