

Indonesia in the 21st Century: Environment at the Crossroads

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Put a frog in hot water and it will try to escape.

Put a frog in cold water and boil it and the frog will not try to escape.

(Proverb from Asia)

"All things are toxins, and there is nothing which would not be toxic;
it is only the dosage which makes a thing toxic."

(Paracelsus, 1574 AD)

Abstract

*This paper aims to look at Indonesia's state of the environment at the end of the second 25 year Long Term Plan (Pembangunan Jangka Panjang Kedua -PJPT II), and also aims to signal a warning for Indonesia to put things in order and not to carry on with "business as usual". The "warning" stems from the concept of the **Precautionary Principle** which focuses on a worst case scenario and from there makes three appeals -the need to halt pollution in advance of concrete knowledge about its impacts, the need to take responsibility for pollution that is occurring, and like this paper itself, appeals to the idea that "common sense" must prevail if development is to be sustainable.*

Introduction

The Precautionary Principle had from the beginning a **global** or transnational perspective because it gained prominence in the 1980's through efforts to tackle the pollution of the North Sea. Throughout the 1960's and 70's a number of heavily industrialised European countries were dumping toxic waste into the North Sea while toxic waste and sewage discharged into rivers was also flowing into the sea. Large fish kills were occurring in the 1980's and fisherman were catching fish with deformities and cancers. However, it was impossible to allocate **blame** on any one country's industrial activity because the complexity of the chemical combinations made it impossible to clearly define the exact causes of the diseases in the fish and made it impossible to define the exact sources of the pollution (Lutter: 1991: 12). Therefore the Precautionary Principle also developed a **local** perspective because each country had to take responsibility for the pollution in order to achieve a positive outcome. Science could not determine the problem with any precision but knew it had to act on what it knew, ie, that each country had to stop dumping waste.

This issue has strong relevance to Java, Indonesia. Take for example the pollution loads in the Surabaya River between the cities of Mojokerto inland, and Surabaya on the coast. Within this short 60km stretch there are more than 40 large factories hundreds of small cottage industries, scores of hospitals, and riparian communities without sanitation provisions, discharging their wastewater into the river. Therefore it is difficult to lay blame on any one particular industry or hospital or kampung (urban village) for the pollution loads in the river. If an affected community seeks compensation for their losses due to a factory's pollution upstream they will always lose because the factory can always say that the pollution comes from other sources further upstream or from the affected community itself. Blame can not be exacted upon any one polluter. Like the North Sea example, each polluter must take responsibility for the waste being dumped into the river. Hence there is the common sense status of the Precautionary Principle. As O'Riordan (1994: 17) states, **preventative anticipation**, a fundamental concept of the principle is:

"...a willingness to take action in advance of scientific proof of evidence of the need to take action on the grounds that further delay will prove ultimately most costly to society and nature, and, in the longer term, selfish and unfair to future generations."

The year 2020 - what future?

The Precautionary Principle also focuses on the "worst edge" of ecological impacts that may occur if action is not taken to change the nature of development (Costanza: 1992: 16). In 1994 Indonesia entered its second 25 year Plan (PJPT II) and the central government in its higher levels is clearly informed about the economic change it faces over the next 25 years and is also aware of the environmental changes that could result from economic growth. The Government also recognises the changes it will need to make in terms of planning, legislation, technology transfer, participation processes, in order to guide Indonesia to adapt in a positive and sustainable way to the environmental impacts that economic "take-off" will generate.

The First PJPT (1968 - 1993) revolved around three basic factors - the exploitation of oil and forest resources, the development of rice production, and the reduction of poverty in order to bring Indonesia to a point of economic and social security. Authorities are aware that the Second PJPT revolves around industrial deepening and urbanisation, particularly in Java. In 1994 an important World Bank Report (here in written as: WBR) entitled "Indonesia Environment: Challenges for the Future" was circulated among top Government officials. The Executive Summary of the Report spelt out quite clearly the impact of Indonesia's trends in development upon the environment:

The analysis of current environmental conditions and trends, and the likely impact of future growth and development under existing policies and practices call into question the sustainability of even current levels of economic activity in a number of key sectors.

The analysis came to three main conclusions. Firstly, current inefficiencies in the allocation and use of natural resources, and the prospects for continued degradation of critical ecosystems (including urban areas), make future growth and development unsustainable. Secondly, industrial development predominantly located in the urban areas of Java will "pose an immediate threat" to community health, erode investment and strengthen community resistance to contamination. Thirdly, conflicts over land use combined with environmental threats, resultant health risks and the inevitable increase in demand by affected communities for environmental quality will increase. (WBR: 1994: Executive Summary). The WBR stresses the need to inform the citizens of Indonesia about these issues. That is one intended function of this paper. As will be seen, the findings located in the WBR are not an isolated exercise of no purpose. Other researchers in the field have voiced similar concerns.

1. Urbanisation

In 1970, 12 million people live in the urban regions of Indonesia and by 1995 this figure rose to 38 million. The WBR estimates this figure will increase to 50 million by the year 2000 and by the year 2020, there will be 85 million people living in the urban areas of Java alone and a further 40 million in the urban areas in the outer islands. While the population growth in Java will likely remain at the current 1.5 - 2%, a figure small by "third world" standards, the overall numbers will continue to be comparatively high because the base population is high at around 100 million. Java alone will have to accommodate 1.5 million new urban residents each year (WBR: 1994: 11).

With the future bulk of the population (approximately 60%) living in towns and cities requiring basic but costly (and at present absent) urban infrastructural services, there is no doubt that the development of urban areas will be a vital barometer for social security and sustainable future of Indonesia. Yet the Jakarta administration cannot even now maintain an adequate number of housing projects to absorb the increase of its population. While it is not known how many privately funded homes are being built in Jakarta each year, public housing authorities have planned to build only 12,000 new homes per year over the sixth Five-year Plan (Repelita VI -1994/99) (Jakarta Post, 2/5/96, 26/6/96), way below the required number estimated by the World Bank. This "barometer" will be tested even further as there is clear evidence that employment opportunities in the industrial urban centres will not be able to keep up with the 2 million annual increase of new job seekers wanting to enter the workforce (Manning: 1993. Jakarta Post, 5/8/96).

On Java, the spreading urban and industrial development, has already altered the groundwater table due to unsustainable extraction and increased contamination. Donner (1987) noted that since the late 1960's, half the natural springs in Central Java have dried up while in Jakarta, groundwater is being extracted at 300 million cu.m per year while aquifer recharge capacity is only 114 million cu.m, causing land subsidence at up to 9cm a year and seawater intrusion up to 15km

inland from the coast, increasing at 1km per year (WBR:1994: 58). Smith (1994) noted the alarming levels of nitrates in the groundwater in selected areas of East Java caused by leachates from septic tanks, the conventional urban sewerage disposal system used in Java, while the WBR (1994: 69-70) cites a Japanese ODA (JICA) study in 1991 detected mercury contamination in 13 percent of domestic well-water samples in Southern Jakarta. The study also estimated that septic discharges and flooded septic tanks in Jakarta contributed to 93 tons of BOD in the aquifer and predicted this load would increase to 136 tons by 2010. While water reservoirs hold less than 5% of total river flows (WBR: 1994: 21), and while only 10% of Indonesia's total population has piped water (and only 40% of the urban population) (WBR: 1994: 121), there will remain a strong reliance on groundwater into the next two decades.

There appears to be real health risks associated with the rapid expansion of small towns and cities without a complimentary development of infrastructures as evidenced for example with the development of the East Java city, Malang, and its environs. This city, one of the wealthiest in Indonesia, experienced a 18-fold increase in Typhoid cases between 1989 and 1992 (DK: 1993).

2. Landuse

Urban expansion, and the concomitant need for infrastructure particularly in Java, is directly related to Indonesia's overall agricultural trends. Cities will increase in area and number as towns become cities, and villages become towns. This pattern will not go away. The WBR (1994: 40) maintains that in Java, 10% (225,000ha) of prime irrigated rice land will be converted by 2020. Cities in Java did grow by 225,000ha between 1980-95, ie, 15,000ha/year of prime land. However, this figure appears to be conservative. If roads, industries, etc were included, the figure could be as high as 40,000ha per year. Figures from Directorate General of Agriculture stated that 76,000ha were converted in Java in 1986 alone -enough land to grow rice for nearly one million people per year. The trend is likely to be the same over the next 25 years. This conversion constitutes the best agricultural land because cities and towns in Java have agricultural traditions. Furthermore, in Java rural population is increasing at 150,000 households per year. Just to build the houses to meet the needs of this particular increase requires 10,000ha/year (World Bank : 1990 : 45).

Which ever figure is more correct, and it is indeed difficult to know, it nonetheless means that an even greater percentage of agricultural fields will need to be developed in the outer islands in order to cope with the increased population and its rice demands which will increase from 45 million tonnes/year in 1990 to 72 million tonnes in 2020¹. According to BAPPENAS, the National Planning Board, if Indonesia continues with its policy of self sufficiency in rice production (Swasembada Beras), this demand will translate as 1 million hectares of new irrigated paddy, or the development of 60,000 ha per year over the Second PJPT (BAPPENAS: 1992: 186). This is also an extremely conservative estimate that does not take into account either soil fertility or the real increase in population. Productivity ratio of land in Kalimantan is 6ha:1ha of land in Java while productivity ratio for Sumatra is 2ha: 1ha of Java land (World Bank: 1990: 28)².

3. Pollution loads

The WBR (1994: 24) estimates that total existing industries in 1990 will only amount to 15% of total industries in 2010, and will amount to only 8% of total industries in 2020. Total industrial output has increased by 7-fold since 1970 and will jump to 13-fold by 2020. Traditional BOD loads in Java will increase by 10-fold by 2020, while heavy metal emissions will increase by 50 times the emission levels of 1980 (WBR: 1994: 78-80)³. Air pollutants such as sulphur dioxide and suspended particulates will increase 13-fold and 15-fold respectively in the major cities. In Surabaya recorded cases of bronchial illnesses and lung disease are twice the national average (DK: 1993), while the WBR (1994: 25: 88-89) estimated that in Jakarta alone in 1990 the affect upon health due to pollution related cases cost \$500 million. The WBR (1994: 22: 71) also estimated that over the Second Long Term Plan, urban solid waste will increase at twice the rate of the population, indicating a shift towards the "garbage of consumerism" paralleling the deepening of capital. With some 30% of urban garbage still being dumped in waterways, the estimated life span of water reservoirs and dams and drainage canals will be diminished⁴.

The growth centres of the outer islands will attract processing industries geared to the production of domestic goods for local consumption. In terms of industrialisation, and possible consequent impacts of pollution loads, these outer island centres of growth will therefore undergo similar patterns of development as Java has undergone over the last 25 years. In the outer islands,

industrialisation in the urban areas will increase 12-fold by the year 2010 (WBR: 1994: 81). Indonesia wide, however, half of the industrial output in 2020 will still be processing industries that are traditionally the heavy organic polluters of water systems (WBR: 1994: 17). The WBR notes that Java will remain the major recipient of the national pollution load but there may be gradual shift in sectoral composition. Java will attract more assembly type industries (less polluting) because of the need for transport infrastructure, good lines of communication, financial security and skilled workers. However the WBR warns that if pollution is not controlled, water supply and "brown" infrastructure not developed, and transport lines suffer gridlock, which they are beginning to now, then foreign investment required for the establishment of the higher tech assemblage industries may be dissuaded from locating in Indonesia (see endnote 10, below).

Java is the political, cultural and social hub of Indonesia. Because the concentration of industry is located in Java's urban areas, traditionally areas of higher population densities (nearly 40% of industrial output is focussed in just 4 cities in Java) (WBR: 1994: 16), Indonesia stands at the crossroad between social and economic take-off, and an environmental crash landing. This crossroad is most evident in Java with a population doubling over the next 25 years and a 10-fold increase in industrial pollution loads, combined with further deterioration of groundwater supplies and further increase in solid waste and refuse.

4. Transport and energy

Industrial deepening and economic growth will ensure an increase in energy demand, estimated increase by 14-fold by 2020 (WBR: 1994: Exec Summ). Ensured also is an increase in private automobiles in Indonesian cities. The number of private automobiles in Jakarta rose from 1.6 million in 1990 to 2.1 million in 1993 (Jakarta Post, 5/6/96). Indonesia wide, private vehicles may increase from 10 million in 1995 to 60 million in 2020. There could be as many as 4.3 million private cars in Jakarta by 2010 (Jakarta Post 5/6/96). This will place added pressure on already diminishing oil supplies, said to extinguish by 2020 because any new oil discoveries will have increasingly short supply-time due to the ever increasing demand to "mobilise" and "energise" the nation. At the same time, Indonesia will become an importer of oil by the year 2000 (WBR: 1994: 21). While it is debatable whether Indonesian cities will become automobile dependent like cities in Australia and America nonetheless authorities will need to invest billions of dollars⁵ on urban public transport infrastructure if industrial and commercial hubs such as Jakarta and Surabaya are to be truly functional and "healthy" cities. Only Singapore has managed an adequate level of spending on public transport infrastructure over the last decade. However, Singapore is traditionally a profitable city-state small enough to control. For a nation-state like Indonesia where control over codes of practice in public expenditures and control over implementation of regulations are far from transparent, there will undoubtedly need to be a radical appraisal by the present government in order to produce adequate levels of transport infrastructure, emissions control and licensing, and equally important, an adequate level of transport education.

The scenario of an unsustainable future for Indonesia is indeed pessimistic, but it is the scenario predicted by the World Bank if development is pursued as it has been over the last two decades. The point to remember is that the sum of the environmental stresses described above have not yet reached overload and need not if authorities recognise the crossroads at which their nation is poised. Infrastructural public works to meet the demands for urban air quality, urban water supply, sewerage, sanitation and solid waste management, and industrial pollution control are given high priority in government rhetoric. However, meeting these demands will require a definitive shift from the "theatre of rhetoric" currently practiced, to a serious engagement in government spending and quite serious control over that spending.

The costs of clean up in Asia: some examples

OECD countries' costs for pollution abatement averaged 4% of total investment in the 1970's and early '80s. In Asia, Thailand spends approximately US\$ 350-500 million per annum (0.4% of GDP) on environmental public works infrastructure. Bangkok plans to spend US\$ 800 million -1.2 billion on sewerage treatment works and a further US\$ 200 million on hazardous waste treatment works (O'Connor: 1994: 179). Japan, with all its evidence of advanced industrialisation, is only now managing to deal with the inadequacies of its sewerage infrastructure. In 1990 Japan spent US\$ 36 billion (1.2% of GDP) on environmental protection -a third at national government level and two thirds at local government level. Roughly 80% of the money was invested in sewerage treatment system development (O'Connor: 1994: 177). The Taiwanese Government spent US\$ 1.1 billion (0.7%

of GDP) on pollution control in 1991. Out of the total investment, 56% was allocated to solid waste management. The Taiwanese government also pledged in all US\$ 12 billion towards pollution control for the 1992-97 Development Plan, equivalent to 4% of total investments (O'Connor: 1994: 53). Out of this figure, US\$ 3.5 billion is to be invested in sewerage management. In 1991 Korea invested US\$ 660 million on pollution control, of which 82% (0.2% of GDP) was for public projects of water supply, sewerage and sanitation and solid waste management. Korea also plan to invest US\$ 1 billion on the development of "environmentally sound technology" (O'Connor: 1994: 178).

The costs of industrial clean up in Indonesia - the private sector

The WBR estimates that in Indonesia, pollution control for existing industries will cost US\$ 275 million at a 30% treatment rate of wastes, increasing to US\$ 1.5 billion at 70% treatment rate, and jumping to US\$ 5.7 billion at a 90% treatment rate (WBR, 1994: 30). Therefore, in order just to meet Indonesia's Clean Rivers Program (PROKASIH) regulation of a 50% reduction in river water pollution, (let the costs required to meet its Blue Skies air pollution program), would alone require US\$ 700 million. The share of this cost would vary from industry to industry depending on age, size and type, but it is of no doubt that the burden of this cost lay with the private sector. If quick and assertive action was taken over the next 5 years, this would represent a mere 1.2% of current GDP in order to clean up the backlog of industrial waste, while new industries' control costs should be no different to OECD experiences, therefore ranging between 2-5% of the total investment.

The costs of urban clean up in Indonesia - the public sector

The Government of Indonesia recognises that to attain sustainable levels of pollution control and prevention will be an incredibly costly exercise. However, public spending in brown projects declined by approximately 40% in real per capita terms during the fifth Five Year Plan of 1987-91 (Repelita V) (WBR: 1994: 146). It is not clear whether any investment in sewerage occurred at all. The WBR (1994: 146) estimates that public sector expenditure on convention "big pipe" sewerage for just the larger inner cities will need to be at a rate of US\$ 250 million per year over a 7-10 year period. The UNDP have calculated that the cost for "traditional" centralised urban sewerage treatment systems for Jakarta alone would be as much as US\$ 270 per capita, ie, 50% of the average per capita GDP (BAPPENAS: 1992: 191). It seems impossible therefore to expect any substantial cost recovery from a majority of the urban community. The World Bank estimates that the expenditure required to supply piped water to all residents in the municipal area of Jakarta would come to US\$ 2 billion (Far Eastern Economic Review: June: 1995)⁶. Given that the population of Jakarta is approximately 8-9 million, then water supply for Jakarta would absorb the remaining 50% of the average GDP. Spread over a 25 year period, the current spending on water supply and sewerage would need to increase from the current 0.2% of GDP to 0.4% of GDP just to initiate the required investments⁷. Initiating solutions to transport problems will absorb a further 0.5% of GDP (WBR: 1994: 30). Therefore an investment of 1.1% of GDP per year would go far towards establishing a threshold between the backlog of basic urban environmental infrastructure, and meeting the needs of regulating future development.

How to pay for backlog of clean-up (let alone establish controls for pollution prevention)?

As already mentioned, the burden of industrial pollution control lay with private industrial sector investment. Proven abatement technology and cleaner production methods are readily available and there is no doubt that the big polluters can afford the investment. Furthermore, both local and international aid based financial assistance programs have been implemented. For example, between 1993-97 the Japan based Overseas Economic Cooperation Fund (OECF) and the Asian Development Bank (ADB) partnered with Bapedal (Indonesia's Environmental Impact Management Agency) to issue non commercial rate loans totalling US\$ 125 million for medium to large industries to adopt abatement technologies and cleaner production methods⁸. However, industry leaders will need to "wake up" and view abatement measures not as an added cost, but as an internal extension and integral part of production processes, and as an investment in Indonesia's future. The government's role should be to strictly monitor industries' technology applications and practices after the measures have been adopted.

However, public works expenditure for brown environmental projects for urban sustainability may prove to be difficult for a number of reasons. Firstly, and foremostly, is the problem of deeply entrenched corruption. It is undoubtedly a significant threat to development.

Indonesia is one of the largest recipients of foreign financial aid, administered through the Consultative Group on Indonesia (CGI) which includes the World Bank Group. For the 1996/97 fiscal US\$5.26 billion was awarded to the government. The Ministry of Public Works is the largest recipient of that aid and it has become widely acknowledged that within Indonesia, 25 -30% of those funds "disappear" into the private pockets of government workers. Exposed embezzlement cases continually arise but only a minor fraction (10%) of the stolen monies are retrieved, and these cases are acknowledged to be only "the tip of the iceberg". Just the exposed cases reached US\$640 million between 1990 and early 1993, while much of the leakage out of large-scale infrastructural projects and programs is never detected (Server: 1996: 37)⁹. Preventing leaks as large as US\$640 million (or about 1% of GDP), would by itself contribute towards funding the sustainability of Indonesia's future. In June 1996, the second stage of East Java's Indonesian Urban Infrastructure Development Program (IUIDP) funding from ADB was approved, the total amount of which was announced at US\$ 150 million. If the normative 25-30% leaks out of the project, the loss to the urban quality of life can be quantified at around US\$ 40 million. As Foley, citing other World Bank studies pointed out, it is the poor who will be most affected by the leakages. Indeed the World Bank itself has broadcasted a warning that it will "restructure" its lending policy, threatening to pull out of projects shaded with corruption. The Bank has come under pressure from industrialised donors who recognise that their public taxes are ending up in the hands of corrupt officials in recipient countries. The Bank President, James Wolfensohn, said the Bank will try to "create a climate in which people fight corruption" (Jakarta Post, 5/10/96)¹⁰.

Secondly, and significantly, the Indonesian Finance Ministry officials are aware that current level of overseas development assistance (ODA) funding cannot last indefinitely because Indonesia's rapid development will not allow it to receive aid for much longer (Jakarta Post, 21/6/96). Swiss aid, for example will cease in 1997/98 because GDP in Indonesia has reached the cut-off point designated by the Swiss aid agency (SDC). Thirdly, and related to the second point above, continuing downward economic conditions in the donor countries has forced countries like Japan to cut its overall ODA by almost 60%, and Britain to cut its aid by 16%. Added to these issues is the fact that approximately 17% of Indonesia's yearly budget expenditures are derived from ODA¹¹. With a total foreign debt of US\$100 billion (around 72% of GNP), and an excessive debt service ratio (ie, the ratio between debt serving payments and exports) of around 32%, the Indonesian government may find itself falling short of funds required for infrastructure development within the next decade, especially with the added pressure of financing agricultural development. Both the US and Japan, in efforts to tighten their economies, have announced plans to shy away from big infrastructure development funding (Jakarta Post, 18/7/96).

Learning from the first world? - institutions, policies, and the rule of law

There is no doubt Indonesia is on a steep learning curve vis a vis environmental management. One lesson currently being faced is building up the institutions in charge of controlling pollution, in particular Bapedal (the Environmental Impact Management Agency). The Centre for Environmental Law (ICEL) have noted the need to strengthen Indonesia's environmental institutions, its regulations and their enforcement, to be a more open, information-centred base operating in a more transparent manner. In particular, an ICEL report noted the need for the government to clarify the mandate of Bapedal -how it will develop in the Provinces and how its functions and responsibilities will be allowed to adapt to the pace of change (ICEL: 1994)¹². However, it seems improbable to wait for the event of "institutional building" to assist secure a sustainable future.

Institutional development is a lengthy process. In 1994, after 4 years of operation, Bapedal employed 100 professional staff members. However it is severely restricted from increasing staff numbers because of policies held by the Ministry of Manpower to keep staff numbers in Indonesia's bureaucracy down. While Bapedal relies heavily on collaboration with NGOs such as the Indonesian Environmental Forum (WALHI), the Legal Aid Foundation (LBH) and ICEL, these NGO's are themselves severely under-staffed, under-funded and under pressure from the Government because their stance on environmental issues is often labelled as "anti development".

ICEL recognises the constraints inherently involved, basically weak institutions, conflicts of sectoral interests and a lack of transparent legal infrastructure, which ICEL maintains, will require ten years to subdue. However, lessons from America and Japan indicate this time frame is rather optimistic. The USA EPA needed 22 years to reach staffing levels of 22,000 with most (70%) of its

policing activities occurring only in the last 6 years. In Japan, where municipal governments factor heavily in pollution control, within 20 years (1971-91), some 12,000 were employed in pollution control by local prefectures, and some 39,000 registered pollution control managers were employed at the factory level¹³. It is doubtful whether Indonesia has the same time frames as USA and Japan in order to develop comparable staffing levels, and therefore a reliance on institutional building will in no manner be a panacea to put unsustainable development right.

Perhaps more pertinent, if Indonesian legal experts such as ICEL voice concerns over a legal infrastructure that is under-developed, the USA again provides convincing examples of a legal system that is over-developed, and the concomitant inadequacies exposed in negotiating the cost of the backlog of clean-ups. In USA the \$16.3 billion Superfund allocated by the government in 1980 to register and clean up toxic sites has mainly been used in highly technical and protracted court cases. It was calculated in 1994 that 75% of the \$10 billion in funds spent had gone to outside consultants, administration, and in particular, to lawyers battling out litigation cases, leaving only 25% for the actual clean-ups. For example, in the USA, interpretation of ambiguous terms such as, best available technology economically available (BAT); best practicable technology currently available (BPT); best available technology not entailing excessive cost (BAT-NEEC), have tied up the courts, the regulators and the regulated (See, O'Connor: 1994: 87). In 1992, 12 years after the Superfund was legislated, the EPA could declare a mere 64 out of the registered 34,000 toxic sites as cleaned up (Tyler Miller: 1994: 563). The principle of "polluter pays" has become a weak and trivialised foundation upon which to launch allegations of liability¹⁴.

Clearly, although policies successful in industrialised countries may not be suitable in Indonesia, even local solutions sought will need to be adhere to a rule of law. The issue of public monies ending up in private bank accounts has definitive consequences for the policies Indonesia chooses to control industry pollution. According to Lance Castles, a prominent "Indonesianist", the main constraint upon seeding sustainable development (in this case pollution prevention and control) in Indonesia lies with an entrenched lack of "rule of law", because Indonesian political culture is "allergic" to it (SPES : 1992: 265). This allergy undoubtedly affects efforts in establishing and implementing environmental policy regulations. Eskeland and Jiminez (1991) from the Indonesian Country Economic Department of the World Bank, analysed the prospect of Indonesia following the option of normative interventionist policy instruments derived from public finance, such as pollution levies, taxes and subsidies (market based instruments - MBI), to persuade industries to adopt abatement practices. They compared MBI which regulate ambient quality of the receiving body (eg, river water or air) with the other widely used option of Command and Control (CAC) which regulates pollution at the "end-of-pipe" source and though still in favour of MBI, they expressed dismay at the prospect of Indonesia following MBI policies because of public revenue constraints, an inability to monitor emissions and damages, uncertainty, and a non-competitive market structure.

Other policy analysts such as O'Connor (1994) have also sited MBI as a solution to Indonesia's industrial pollution control. However, there is no guarantee they will produce the desired incentive of reducing pollution. In East Java for example, industry's current practice of avoidance of responsibility by "buying out" officials in order to stall the inevitable abatement costs has created a rent-seeking opportunity for those in charge of pollution surveillance at the regional and local level. Not only may MBI merely "legitimate" such rent seeking opportunities, but also there would be no guarantee that levies collected would be transferred to consolidated revenue which in return can be recycled back into an urban sustainability initiative²². Put simply, without rule of law, pollution tax systems have little hope of efficacy because it is relatively easy to manipulate the collection agency as tax agency officials are vulnerable to manipulation because of wage constraints. It is an open secret that in Indonesia the taxation system operates through a bargaining process in which the both business sector and the tax officials prosper at the expense of an impoverished consolidated revenue. Therefore there is no guarantee that pollution taxes are an answer to either control or prevention.

What these "lessons" suggest is that no matter how sophisticated or autonomous the institutions are, no matter how clear a duty statement is laid out, no matter how transparent government is, efforts to clean-up contaminated sites, prevent future pollution, or to do development that is sustainable, clear decisive action needs to be taken. Doing sustainable development always requires a consensual and consistent political will as a fundamental pre-requisite.

Conclusion: thresholds, "development", and regime dilemma

Will Indonesia recognise the importance of creating a threshold between cleaning up current existing sources of pollution and preventing future sources of pollution, that is, between the backlog of clean-up required in order to rectify past development done badly, and future development that is ecologically sustainable? According to Cameron (1993) a determination of environmental thresholds needs to be established, ie, how and where a limit be set on whether environmental damage is reaching a point of irreversibility, and how can the cost of regulatory inaction be assessed in the face of future uncertainty. These "ultimate environmental thresholds" (UETs), as Koslowski and Hill call them, are vital for development because they are not the limits that humanity imposes on the environment. Rather, by definition of final limits, or UETs, they are the limits which the natural environment may impose on various types of development (Koslowski and Hill: 1993: 5). In Indonesia, as for anywhere, establishing the threshold will require all project stake holders to understand that firstly, pollution control is an inherent part of the production process, secondly, that urban infrastructure is an inherent part of sustainable development, and thirdly, that when there is consensus on the need for rule of law, then strict application of planning regulations can take place to ensure the uptake of clean technologies, waste treatment facilities and operation, the transparent fulfilment of Environmental Impact Assessment requirements, and proper practice in project design and site location.

Over the next 25 years, Indonesia's priorities for ecological sustainability lay in the development of infrastructures - water supply, sewerage and sanitation, industrial pollution control, air pollution, solid waste management and transport. These priorities involve the quality of urban habitats which in themselves will increasingly become the barometers of either success or failure. National development ("*Pembangunan*") is a primordial concept upon which the current Indonesian government has based its legitimacy, and "doing development right" is what that legitimacy depends upon. One of the foundations upon which Indonesia has pursued *Pembangunan* is the "trilogy" growth with stability and equity. However, economic growth is undermined by the deterioration of the environment and stability is undermined by the consequences of that deterioration. Equity, unfortunately, never had a chance.

All Indonesian citizens want development, but none want the negative impacts of a development ill-managed. Just as there UETs defined as final limits which the natural environment may pose on development, so too there may be final limits that the civil environment may pose on development, especially in Indonesia where the word 'environment' (*lingkungan*) has historically had an inextricable link to the social contexts²³. Indeed UETs may be the precise location of Ultimate Civil Thresholds or UCTs. Transgression of the former may bring transgression of the latter. If Indonesia continues a "business as usual" approach to development, the government will inevitably use up its political capital, ie, its legitimacy will be stretched and citizen reaction may be inevitable. It would therefore be more appropriate to use that capital in putting things in order. The cost of pollution clean-up is far more expensive than orderly prevention. It would therefore be more constructive to invest political capital in order to retrieve the public capital that leaks out of the system. That is, it would be far more cost effective for the government to use its remaining legitimacy to put both industry and urban infrastructure right than it would be to lose the consensus of the citizens. The disaster at Minamata in Japan, or at Bhopal in India has shown us that just one factory can destroy a whole community. A mass of polluting factories such as in Poland can destroy a whole nation. One major industrial disaster, such as Chernobyl in the former USSR can create an irreversible crack in the political regime of a nation and bring it to collapse.

However, it needs to be questioned whether the quest for a sustainable future providing quality urban life is too complex for a centralised management approach. Environmental protection is embedded in political choice and requires negotiating the lot of vested interest at all levels of society with some considerable public and private investment and definite shifts in the arrangements of power at the political level. Outmoded economic, social and legal priorities based on dominance over nature rather than complementary with nature are a world wide problem. But outmoded economic, social and legal priorities based on dominance over and exploitation of civil society and dictated by a highly centralist regime is a problem particularly acute in Indonesia. There is no doubt that in Indonesia's near future "environmentally responsible behaviour" will be a site for a predatorial hierarchy of priorities and much will depend on putting politically responsible behaviour right. Indeed the government may have put itself in a catch-22 dilemma, that is, there are attendant risks of social and political stability if wider participation is allowed in the development process, but there may well be the same risks of instability if wider

participation is not allowed. The current paternalistic approach of doing development for communities may bite back at the regime because the outcomes of this approach in the past have favoured the interests of government, bureaucracy and the elite. A civil based approach of doing development with communities may also bite back because the aspirations of the bulk of civil society will undoubtedly be in opposition to the interests currently being served. There is no guarantee concerning the ferocity of either bite, but the captive hound is bearing its teeth.

Endnotes

1. According to the Indonesian Minister of Industry and Trade, Indonesia is set to become Asia's largest importer of food within the next decade. Indonesia already imports 3.5 million tons of wheat, 2 millions tons of corn, 1 million tons of soybeans. Though claiming to be self sufficient in rice production since 1984, imports of rice have increased 10-fold from US\$53 million in 1991 to US\$514 million in 1995 (Jakarta Post, 15/8/96).
2. The Department of Public Works has begun a massive one million hectare irrigation project in Central Kalimantan, of which 640,000ha is allocated for rice and 360,000ha for plantations. While the project was billed at Rp. 5 billion (US\$2.1 million), the government claims it has already spent Rp. 528 billion (\$260 million) before even completing the infrastructure (Jakarta Post, 5/10/96). Indeed the projected cost was extremely conservative. If one takes into account the estimated cost of establishing new rice fields at US\$2,000 - 3,000 per hectare (World Bank: 1990), the real cost of the project would be approximately US \$1 - 2 billion for the development of irrigated rice fields, let alone the plantation development. The critical implication is that agriculture's allocation of ODA has increased from 35% in 1982, to 49% in 1991 of the total agricultural expenditure (BAPPENAS: 1992: xxxii). Agriculture and public works irrigation projects will need to remain a major recipient of ODA thus placing further pressure in allocating critical funds to urban brown infrastructure development. The Central Kalimantan irrigation project cited above was dubbed "the most expensive development project" for 1996 (Jakarta Post, 5/10/96). Yet in the long term the Kalimantan project will have little impact on Indonesia's attempt to maintain self sufficiency in rice. It may not even make up for past losses if soil fertility is brought into consideration.
3. In 1975, research on contamination of oysters in Jakarta Bay, were suppressed by the Indonesian Government (Watt, et al: 1977: 235). Research on water quality in the Bay dates back to 1931 during the Dutch colonial era (Wood, et al: 1975: 16). The World Bank reports that Mercury levels in the water in Jakarta Bay range from 7-18ppb (parts per billion) exceeding the limit for sea water used for aquaculture, while mercury levels in commercial fish species exceeded WHO standard of 0.5ppm (parts per million) for consumption (WBR: 1994: 91).
4. In May 1996, the Ministry for Finance declared that investment needs in solid waste management for Jakarta exceeded US\$ 1 million for the next 2 years while actual funds available were only half that amount. At the same time the Head of the Greater Jakarta Area Development Board lamented 20 years of under investment in solid waste management (Jakarta Post, 29/5/96). Recently, reports emerged of high levels of PCB contents in the Jakarta dump sites (Gatra, 27/7/96), and of Indonesian rubbish floating its way onto the northern beaches of Australia (Gatra, 2/11/96). It is critical to note that in Jakarta the prices of recyclable goods has dropped up to 10-fold in the last quarter of 1996 due to the importation of waste. This importation has resulted in leaving 1,500 tons of cardboard, paper and plastic, usually collected daily by the 150,000 recyclers (termed "scavengers" - *pumulung* - in Indonesia) out of the recycling process and piling up in the collection sites (Jakarta Post, 30/11/96).
5. One proposed "mega project" to build a 14km long 3 level Mass Rapid Transit system linking South Jakarta to West Jakarta will alone cost US\$1.5 billion. The proposal is awaiting Presidential Decree and was to commence in June 1997 (Jakarta Post, 10/12/96). While this proposal may begin to ease current transport problems in one area of the city, it certainly will not keep up with the pace of private vehicle ownership, currently doubling every 5 years. Furthermore, and importantly, strong incentives will be required to persuade commuters to change their habits of status to get out of cars and into public transport.
6. The JICA study sited above (p.2), also noted excessive faecal contamination of tap water in Jakarta. Indonesia's faecal coliform standard for raw water used for post treatment drinking (grade B) is 2,000 MPN (most probable number of cells) per 100ml, yet faecal coliform counts in river water used for public water supply in Jakarta have been measured at 10^6 MPN/100 ml (WBR: 1994: 69). This raises issues concerning the effectiveness of current water treatment technologies and delivery lines in use. In 1992, in a keynote address, the Director General of Water Resources Development, Ministry of Public Works, admitted that the transfer of water technology "had not produced the results that we had anticipated" (BAPPENAS: 1992: xxxi).
7. Interestingly, although water supply authorities, *Cipta Karya*, in the Dept of Public Works have a demand management program due to the costs of supply, with only 40% of city dwellers and 10% of the total population connected to infrastructural water lines, absolute supply will remain a strong determinant. According to the WBR, the absolute urban poor living in areas of aquifer salination or along river banks, have to pay 30-50 times more for water bought from travelling vendors, than households linked to the town supply (1994: 121). In Surabaya vendors sell water for Rp. 400 per 20 litres compared to tap water prices of approximately Rp 470 per cubic metre, making the mark-up price around 40-fold. The bulk of the poorest urban communities are paying more for water than those who have town water connection. Public sector investment in water supply would free up daily finances of these communities.
8. Personal experience in 1994, as a short time consultant in East Java conducting an feasibility study of installing wastewater treatment technology in a distillery and an abattoir, clearly indicated that these firms could afford abatement technology suitable to raise the quality of their effluents to meet legislated water quality standards with an extremely favourable economic internal rate of return (EIRR). The study, conducted for an Australian pollution technology company, laid proof that the percentage surplus profit attained by these companies by not

buying and operating abatement technology overrode the percentage loss incurred in the local economies communities and public utilities downstream.

9. In late 1994, one of the biggest fraud cases hit the press when Eddy Tansil, Director of the Golden Key Group of businesses embezzled US\$ 650 million from the Indonesian Development Bank (BAPINDO). The bank, established to assist in regional development, had to close 100 branches. At the most, 30% may be returned while the state owned Bank of Indonesia will have to cover the remaining losses. Although Tansil was sentenced to 20 years prison he managed to "escape" and has not been seen since. Court cases are still in process. More recently, the Supreme Auditing Agency declared US\$ 260 million of public funds went astray in the 1995/95 fiscal year by corrupt practices (Jakarta Post, 19/6/96), while the Industry Ministry had collected US\$ 32 million in "non tax revenue" over the 1995/97 fiscal years - money that will not be transferred to the state treasury (Jakarta Post, 30/1/97). Another case recently arose out of activities that occurred in 1994 within the Ministry of Mines and Energy where funds totalling US\$ 150 million collected from state owned mines never reached the state treasury. Out of those funds, \$23 million were transferred into the private bank account of the Mines and Energy Minister - with President Soeharto's approval (Jakarta Post, 12/12/96). The fiscal year of 1995/96 saw over US\$ 5 billion lost in bad bank loans, mostly through corruption and mostly through the state Bank of Indonesia. This figure represents over 10% of the total yearly state budget expenditure. Credit failure, or credit jam (*kredit macet*) as it is known in Indonesia has been called by the press, "a disease" and "an epidemic" within the Indonesian economy (Surabaya Post, 4/1/97). As Schwartz (1994: 137) states, "Corruption is profitable for the few, expensive for the many". The nation, according to Schwartz, is demoralised by these feats of embezzlement.

10. One of the largest foreign legal firms operating in Indonesia, Arthur Anderson, declared that foreign investors are more concerned with the state of legal uncertainty and inconsistent law enforcement currently prevalent in Indonesia than anything else (Jakarta Post, 19/11/96). This lends weight to a 1992 a survey of large multi-national companies in USA which ranked various cities according to their desirability as a potential relocation site for corporate headquarters. Singapore was ranked among the top while Manila and Bangkok were near the bottom of the list. Jakarta was not mentioned in the survey but, according to the World Bank, one can estimate that if Indonesia does not sort out its water and air pollution problems it would probably be near the bottom of the list as well because polluted cities are not attractive to foreign investors. The failure to enforce environmental standards as a deliberate strategy to attract foreign investment is a short sighted approach that is self defeating (Washington Post, 4/9/92, cited in WBR: 1994: 93). Significantly also, with Singapore ranked at the top, the notion that cheap labour is an incentive for relocation is ill proven. In 1993, and again in 1997, a prominent, Hong Kong based Political and Economic Risk Consultancy Group, in a survey of 10 Asian nations, nominated Indonesia as the most corrupt. In 1994 the Japanese External Trade Organisation (JETRO) complained of too many invisible costs from "under the table" (Schwartz: 1994: 158). In 1996, JETRO filed a survey on the most favoured ASEAN nations as recipients of Japanese investment. The survey showed that Japanese firms in Malaysia and Thailand (with higher wage rates than Indonesia) made better profits than firms in Indonesia. In all, 22% of Japanese firms planned to relocate out of Indonesia preferably to Singapore, Malaysia or Thailand. The report stated that bureaucracy was the main deterrent for staying in Indonesia (Jakarta Post, 12/9/96). Singapore and Malaysia have a higher degree of foreign investment, not because of cheap labour advantage or because of loose environmental regulations, but because urban infrastructure improvements are in operation and because there is a bureaucratic environment more conducive to rule of law.

11. The state budget has increased from US\$ 31 billion in 1993 to \$ 50 billion in the 1997/98 fiscal. However the increase must cover inflation at around 5-7% a year and a pledged 10% pay rise for 4 million civil servants.

12. In June 1996, the long awaited Presidential Decree (Kepres No.98, June 5), permitting Bapedal to form at the provincial level. However no presidential instructions (normally an integral part of the "kepres" issuance) were handed down, making the decree inoperable. It is worth noting that an Australian aid project with the specific aim of assisting East Java set up a regional Bapedal (Bapedal-da) has been operating since 1994 without any real counterpart institution. In October 1995, with 3 years of the 5 year project remaining and still no Bapedal-da in sight, and having trained 300 personnel with no guarantee that any of the trainees would in any way be involved in the "future" Bapedal-da (let alone be involved at all in any form of environmental management - and to take the point further, in fact without any guarantee at all as to just who it was that was being trained! - and with no internal feedback on the effectiveness of that training), an independent review was submitted to Australia's Aid Agency (AusAID) recommending to close down the project if no Bapedal-da emerges within one year (PCI: 1995: R2.4). More than one year has passed since that report and still there is no Bapedal-da. In March 1997, nine months after the Kepres was handed down, the Kepres Instructions were issued and PCI staff now feel their counterpart Bapedal-da will finally be established. However, East Java's Bapedal-da will be the third off the rank, not the first, therefore delaying the time even further. Added to this, informed sources have indicated to me that in the agency staffing selection process to follow, the "struggle over interests" and the scrumming for positions could take up to one year to overcome. I therefore personally doubt whether PCI will ever get their counterpart.

13. The World Bank maintains (Fiscal 1994: 9) it is easier to develop physical infrastructure for pollution control than it is to pursue institutional building. Indonesia could learn much from Japan's initial approach to industrial pollution control in the 1970's which focussed on end of pipe solutions, damage control and crisis management (O'Connor: 1994: 65). According to O'Connor (p73), there are already similarities between Indonesia's and Japan's approaches. Both pursue voluntary agreements with industries, relying on persuasion ("jaw boring") at the local level rather than litigation. However, voluntary agreements work successfully only when there is strong local government and a civil society allowed to express itself - both markedly absent in Indonesia.

14. Australia can provide convincing examples of a trivialised polluter pays principle. The site of "Olympics 2000" is an old industrial area and feasibility studies were conducted to estimate the extent of contamination in the area and the cost involved in the clean-up. The New South Wales State EPA suppressed information about the real levels of contamination from the Olympic Site Selection Committee. Now it appears that a major toxic waste cleanup will be required, cost of which has blown out from AUD\$ 20 to AUD\$ 150 million. It appears that the main polluter of the site, Union Carbide, an American company which was responsible for the Bhopal disaster in

India, and which was awarded the infamous title of America's worst polluter, will not even be brought to the courts. In Australia, NGOs now file law suits against EPAs for not performing their duties.

15. Panayotou (1991) maintains that CAC instruments are likely to attract and encourage rent-seeking opportunities. This is certainly true if the East Java scenario is considered. But my point is that MBI may simply legitimise it. There is no guarantee MBI will prevent it.

16. For example, would-be employees in Indonesia's civil service are still screened for "bersih lingkungan" (a clean environment), that is, they must be able to prove that no one in their immediate and extended family dating back unlimited generations have ever been members of the Indonesian Communist Party (PKI), outlawed in 1966.

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