

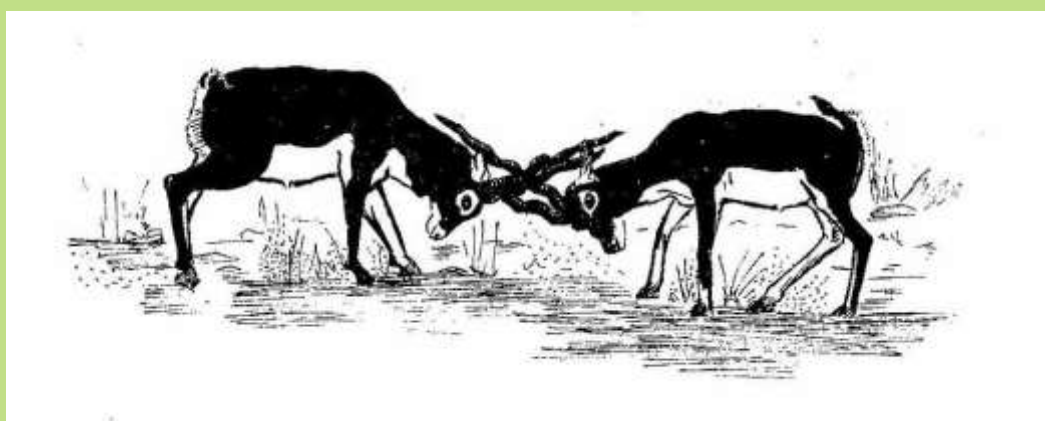
WORKING PAPER

Environmental Sustainability and Industrial Development:

The Indian Experience

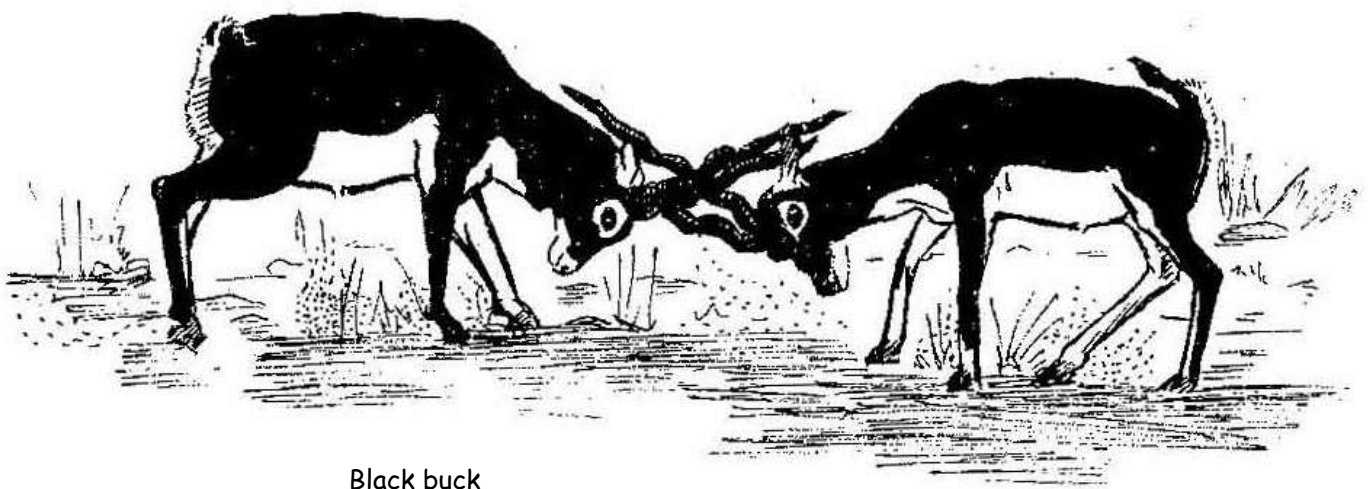
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Black buck

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Sketch of black bucks on the cover and above by Pratibha Pande.

INTRODUCTION

India is a country with vast natural resources. It has a land mass of about 329 million hectares, with 75 million hectares as designated forest land, nearly 150 million hectares under agriculture and an annual precipitation of 400 million hectare metres. It is among the richest countries in biological diversity supported by a unique range of topography and climate stretching from the world's highest ranges in the Himalayas, with permanent snow and temperatures much below freezing point, through the grasslands and plains of central India, the plateau of the Deccan, the dry and hot Thar Desert of Rajasthan, the wettest areas in the world around Cherrapunji, a long coast line and islands in the Bay of Bengal and the Arabian Sea.

It supports sixteen different types of forest systems ranging from the tropical evergreen forests of the Andaman & Nicobar Islands, the North-East and the Western Ghats, to the temperate coniferous and pine forests of the Himalayas, and the alpine pastures.

The country has ample sunshine and rich soils supplemented over centuries by the great rivers bringing down and depositing rich silt from the Himalayas and other mountain ranges. The Indo-gangetic plain is considered among the richest agricultural areas in the world.

But India is also faced with formidable environmental problems and threats. It has a huge population, expected to cross the one billion mark by the turn of the century. Much of this population lives in poverty and a significant proportion is below the poverty line. According to latest estimates, over 250 million children, women and men suffer from under-nutrition.

It has a domesticated animal population of nearly 500 million. Considering only 3.5% of the land area is under grasslands, this population is supported by the forests and by agricultural residues

which are thereby diverted from the land. 175 million hectares of land are degraded and require special treatment to restore productivity. Of the 75 million hectares designated as forest land, only about 35 million has closed forest cover. Despite all efforts, India continues to lose forests at the rate of nearly 50,000 hectares a year. Over 1500 species of plants and animals are on the endangered list.

Levels of air and water pollution are much beyond acceptable limits, especially in the cities and industrial belts. A very large proportion of the water sources in the country are not fit for drinking water. Many of our main rivers are not even fit for bathing. The air pollution levels even in the Capital of India, Delhi, are often and for more than one parameter, above the acceptable levels.

This depletion of natural resources and pollution of the environment is much more a cause of poverty than a result of it. Therefore, efforts to eradicate poverty, through development projects, cannot succeed if in the process the environment is further degraded.

This paper attempts to describe and analyse the efforts being made, in India, to make development, especially industrial development, more environmentally sustainable. Apart from the Introduction, it contains a Conceptual Framework, a section on the Indian Situation, Conclusions, Recommendations, Case Studies, and Annexures.

THE CONCEPTUAL FRAMEWORK

The concept of environmental sustainability is much maligned and misunderstood. In the sense that it is being used in this paper, it follows from the notion of "carrying capacity" which indicates the ability of an ecosystem to allow extraction and assimilate pollutants without being itself damaged or modified to an unacceptable level.

Sustainable development means, therefore, that level of economic and social growth which is within the carrying capacity of the ecosystem.

To assess whether industrial development is environmentally sustainable, at least two questions need to be answered:

- Whether the overall model of industrial development is environmentally sustainable?
- Whether each specific industry is environmentally viable?

An answer to these questions presumes an understanding of:

- Natural Resources Demand: Whether the present and anticipated industrial demand for natural resources directly (water, biomass, land, minerals, etc.) or indirectly (electricity, cement, steel, etc.) is within the carrying capacity of the ecosystem.
- Pollution: Whether the environmental impact of the industry (or industrial strategy), especially in terms of location, air and water pollution, and industrial hazards and congestion, is within the carrying capacity of the ecosystem.
- Patterns of Resource Use and Distribution: The patterns of resource consumption and distribution that industrial strategies and specific industries represent have an impact on the society and culture of a nation and consequently, on its environment. Important though this is, it needs a separate detailed discussion, especially regarding the impact of International trade practices and the role of international organisations in influencing these.

There are degrees of environmental sustainability. Each country has to decide for itself and its regions and specific locations the level of ecological disturbance and modification acceptable, within the limits prescribed by ecology. Also of relevance is the acceptable time frame within which an ecosystem must repair itself.

To make increasing levels of production and consumption sustainable, at least two instruments are available:

- Technology: Through technological innovations, ecosystems can be made more productive, their ability to assimilate waste can be enhanced, processes can be made more efficient, and alternatives for scarce or non-renewable resources can be developed. Technological innovations can also make environmental protection economical.
- Management: With a constant level of technology, processes and activities can be better managed to reduce the environmental impact. Better management can often result in saving costs while saving the environment.

For a nation to establish an environmentally sustainable industrial order, what is required is:

- An integrated development plan which indicates how best industrial and economic goals can be achieved in an environmentally sustainable manner, and determines priorities between different demands.
- A set of laws which regulate various activities thereby ensuring that, where other measures fail, legal deterrence and retribution ensures environmental protection.
- A set of policies and guidelines which lay down the operational principles that follow from the integrated plan.

THE INDIAN SITUATION

To understand the practice and potential of establishing in India an Industrial order which is in harmony with the natural environment and thereby sustainable, it is essential to understand various processes, institutions and instruments of governance, across different levels. These include:

- The integrated and sectoral plans at the national level
- Laws regulating industry in terms of
 - location
 - use of natural resources
 - pollution, safety and other impacts on the environment
- Policies and guidelines related to
 - industry
 - environment
 - finance and taxation
 - complementary sectors like technology and water

Each of these three have to be looked at in terms of :

- The institutions
- The processes
- The content
- Implementation

In addition, it is also important to understand:

- People's Participation, and
- Professional and Institutional Participation in the task of making industrial development sustainable.

A. INTEGRATED AND SECTORAL PLANS.

The Institutions: The Planning Commission has the responsibility of formulating five - year plans for the country. The Commission is chaired by the Prime Minister and has a full-time Deputy Chairman, who has the status of a Cabinet Minister. Various Union Ministers are part time Members of the Commission and, in addition, the Commission has various full time Members who are usually professionals (economists, scientists, administrators). The full time Members have the status of Ministers of State.

The Commission is assisted by a secretariat headed by a Secretary, usually a civil servant, and divided into various subject and functional divisions (Agriculture, Environment and Forests, Industry; Project Appraisal, Programme Evaluation, etc.). These divisions are each headed by an Advisor who is expected to be an expert in the respective subject or function.

The Planning Commission acts as an advisory body to the Union Cabinet, which is headed by the Prime Minister and comprises of all the Cabinet Ministers.

The basic five - year plan and the "approach" or "thrust" paper formulated by the Planning Commission is finally approved by the National Development Council which is chaired by the Prime Minister and has, as members, various Cabinet Ministers and Chief Ministers of all the states.

The Process: Development Planning in India is structured in terms of five-year plans (the eighth one becoming operative from 1 April, 1992). The formulation of the five year plans is the responsibility of the Planning Commission which, among other things:

- a) Prepares the "approach" or "thrust" paper which lays down the "development philosophy" of the government.
 - b) Allocates "plan funds" to different sectors, sub-sectors and the state governments.
 - c) Prepares a "chapter" for each sector which lays down the detailed approach to be followed for each sector in the next five years.
 - d) Approves and allocates funds for specific schemes and programmes.
- The "approach" or "thrust" paper which is initially prepared by the Planning Commission, is approved by the Union Cabinet and, finally, by the National Development Council (NDC).
 - The sectoral allocation of plan funds is done by the Planning Commission based on an estimate of the resources available.
 - Allocations to Central Ministries are made in consultation with them and based on proposals, submitted by each of the Ministries, containing details of every scheme, programme and activity they propose to continue or start.
 - Allocations to state Governments are similarly done after discussions with officers of the various departments of the State Government and based on their proposals outlining specific schemes

and programmes. These are finalised in discussions between the Dy. Chairman of the Planning Commission and the Chief Minister of the state.

- Chapters for each sector are prepared by the Planning Commission. There is usually some interaction, in the process, with the Central Ministries. These are also approved by the Cabinet and the NDC.

The Content: The sectoral chapters and the detailed allocations for schemes and programmes for the Eighth Plan (1992-97) are not yet final. This is at least partly due to the rapid changes in government over the last three years. However, the "thrust" paper has been finalised and approved by the National Development Council.

Unfortunately in the overall objectives of the Eighth Plan, contained in Objectives, Thrusts and Macro-Dimensions of the Eighth Plan, brought out by the Planning Commission in December, 1991, there is no mention of the environment or of environmentally sustainable development. The listed objectives are:

The Eighth Plan will give priority to the following objectives:

- (i) generating adequate employment to achieve near full employment level by the turn of the century;
- (ii) containing population growth through active people's cooperation and an effective scheme of incentives and disincentives;
- (iii) universalisation of elementary education and complete eradication of illiteracy among the people in the age group of 15 to 35 years;
- (iv) provision of safe drinking water and primary health facilities including immunisation so as to be accessible to all villages and entire population, and complete elimination of scavenging;
- (v) growth and diversification of agriculture to achieve self-sufficiency in food and generate surpluses for exports;
- (vi) strengthening the infrastructure (energy, transport, communication, irrigation) in order to support the growth process on a sustainable basis;

The 8th plan will focus on these objectives keeping in view the need for (a) continued reliance on domestic resources for financing investment, (b) increasing the technical capabilities for the development of science and technology, (c) modernisation and competitive efficiency so that the Indian economy can keep pace with and take advantage of global developments.

There is also no section which indicates how, if at all, environmental concerns are to be integrated into planning and implementation of development activities and projects.

The section on Environment and Forests states:

Environment, ecology and development must be balanced to constitute the needs of the society. In the interest of sustainable development it would be necessary to take measures to preserve, conserve and nurture, the fragile and critical

eco. systems. There is a need for decentralised approach in this area as well, so that the environmental considerations are taken note of in every sector with a definition of the appropriate technology and environmental options while formulating programmes and projects.

Environmental management principally includes planning for sustainable use of resources, protection and conservation of ecological system by education, training and awareness. Cooperation of both governmental and non-governmental organisations should be called for at all stages if environmental movement is to achieve success. It can only be accomplished with the fullest cooperation of the people. Cleaning of important rivers such as the Ganga will have to be accelerated.

Forest conservation and development must aim at preservation of biological and genetic diversity in terms of fauna and flora and protection of forest cover from further degradation. At the same time meaningful projects are to be developed to utilize wastelands and to make them productive.

The document also contains a section on "Emerging Issue of Planning and the Needed Policy Correctives". It identifies the issue as follows:

The most glaring problem that faces planning is that the essence of the planning process has been eroded. If planning is to be a prioritised application of resources-human, material and financial-to the needs of development, the process has to keep enough operational efficiency to make adequate and timely investments in priority programmes and to have reserves to take up new initiatives in short, medium and long term development.

Even at this level, there is no mention of natural resources. This section goes on to list, as priority sectors, Energy, Physical Infrastructure, Irrigation, Agriculture, Social Services, and Poverty Alleviation. However, the description of these priority sector goals contains no mention of sustainability or the environment.

Implementation: The implementation of a plan must be assessed on at least two basis

- the impact it has on the subsidiary plans, policies, action plans and programmes that are supposed to emanate from it;
- its impact on the activities and situation in the field.

Impact on subsidiary plans : The sectoral chapters of the plan document are supposed to exemplify sectorally, and in greater detail, the broad thrust contained in the approach or thrust paper. This exemplification is supposed to be reflected in the schemes, programmes and projects approved and supported by the Planning Commission, and in the financial allocations made for each of them.

However, the lack of integration and the inability to clearly identify the interfaces between different sectors manifest in the thrust document, is aggravated in the sectoral chapters which, in the past, have been even more stratified than the thrust or approach paper. These chapters have mainly sought to further sectoral goals which are primarily seen as quantitative growth targets.

It is interesting to note that, in 1990, while formulating the approach paper for the Eighth Plan, then scheduled for 1990-95, the Planning Commission had made a valiant effort to break away from the tradition of target oriented planning and had tried to replace quantitative targets with social indicators. However, this was not accepted by the Cabinet and the Commission had to revert back to the earlier practice.

At the next level, the schemes and programmes of the Central Ministry and the States bear even less resemblance to the overall thrust or approach and even to the chapters.

This is partly because whereas the plan is formulated by the Planning Commission, the programmes, schemes and projects are formulated by Ministries and Departments in the Central and State Governments. Though there is some discussion with central ministries in the process of plan formulation there is none with the State Governments. Infact, apart from the Chief Ministers being involved, as members of the National Development Council, in approving the approach or thrust paper and the plan document, the State Governments seem to play a relatively small part in the overall planning for the country.

Perhaps the most important reason why schemes, programmes and projects do not always reflect the current plan philosophy is because a very large proportion of them are ongoing or half finished. The planning process might very well be a five - yearly process but it does not reflect the life of projects or schemes and, consequently, at the time when a new five - year plan is being formulated, or financed, a very large proportion of the funds available are already earmarked for ongoing or unfinished activities.

Impact on activities: At the implementation stage, there is very little that the Planning Commission can actually do to ensure the proper implementation of these plans, whatever their inadequacies. Past experience has shown that State Governments and even Central Ministries implement the plans according to their own priorities, both in terms of the strategies followed and even in terms of expenditure incurred.

Whereas the Planning Commission is involved in the process of approving schemes, programmes and projects at their inception, this is done on the basis of a proposal. When these same schemes, programmes or projects are initiated, they need yearly financial outlays from the Planning Commission. However, at this stage the Commission has very little ability to assess their functioning and has to go by the reports, often very scanty, presented by those implementing these schemes and projects.

Even in terms of financial outlays, there is a tendency, especially among State Governments, to disregard the allocations made by the Commission when it suits them. There is, again, little the Commission can do to prevent this. Some sectors, like agriculture, are "earmarked" sectors implying that if States transfer funds out of this sector's allocation to other sectors, without clearing it from the Planning Commission, the amount so transferred would be cut from their next year's central assistance. The "central assistance" comprises of the State's share and other dispensation from the revenue collected by the Central Government. However, even for earmarked sectors it becomes politically difficult for the Commission to ensure that it is respected.

The inability to develop and implement an integrated plan which clearly lists priorities and identifies the interface between different sectors and sectoral interests has a negative impact on many aspects of development but, most significantly on the environment. Essentially

"sustainable" development implies integration of environmental concerns into all sectors of development. Clearly this is not happening adequately in India.

The inability to implement strictly even the stratified sectoral plans also has implications on the environment which are serious. Where States or Ministries are allowed a free hand, they often favour the hard core "development" sectors like industry, irrigation, communication, tourism and mining all too often at the cost of "soft" and "anti development" sectors like the environment.

The Planning Commission, and the integrated planning model that it represented, have lost influence for perhaps the following reasons.

a) Whereas in its initial years the Commission was able to develop integrated plans, the emergence of diverse and new issues relevant to development (like the need for environmental protection) heightened the conflict between different sectors of development. Rather than face and resolve these contradictions through the medium of planning, the planning process was allowed to disintegrate and become pre-occupied with producing a series of sectoral and sub-sectoral plans which were, often, at variance with each other.

b) The resolution of conflicting demands, especially for natural resources, needs a basic, long term plan, prioritising different uses in a rational manner. Without this, planning becomes ad hoc and irrational. It often leads to lower priority demands getting satisfied while higher priority ones are refused. But, despite this, the planning process has not succeeded in formulating such basic plans for many crucial areas of conflicting demands. The lack of a land use plan is one such example, even though the Government of India had set up a high powered Land Use Board, way back in 1985, under the Chairmanship of the Deputy Chairman of the Planning Commission.

c) Apart from being sectoral and sub-sectoral, such planning also remains essentially centralised in a nation so diverse that centralised fiat have little relevance.

d) The irrelevance of centralised planning is aggravated when it has to be performed in the absence of detailed and authentic information of a disaggregated nature, as is the case for at least environmental planning.

The Institutions: Formulation of laws is ordinarily the task of dealing Ministries and Departments at the Center and State. These Ministries and Departments are ordinarily headed by Cabinet Ministers and can have one or more Ministers of State and Deputy Ministers. The secretariat is headed by a Secretary who is usually a civil servant. Most technical and scientific ministries and departments have various technical and scientific staff.

At the Center there is a Committee of Secretaries, chaired by the Cabinet Secretary, and having as members Secretaries of the Ministries and Departments concerned with the issue under consideration.

At the national level there is a Parliament which has two houses, the Lok Sabha which has Members elected directly by the people, and Rajya Sabha which has Members elected by an electoral college of State legislators.

At the State there is a Legislative Assembly which has Legislators elected directly by the people.

The Process: At the Centre, the responsibility for formulating new acts (or amending existing ones) is of the dealing Ministry. The proposed act, or amendment, is sent to other ministries for their comments.

- Based on comments received, the proposed act is modified and then discussed by the Committee of Secretaries.
- The proposed act is then cleared by the Union Cabinet.
- Finally, it is introduced into Parliament and only becomes an act after it is passed by Parliament.
- A similar process is followed by State Governments while formulating State Acts, except that the consultation with other departments and discussion among secretaries is not formalised but done selectively at the discretion of the Chief Secretary, who functions as Cabinet Secretary to the State Cabinet. The Act is finally introduced into the Legislative Assembly.

The Content: Some of the Constitutional provisions and laws which seek to control environmental degradation, especially in terms of the impact of industry, are:

- Constitutional provisions relating to the protection of environment

By the Constitution (42nd Amendment) Act, 1976, Article 48A was inserted in Part IV of the Constitution. Article 48A of the Constitution reads as under:-

"48A: protection and improvement of environment and safeguarding of forests and wild life:-

The State shall endeavour to protect and improve the environment and to safeguard the forests and the wild life of the country".

By the Constitution (42nd Amendment) of 1976, Article 51-A has been added as Part IV-A of the Constitution of India. Article 51-A reads as under:-

"51-A. Fundamental duties - It shall be the duty of every citizen of India:.....

g) to protect and improve the natural environment including forests, lakes, rivers, and wild life and to have compassion for living creatures;"

- The Environment (Protection) Act, 1986.

This is a comprehensive act which seeks to control environmental pollution, to prevent environmental degradation, and to regulate hazardous substances and processes.

The Act States:

"...The Central Government shall have the power to take all such measures as it deems necessary or expedient for the purpose of protecting and improving the quality of the environment and preventing, controlling and abating environmental pollution". (Section 3(i))

Recently (January, 1992) the Central Government has issued a notification under this Act (at Annexure I) making it mandatory for various types of industry to take environmental clearance from the Central or the State Government.

- The Water (Prevention And Control of Pollution) Act, 1974 (as amended in 1978 and 1988).

Apart from laying down and enforcing water quality standards, this act also regulates the setting up of new industries as it stipulates the necessity of getting a No Objection Certificate from the concerned Pollution Control Board. As per the provisions of Section 25 of the Water (Prevention and Control of Pollution) Act, 1974, without the previous consent of the State Pollution Control Board no person shall bring into use any new or altered outlet for the discharge of sewage effluent or trade effluent into a stream or well or sewer or on land or begin to make any new discharge of sewage effluent or trade effluent into a stream or well or sewer or on land.

In case the industry falls in the list of 20 highly polluting industries, an environmental clearance is also required to be obtained from the respective Director of Industry of the State where the factory/plant is being set up.

- The Air (Prevention And Control of Pollution) Act, 1981 (as amended in 1987).

This act lays down and enforces air pollution standards and regulates the setting up of new industry by laying down the necessity of getting a no objection certificate from the concerned pollution control board. It has other provisions similar to the 'Water Act'.

- The Water(prevention and Control of Pollution) Cess Act, 1977.

This Act provides for the levy and collection of a cess on water consumed by persons carrying on certain industries and by local authorities with a view to augment the resources of the Central and State Pollution Control Boards.

- The Indian Forest Act, 1927

This Act demarcates forests into different categories, with differing levels of protection and management. The Act regulates the use of forests and the extraction of timber and other forest products.

- The Forest (Conservation) Act, 1980

This Act prohibits the diversion of forest land for non-forestry use, except with the prior permission of the Central Government. It, therefore, regulates the location of Industry.

- The Wildlife (Protection) Act, 1972

This Act protects wilderness areas and wild plants and animals. Under the Act areas with unique or representative ecosystems are protected as national parks and sanctuaries. It prohibits the setting up of Industry within wildlife protected areas.

- The Insecticides Act

This Act regulates the production and utilisation of insecticides.

- The Factories Act

This Act regulates the safety aspects of factories.

Implementation: The laws pertaining to the environment are both comprehensive and strong. There is the "umbrella" Environment (Protection) Act which covers all forms of environmental destruction and prescribes very stringent punishments. There are also Acts covering air and water pollution, forests, wildlife and public nuisance. However, the implementation of these acts is poor partly because of governmental inaction and partly because of the inability of non-governmental organisations to fight prolonged cases especially when data and documents are rarely made available to them.

Though many of the polluting industries in India belong to the public sector and the Government, there is a reluctance among the Ministry of Environment at the Centre and State Environment Departments to legally prosecute another wing of the Government. Also, the legal process is very slow with industries often getting stay orders from courts.

Till the end of 1990, while the State Boards had filed 3971 cases in the courts of law, 2683 cases are still pending without disposal due to the fact that the criminal courts were clogged up with a large number of cases. While there is provision in the Criminal Procedure Code for the State Governments to establish special courts, only three States - Uttar Pradesh, Orissa and Bihar - have tried this system with one court each.

Till recently, non-governmental organisations and individuals had no locus standi under the various environmental laws. Recently this has been rectified. Though litigation by NGOs against polluting industries and enterprises equals, if not exceeds, the Government's efforts, many polluting industries still get away. There are just not enough NGOs with the ability and resources to take up prolonged legal battles.

There is also a problem of securing quick and adequate relief to the victims of industrial pollution and disasters. Though, recently, a Public Liability Act has been enacted, however it still remains difficult to fix liability on the offending industry.

The recently announced policy for abatement of pollution says:

Public interest litigation has successfully demonstrated that responsible non-governmental organisations and public spirited individuals can bring about significant pressure on polluting units for adopting abatement measures. This commitment and expertise will be encouraged and their practical work supported.

As the present system of jurisprudence does not provide for compensation to individuals for environmental damage, including effect on health and environmental damage caused by pollution, it is proposed to set up special legal institutions to redress this deficiency and also make adequate arrangements for interim relief.

C. POLICIES AND GUIDELINES

The Institutions: The institutions involved have already been described above.

The Process: The procedure for formulation of policies is similar to that for laws, except that policy statements are not passed by Parliament, but only placed in Parliament.

Guidelines, procedures and other government orders are rarely put up even to the Cabinet, and are formulated at the ministry or department level. Some, which concern more than one ministry or department are finalised in consultation with the concerned ministries or departments. Others, which are either relevant only to the ministry or department formulating them, or those required by law are finalised internally within the department with, at best, a reference to the Law Ministry or Department.

The Content: For the purpose of this paper, three types of policies and guidelines need to be assessed:

- Industrial Policy
- Policies relating to other sectors relevant to industry and environment, like the Water Policy and the Technology Policy.
- Environmental Policies
- Industrial Policy: The Government of India tabled a Statement of Industrial Policy in the Lok Sabha (Lower House of Parliament) on 24 July, 1991. This statement contains the following sections about the environment:

Government will continue to visualise new horizons. The major objectives of the new industrial policy package will be to build on the gains already made, correct the distortions or weaknesses that may have crept in, maintain a sustained growth in productivity and gainful employment and attain international competitiveness. The pursuit of these objectives will be tempered by the need to preserve the environment and ensure the efficient use of available resources.

Again, in para 23 the statement talks about abolishing industrial licensing except for specified industries because these are, among other things, having "problems related to safety and over-riding environmental issues."

Finally, while talking about industrial location, the statement says:

In respect of cities with population greater than 1 million, industries other than those of a non polluting nature such as electronics, computer software and printing will be located outside 25 kms. of the periphery, except in prior designated industrial areas.

A flexible location policy would be adopted in respect of such cities (with population greater than 1 million) which require industrial re-generation.

Zoning and Land Use Regulation and Environmental Legislation will continue to regulate industrial location.

The statement also has a section on technology without any reference to environmentally friendly technologies.

- Technology Policy: The Technology Policy Statement was announced by the Government in early 1983. This statement contains the following sections relevant to the environment:

Energy: Energy constitutes an expensive and sometimes scarce input. Therefore, the energy requirements both of a direct and indirect nature from each product and each production activity and the associated technology employed will be analysed. Measures will be devised to avoid wastage or non-optimal use of energy. Fiscal measures as necessary will be introduced to ensure these. Research and Development in the energy sector will aim at improving the efficiency of its production, distribution and utilisation, as well as improvement of efficiency in processes and equipment.

Efficiency and Productivity: Technologies already employed will be evaluated on a continuing basis to realise maximum benefits in terms of increased production and lower costs, specially in the public sector enterprises. Every effort should be made to utilise by-products and wherever possible to recycle waste materials, especially those from urban areas. Programmes to make use of the easily available and less costly materials will be supported.

Environment: Development should not upset the ecological balance for short as well as long-term considerations. Poorly planned efforts to achieve apparently rapid development, ignoring the long-term effect of many technologies on the environment, have resulted in serious ecological damage. It is, therefore, essential to analyse the environmental impact of the application of each technology. Due regard will be given to the preservation and enhancement of the environment in the choice of technologies. Measures to improve environmental hygiene will be evolved.

- National Water Policy: This policy has various sections dealing with the environment, notably:

In the planning, implementation and operation of projects, the preservation of the quality of environment and the ecological balance should be a primary consideration. The adverse impact, if any, on the environment should be minimised and should be off-set by adequate compensatory measures.

There should be an integrated and multi-disciplinary approach to the planning, formulation, clearance and implementation of projects, including catchment treatment and management, environmental and ecological aspects, the

rehabilitation of affected people and command area development.

Water quality : Both surface water and ground water should be regularly monitored for quality. A phased programme should be undertaken for improvements in water quality.

Conservation of Water : The efficiency of utilisation in all the diverse uses of water should be improved and an awareness of water as a scarce resource should be fostered. Conservation consciousness should be promoted through education, regulation, incentives and disincentives.

Conclusion : In view of the vital importance of water for human and animal life, for maintaining ecological balance and for economic and developmental activities of all kinds, and considering its increasing scarcity, the planning and management of this resource and its optimal, economical and equitable use has become a matter of the utmost urgency. The success of the national water policy will depend entirely on the development and maintenance of a national consensus and commitments to its underlying principles and objectives.

Unfortunately, the water allocation priorities listed in the policy do not acknowledge the need to allocate water for ecological needs. The order of priorities is :

Drinking water, irrigation, hydro-power, navigation, industrial and other uses

- Fiscal Policies : The recently announced pollution policy states:

While regulatory measures remain essential for the effectiveness of the policy, new approaches for considering market choices will be introduced. The aim is to give industries and consumers clear signals about the cost of using environmental and natural resources. The expectation is that market-oriented price mechanisms will influence behaviour to avoid excessive use of natural resources.

There are at present several fiscal incentives for installation of pollution control equipment and for shifting polluting industries from congested areas. The items for which excise and customs rebate are allowed will be reviewed. This will stimulate the advancement of abatement technologies and create increased demands for the products.

Economic instruments will be investigated to encourage the shift from curative to preventive measures, internalise the costs of pollution and conserve resources, particularly water. A direct economic signal is offered by an effluent charge based on the nature and volume of releases to the environment. The level will be based on the cost of treatment and the flow discharged, in order to provide an incentive to set-up treatment plants. The scope of the charges will also be extended to emissions and solid waste. Charges provide a continuing incentive towards optimal releases.

These instruments will also have a distributive effect as the revenues will be used for enforcement, collective

treatment facilities, research and promoting new investment.

The precise choice of economic instruments adopted will be determined by the ease with which releases can be measured, as well as prospective changes in technology and market structures. To deal with the range of pollution problems a mix of regulatory and economic measures will be adopted.

Some of the existing fiscal measures, especially financial incentives, are:

(i) Depreciation on air pollution and water pollution control equipment used in industries and other business is allowed at a special rate of 50% instead of the normal rate of 33.33%.

(ii) Section 35CCB allows a deduction to an assessee having income from business or profession in respect of expenditure incurred, subject to certain conditions, for conservation of natural resources. This section has been recently amended by the Finance Act, 1990, to include expenditure incurred on afforestation also. Section 80GGA allows deductions for similar payments made by assessees who are having income from sources other than business or professions.

(iii) Section 5G exempts capital gains arising on sale of land, building, plant and machinery etc. when an industrial undertaking is shifted from urban areas. This is intended to promote shifting of polluting industries from urban areas.

(iv) Concessional customs duty of 40% has been prescribed in respect of 35 specified pollution control instruments/equipments.

(v) Further 26 specified pollution control instruments/equipments enjoy concessional excise duty of 5%

(vi) Under the Water Cess Act, 1977, a rebate of 70% is provided for treating the effluent to the prescribed standards.

(vii) In order to encourage industries to implement pollution control measures in their units, a scheme of awards has been instituted from 1990-91. Under this scheme awards will be given to units for achievements in pollution control over and above the statutory requirements of pollution control, particularly for adopting pollution prevention technologies.

(viii) There is also a proposal to award "ecomarks" to those products and industries which are environmentally friendly. This would entitle the Industry to display this mark on its products thereby having an edge in the market. The proposal is expected to be operationalised soon.

- Environmental Policies: The main policy with relevance to industry is the "Policy Statement for Abatement of Pollution", tabled in Parliament in the beginning of 1992. Given below are important extracts from this statement:

PREAMBLE : The commitment of Government on abatement of pollution for preventing deterioration of the environment is stated here. The policy elements seek to shift emphasis from defining objectives for each problem area towards

actual implementation, but the focus is on the long term, because pollution particularly affects the poor. The complexities are considerable given the number of industries, organisations and government bodies involved. To achieve the objectives maximum use will be made of a mix of instruments in the form of legislation and regulation, fiscal incentives, voluntary agreements, educational programmes and information campaigns. The emphasis will be on increased use of regulations and an increase in the development and application of financial incentives.

The objective is to integrate environmental considerations into decision making at all levels. To achieve this, steps have to be taken to:

- prevent pollution at source;
- encourage, develop and apply the best available practicable technical solutions;
- ensure that the polluter pays for the pollution and control arrangements;
- focus protection on heavily polluted areas and river stretches; and
- involve the public in decision making.

The Policy Statement goes on to address the crucial issue of integrating environmental concerns into all sectors of development, especially industry:

INTEGRATION : Critical policy areas for control of pollution come under different departments and levels of Government. Sectoral Ministries, State Governments, local bodies and agencies responsible for planning and implementation of development project will be required to integrate environmental concerns more effectively in all policy areas. Local authorities play a key role in abatement of pollution and environmental concerns need to be built into the way they operate. Steps will have to be taken to strengthen governmental and institutional structures dealing with environmental management, especially within the ministries dealing with the sectors of energy, industry, water resources, transport and agriculture and who would develop specific programmes in regard to pollution prevention.

Policy making, legislation and law enforcement influence each other. The increase in the number of regulations increases difficulties in enforcement. Legislation regulating particular activities will be amended to incorporate and eliminate clashes with environmental criteria. Traditional instruments for monitoring of compliance and investigation of offences are becoming overburdened. An integrated overview and organisational structure for decentralised environment impact assessments and environmental law enforcement based on cooperation with local authorities will be sought.

It also has the following section on the environmental audit of industries:

ENVIRONMENTAL AUDIT : Industrial concerns and local bodies should feel that they have a responsibility for abatement of pollution. The procedure of an environmental statement will be introduced in local bodies, statutory authorities

and public limited companies to evaluate the effect of their policies, operations and activities on the environment, particularly compliance with standards and the generation and recycling of waste. An annual statement will help in identifying and focusing attention on areas of concern, practices that need to be changed and plans to deal with adverse effects. This will be extended to an environmental audit. The measures will provide better information to the public.

The Ministry has followed it up by recently issuing a notification making environmental audit of industry compulsory (copy at Annexure II).

- Apart from these there is a draft Policy Statement on Environment and Development which has not yet been finalised.
- There is also a National Forest Policy which, insofar as it seeks to regulate the "working" of forests and location of industrial units within forest areas, has relevance to the industry.
- Guidelines for Environmental Clearances: Till recently, all public sector projects above a certain investment limit (Rs. 20 crores), or requiring funding from the Central Government needed environmental clearance. Even private sector projects which either needed forest clearance (under the Forest (Conservation) Act discussed earlier under Laws), or involved foreign assistance required prior environmental clearance.

The Ministry of Environment and Forests (MOEF) was responsible for assessing these projects and accepting or rejecting them from the environmental angle. For this purpose the Ministry had drawn up environmental guidelines for different sectors (including industry and power).

The project proponents were required to have prepared an environmental impact statement in accordance with the guidelines and submit this to the MOEF along with the required certificates from concerned State authorities. The MOEF had constituted standing Appraisal committees of technical experts, professionals and representatives of concerned Ministries, which would appraise the project and recommend clearance, with or without conditions, or rejection.

The recent notification of January, 1992 (Annexure I), if it is finally gazetted, would have expanded the scope of this guidelines and made it applicable to both public and private sector and to a larger range of activities and investment levels. It would also delegated some of the authority to the State Governments.

Implementation : The implementation of policies needs to be assessed on the basis of:

- The action plans, programmes and schemes that operationalise the policy statement.
- The success of the policy statement in influencing and modifying thinking and action across sectors.

In these terms, the implementation of the environmental components of policies outside the environment sector seems lackluster. There is

little evidence of the concerned departments following up policy pronouncements on technology and water by action plans and schemes aimed at minimising the environmental impact of industry.

The industrial policy stresses on optimal location for industry. As a follow-up of this, the Industries Ministry had, even prior to the latest policy statement, created industrial zones prohibiting all or certain categories of industry in certain districts (details at Annexure III).

Though the liberalisation of industrial controls has resulted in the relaxation of the licensing policy, environmentally hazardous industries remain within the purview of licensing.

Apart from this, the various other issues involved in making the industrial sector environmentally sustainable are neither addressed in the policy, nor acted upon.

Despite the Technology Policy, funding of projects to develop environmentally friendly intermediate technologies is non-existent; there is little appraisal, especially after liberalisation of the technology import policy, of the environmental friendliness of technologies sought to be imported.

Though the Water Policy states the conservation of water as an objective, no specific action has followed from this. Water inefficient industries continue to operate and be set up. The water conservation aspect is very rarely looked at when technology is being selected or industrial project proposals appraised. The thrust is on site selection where it is not water efficiency but water availability that is assessed. In any case, the priorities for water allocation listed in section 8 of the policy statement (quoted above) do not acknowledge ecological requirements as a priority. But even the acknowledged priorities are not always followed and often the water needs of the industrial sector, though listed as the last priority, are given precedence over all others.

In sharp contrast, the Pollution Policy is strong and comprehensive and is supported by various laws (already described) and schemes. The main burden of preventing and controlling industrial pollution is with the Central and State Pollution Control Boards. They operate the various acts, aimed at preventing water and air pollution, in the manner already described.

The task of assessing industries and other development projects for their environmental impact, prior to giving them environmental clearance, was primarily that of the Ministry of Environment and Forests (MOEF), Government of India. The recent notification (Annexure I) has delegated some of this work to State Governments, while enlarging the scope of the procedure to cover a larger range of activities and projects.

Apart from these regulatory functions, the Government and the MOEF have various schemes, described above, aimed at offering incentives and recognition to industry for environmental protection.

The Ministry also has various schemes aimed at minimising the impact of industry on the environment. An important scheme is the Ganga Action Plan (and the forthcoming River Action Plan) which aims at cleaning the River Ganga, its tributaries and other critically polluted rivers of India. The strategy followed involves the diversion of sewers, development of the river front, enforcement of standards on industry discharging effluents into rivers, and setting up of a pollution monitoring system.

Another important scheme assists in the setting up and running of Common Effluent Treatment Plants for clusters of small industry.

The MOEF has also taken an initiative to make available, from financial institutions, soft loans to industry for the purpose of setting up pollution control equipment.

However, the impact of environmental policies on other policies and practices has been minimal. Despite explicit statements about the need for integrating environmental concerns into other sectors, or of integrating environmental concerns into the planning process, there is almost no action towards these ends.

D. PEOPLES PARTICIPATION

There is, in India, a large and growing network of non-government institutions and organisations working in the area of environment. These are involved in environmental research, training, awareness and advocacy. However, the tasks at hand far outstrip the ability of these institutions and organisations. Also, not being supported by the government, finances are a major constraint.

The monitoring of industries in terms of their pollution impact requires, in the present system, the involvement of non-governmental organisations. However, though some cases are taken up, by and large the lack of expertise, funds and access to data and documents has deterred this.

The recently announced Policy Statement for Abatement of Pollution says:

PUBLIC PARTNERSHIP : The public must be made aware in order to be able to make informed choices. A high governmental priority will be to educate citizens about environmental risks, the economic and health dangers of resource degradation and the real cost of natural resources. Information about the environment will be published periodically. Affected citizens and non-governmental organisations play a role in environmental monitoring and therefore allowing them to supplement the regulatory system and recognising their expertise where such exists and their commitments and vigilance, will also be cost effective. Access to information to enable public monitoring of environmental concerns, will be provided for.

Despite this, the involvement and support of NGOs has been inadequate. The main constraint is the atmosphere of secrecy that most Governments operate within. Information, data and documents are not made available to the public or NGOs, who are left to fend for themselves and have to spend vast amounts of time, money and effort discovering things that are already easily available in government records.

The process of governance is highly centralised with almost no mechanism for consulting local communities about projects and activities that would affect their lives. Talk about decentralisation, in the government, usually means decentralising from one level of government to another, never decentralising from the government to the people. As a result, there is a lack of public participation, and sometimes even acceptance, of the programmes and policies of the government.

There are also no easy sources of funding for NGOs. The two main sources available are either the Government or foreign agencies. It becomes difficult to get money from the government in order to very often fight cases against the government, or criticize governmental action and inaction. Taking foreign funds opens up NGOs to the charge of being foreign agents and therefore anti-national.

Finally, the expertise required is often not available, both in technical and legal areas, among NGOs. There are also no training facilities where NGOs could send their members for learning what they need to know in order to perform their role effectively.

E. INSTITUTIONS AND PROFESSIONALS

Considering the huge number of projects, especially industrial projects, that are coming up in India there appears to be an acute shortage of competent institutions and individuals who can prepare the required environmental impact statements. Many aspects of impact assessment, especially the carrying capacity of different regions, needs to be studied. However, there appears to be inadequate research ability and funding to carry this out.

Another major problem is the paucity of independent experts and institutions. Presently, the project proponents engage consultants and consulting institutions to prepare the environmental impact statements for various projects. As these consultants and institutions are being paid for by the project proponents who also have a free hand in selecting them, it becomes difficult to get an independent report especially if such a report goes against the project or the interests of the project proponents. This has led, in the past, (for example, case study 1) to serious delays while data is rechecked or, what is worse, to the wrong clearance of projects which are not ecologically viable (for example, case study 2).

There has also been no effort at strengthening institutions to perform the task of preparing environmental impact statements. Consequently, it becomes difficult to find competent institutions and individuals to do a professional job and the work is often given to unsuitable persons due to their quoting the lowest rates.

CONCLUSIONS

In conclusion it can be said that:

- Though the institutions for integrated planning are in position, there is little evidence of the plans being actually integrated, especially in terms of environmental protection and sustainability.
- Apart from environmental policies, other sectoral policies pay inadequate attention to the environment, and rarely follow-up a policy with action or even action plans.
- Consequently, environmental concerns continue to be viewed as constraints to growth, very much like financial procedures, but with much less acceptability.
- There are strong and comprehensive laws protecting the environment, but their implementation is unsatisfactory.
- There is little concern for the environment among industrialists resulting in the need for constant regulation and monitoring.
- Basic data required to adequately assess the impact of industrial policies and specific industries are often not available.
- There is a shortage of institutions and personnel who can carry out adequate environmental impact studies or advise industry on how to manage the environment better.
- Technological solutions to environmental problems, especially for older industries, are often not there or not accessible.
- There is a hesitancy in incurring financial costs or delays for the sake of protecting the environment.
- The involvement of local communities and non-governmental organisations in planning, implementing and monitoring an environmentally sustainable industrial model is poor.
- There is little co-ordination between different sectors and agencies involved in industrial development, in order to ensure the integration of environmental concerns and safeguards.
- The concern for the environment seems greater in the Central Government, especially the Ministry of Environment and Forests, than in the State Governments. The weakest link in the system remains planning.

RECOMMENDATIONS

There are many decisions that have to be taken and tasks to be carried out in order to ensure that industrial activities and development in India is sustainable. Many of these decisions and actions concern solely the national government and are, therefore, out of the purview of UN and other international agencies. These recommendations, therefore, focus on only those issues where UN and other international agencies could make a contribution in collaboration with the national government.

1. One major constraint to the formulation of a sustainable model of industrial development for India is the lack of understanding of what such a model is or what it implies. The term "sustainable" does not easily translate into plans, strategies and allocations. Also, it is not clear what the implications of a sustainable model of industrialisation are, especially in terms of the pace of economic growth and the investments required.

It is not at all certain that if such a model (or models) and their implications were clear the government would necessarily adopt it. However, the formulation of such a model is a necessary first step.

It is recommended that UNIDO, along with other concerned agencies, assist the National Government (Planning Commission, Department of Industrial Development, Department of Environment), in consultation with State Governments, professional institutions, local communities and NGOs, to formulate a model plan for sustainable industrial development in India.

2. Efforts at better planning for the environment in terms of industrial location and impact have been constrained by absence of reliable and up-to-date information on various environmental parameters and on the carrying capacity of regions and specific locations. This has also resulted in delays while data are being collected to complete environmental impact assessments.

It is recommended that international agencies should assist national governments and institutions, through funding and technical collaboration, to develop an adequate data-base and set up an institutional mechanism to improve and update the data-base, over time.

3. The availability of efficient and environmentally friendly technology is critical to the sustainability of industrial development. This not only includes clean production and processing technology but also pollution abatement technology. In India, one of the major problems is that much of the old industry is polluting and yet, for economic reasons, cannot be immediately replaced. What is, therefore, required is intermediate technology, indigenously developed, which would lessen the environmental impact of such industrial units till they could be replaced.

It is recommended that international agencies help promote awareness about clean and pollution abatement technologies among the Indian Government, entrepreneurs and technical professionals. They should also assist in ensuring access to such technologies, and in developing indigenously the required environmentally friendly intermediate and final technologies.

4. A major deterrent to better environmental management of industry is the apprehension that this would lead to delays and higher costs. Yet, for many types of industries, better environmental management might actually lead to savings. However, this requires planning and technological and managerial expertise, for example by making available the waste of one industry to another which can use it as a raw material. Given the fact that there is little experience of this in India, an exchange of international experience would benefit Indian managers and entrepreneurs.

It is recommended that international agencies assist the national government in identifying industrial wastes (and waste products) which can be recycled and assist in developing a nation wide recycling programme with financial and technological inputs.

5. Though there is a growing body of "environmental experts", there are few training programmes available for them in India. Also, equally important, environmental skills are not being imparted to engineers, technicians, administrators, business executives and other professionals during their basic training.

It is recommended that international agencies assist the national government in identifying training and education needs both for environmental experts and for other professionals. They should assist the government in setting up the required training programmes and in introducing modules on environment in existing training and education programmes. They should also assist existing institutions to strengthen their abilities.

6. It is difficult to plan for sustainable development without having a good idea of the availability of natural resources and the health of the environment. The idea of introducing natural resources accounting in India is already being considered. Following from such accounting, it is essential to build up a natural resources budget which indicates, yearly and five yearly, the availability of natural resources. The "revenue" would be the additional environmental capacity achieved through cleaning up the air or water, through water and energy conservation and through afforestation etc. The "surplus" would be what is available for allocation after environmental and other committed needs are met.

It is recommended that international agencies assist the national government in developing a workable system for natural resources accounting and budgeting.

7. It is difficult in a democracy to implement environmental safeguards, especially when they involve some short-term economic sacrifices, if the general public is not supportive of such measures. However, the support of the public is a result of the levels of awareness and understanding they have about environmental issues.

It is recommended that international agencies assist the government in developing and implementing a sustained awareness campaign, aimed at various social, economic and educational levels of the public and using appropriate forms of communication.

8. Perhaps the most crucial precondition to developing an environmentally sustainable industrial model within a country is the support of the international financial and trade system. Where countries are supported with access to international markets on fair terms, and where international aid is channellised to those sectors and projects which are elements of a sustainable model of development, it is much easier for a country to meet its economic obligations and protect the environment.

It is recommended that international institutions assess their own policies and actions to see whether they are conducive to promoting sustainable development.

CASE STUDIES

CASE STUDY 1. Proposed Dholpur TPS

Note: This project was finally rejected at the proposed site despite huge pressure for its clearance and inaccurate and misleading information by the project proponents.

1. History of the Project

The Project was first referred to the MOEF for clearance in the mid eighties, and the site was rejected by MOEF in April, 1987. Though the RSEB again referred the matter back to MOEF in April, 1987, the MOEF reiterated its stand in September 1987, rejecting the proposed site.

The issue was again reopened in June, 1990, with a visit of a high level team to the proposed sites. Subsequent to this, the RSEB was requested for an EIA report before taking up the assessment of the site and project. The EIA report was submitted on 29.4.91, and the process of assessment started.

Subsequently, clarifications, details and NOC, were requested from the RSEB, and the last of these was received in December, 1991.

In actual fact, the project has been under assessment only since May, 1991, when the EIA report was received, and not for the last six and a half years, as often claimed by the project authorities. The site had earlier been finally rejected by MOEF, and the re-consideration process initiated by RSEB on its own initiative.

2. Environmental Parameters

2.1 Apart from impact on the general environment, some of the special problems related to this project are;

- (a) The Taj Mahal, which is located approximately 55 kilometres from the proposed project site in a NNE direction.
- (b) The National Chambal Sanctuary which includes the Chambal River and all land within 1 km. of the centre of the river, and is adjacent to the proposed site, to the south.
- (c) The Van Vihar sanctuary, which is between 5 and 10 kms. of the proposed site to the South West and West.
- (d) The Dholpur town, with a population of about 70 to 80 thousand people which is adjacent to the proposed site, NNE of it.

2.2 The main impact of the TPS, on the environment, is anticipated from:

- a) Gaseous emissions of SO₂, NOX and SPM.
- b) Waste water discharge
- c) Warm water discharge
- d) Dumping of fly-ash.
- e) Coal-dust emission.
- f) Increase in industrial activities in the vicinity, with their own contribution to the pollution levels.

- g) Disturbance and pollution caused due to increased rail and road traffic, and the construction of railway lines, yards and other infrastructure.
- h) Disturbance due to transmission lines.
- i) Disturbance and pollution due to increase and intensification of human settlements in the area.

2.3 The committee, on the basis of the information provided by the project authorities, the site visit and discussions with the project authorities, and the State Government, noted the following:

- a) That, given the already high back ground levels of SPM, the setting up of the TPS would increase the level of the SPM to above those prescribed even for sensitive areas.
- b) That for both SO₂ and NOX, ground concentration levels would cross, for short terms, even those prescribed even for sensitive areas.
- c) That it was possible to control the discharge of warm water from the TPS and ensure that water discharge temperature did not exceed the prescribed standards.
- d) That any dumping of fly-ash would contaminate the water system and the soil.
- e) That some amount of coal dust is likely to go into the atmosphere, and would pose a hazard to adjacent areas.
- f) That the State Government has already notified an area close to Dholpur as an industrial area, and that this could contribute to various forms of pollution in the area.
- g) That there would be added disturbance and pollution due to increased rail and road transport and the related infrastructure; due to transmission lines; and due to increase and intensification of human settlements in the area.
- h) That despite the fact that the Project Authorities had repeatedly stated, in writing, that no alternative site is available, the committee was subsequently shown an alternative site further away from the National Chambal Sanctuary, strengthening the impression that, if efforts are made, other alternative sites might be identified which are ecologically viable.

2.4 In assessing the environmental viability of the project, the committee has to first determine whether the TPS poses a threat to the Taj Mahal. In a letter dated 5.7.1990, the Archaeological Survey of India has expressed misgivings about the project. The matter has again been referred to the Archaeological Survey of India by the Ministry of Environment and Forests. It would not, therefore, be proper to make a judgement on this matter before their report is received and considered.

2.5 Considering the guidelines of the Ministry of Environment and Forests stipulating that Thermal Power stations should not be located within 25 kms. of a national park or sanctuary, the committee also has to assess whether any of the Dholpur sites, all of which are well within this distance to two sanctuaries, deserves to be considered. If it is to be treated as an exception, it first has to be established that the concerned sanctuaries do not have any biological value, and are only sanctuaries in name.

If this is established, then it has to be further established that no other possible site, which is environmentally more acceptable, is available and nor are there acceptable options to the project.

Based on these considerations, the committee has to decide whether it would like to recommend a violation of the MOEF guidelines regarding siting of TPS, and with what reasoning and safeguards.

3. Critical Issues

Though with the stipulation and implementation of various environmental safeguards, and the location of the TPS down wind of Dholpur town, the environmental impact on the town and on the general environment can be kept within acceptable limits, the critical issues are:

- a) The impact on Taj Mahal.
- b) The justification, if any, to recommend an exception to the MOEF guidelines for siting TPS.

4. Impact on the Taj Mahal

The impact on the Taj, as already mentioned, can only be determined after the report of the Archaeological Survey of India is received.

5. Justification for Violating Guidelines

It is now possible to consider whether any of the sites around Dholpur are fit for recommending as exceptions to the TPS siting guidelines.

As already mentioned, the first issue to determine is whether the sanctuaries near Dholpur have any biological value.

5.1 National Chambal Sanctuary

The State Government and the project authorities repeatedly asserted, both verbally and in writing, that there were no Crocodiles, nor nesting sites, near Dholpur in the National Chambal Sanctuary.

However, a field visit by the committee conclusively proved otherwise. In a brief span of two and a half hours, the committee saw, close to Dholpur in the National Chambal Sanctuary, upward of a dozen gharials, four turtles, three dolphins, and a large number of water and terrestrial birds, shoals of fish, and turtle breeding grounds.

They also saw vast expanses of basking grounds for crocodilians and turtles, and spotted most of these animals while they were basking.

These observations are supported by vast scientific literature on the subject, especially as listed below:

- a) Census of the sanctuary shows large populations of many schedule I species.
- b) Interestingly, the density of gharials in the sanctuary, according to scientific studies, varies from 0.29 to 1.89 per

km. Considering the committee saw upward of a dozen gharials in a stretch of less than 4 kms, and that too from a noisy boat, with a large group, in about two hours, means that the area around Dholpur has a much higher density of gharials than most other parts of the sanctuary.

- c) Scientific data on the existence of breeding sites also show a much greater density near and downstream of Dholpur than in any other part of the sanctuary.
- d) For the national programme on re-introduction of the gharial (which is just limping back from the verge of extinction), the National Chambal Sanctuary is obviously the most important location, as is evident from the fact that of the 1520 gharials released all over the country upto 1986, 1035 were released in the National Chambal Sanctuary. Further, most of the release sites for gharials are near and downstream of Dholpur, showing that this area is the most suitable in the whole sanctuary as a gharial habitat.
- e) Even for dolphins, the area around and down stream of Dholpur has been identified as the major habitat. Infact, their occurrence, in the National Chambal Sanctuary, is restricted to this area.
- f) The Sanctuary is also a major wintering habitat for water fowl and during the winters of 1987-89, between 70 to 75 species of wetland birds were identified in it. The Siberian crane has also been reported from near Dholpur.
- g) The river is also rich in other fauna, especially fishes, of which at least 67 species are known to occur.

5.2 Van Vihar Sanctuary

This sanctuary was set up in 1955, and covers an area of 5993 hectares. The forests in the sanctuary are tropical dry deciduous.

During a census conducted in 1983-84 by the sanctuary staff, at least 14 species of mammals, including Panthers, Sloth bear, Spotted deer, Sambhar, Chinkara, Indian Fox, and Civet were recorded.

A more recent census (1991) again records 14 species. However, this time no Panther was spotted (Annexure X). Atleast 29 species of birds were also recorded (1984-85), along with species of reptiles.

Though much of the forest shows different levels of degradation, the wildlife census establishes that it is still a viable habitat for wild animals, especially because of the availability of water.

Given the fact that Rajasthan has very scanty forest cover (3.8%), which is much less than the national average (19.47%), and far below the stipulated minimum of 33%, all forest area in the State should be considered as having high value.

Also, given the semi-arid and ravinous terrain of the region, the forests are crucial for stabilising the ecology, checking the spread of ravines, controlling water run-offs, and protecting the river systems.

CASE STUDY 2 : ENVIRONMENTAL APPRAISAL OF THE PROPOSED
KAYAMKULAM THERMAL POWER STATION

Note: This project was given environmental clearance and allowed to dump flyash and dredge the kayal(backwater) despite the strong report by the consultant.

1. The proposed site of the Kayamkulam thermal power station (TPS) had been unanimously recommended for rejection by the Thermal Appraisal Committee of the Ministry of Environment & Forests (MOEF) in its meeting on 26.9.91. This recommendation was subsequent to a field visit undertaken by the chairman, and one member of the committee who also happens to be an Adviser in MOEF.
2. The matter was reconsidered, at the request of the National Thermal Power Corporation (NTPC), in subsequent meetings held on 26.10.91 and 27.12.91, and in both these meeting the proposed site was again unanimously recommended for rejection.
3. The committee also suggested an alternate site in the immediate proximity, which was already earmarked for ash dumping, and requested the NTPC and the state government to investigate this and other alternate sites.
4. The project was again brought back for consideration to the committee in its meeting of 3 March, 1992, when the NTPC again requested for clearance at the originally proposed site. The project was once again discussed in detail and once again unanimously recommended for rejection. The main reasons for rejecting the project, as proposed, were:

4.1 The proposed site is enclosed on all four sides by the kayal (back water) and, as such, there is the apprehension that, despite best efforts, non-point pollution from the TPS, especially during the construction phases, would destroy the fauna, flora and ecological balance of the kayal. The NTPC's own EIA report states that the soil in the area is highly permeable, the water table high and that "the shallow depth, and cutting off from sea for a considerable period of time make the kayal systems fragile and vulnerable to even minimum human inference" (P 4.11-2).

4.2 The project involved dredging of the kayal to a distance of 12 kms. and a depth of 7 metres, for extracting land-fill material. The Committee was of the view that such dredging would totally destroy the ecological balance of the kayal and the very rich diversity of aquatic and marine species found and breeding in the kayal. Unfortunately, this very important threat to the ecological balance of the kayal had found no mention in the EIA report of the NTPC.

However, in connection with the issue of drawing cooling water from the kayal, NTPC's EIA report rejected this as a viable possibility for the full project as this would change the water mix (fresh, brackish, saline) in the kayal and involve dredging. The report states:

"Considering the drawal of huge volume of once-through cooling water for stage. II + III if it is drawn from kayal, the loss in kayal water would be compensated by sea water through the lake mouth which definitely would increase the kayal water salinity to a large extent converting it almost to sea water particularly in dry season when there is no fresh water flow. It would disturb the salinity zonation, which at

present comprises fresh water, brackish water and marine water zones. As a result, the species distribution and diversity are likely to be affected. Moreover, the opening of lake mouth and dredging of kayal would bring morphological changes and impacts on the benthic community to an appreciable extent: It may be concluded that the cooling water for once-through cooling system should not be taken from kayal" (P 5.11-3, emphasis added).

Again, the report states:

" the abstraction of cooling water from kayal would mean replenishment by sea water during dry season altering the quality of back water. Being more saline than kayal water, incursion of sea water would increase the salinity in kayal water which in turn would change the other quality parameters like DO, chloride, Sodium, Potassium, Calcium, Magnesium, Hardness, Alkalinity, etc. This is likely to cause impacts on aquatic ecosystem " (P 5.8-1).

In fact, the dredging of the kayal for extracting fill-material, as proposed, would also destroy the water-mix. This water mix is one of the main reasons why the kayal is such a valuable ecological area as only because of this mix can the breeding of many species of prawns, shrimps, and other fauna and flora take place.

The NTPC's plea that the effect of dredging would only be temporary was not found acceptable by the committee. The committee pointed out that there was no evidence to suggest that the bed of the kayal would fill up due to the silt from the river. Considering the kayal is only a metre deep in the dry season, if there was enough silt flowing in to fill up 7 metres of additional depth that the kayal would be dredged to, the original depth of 1 metre would have been filled up a long time back. Besides, with the increased salt water flow consequent to the dredging, the ground current patterns could change and there might be a much greater level of silt out-flow into the sea.

There was also no reason to believe that once the breeding grounds of prawns, shrimps and zooplanktons were disrupted or destroyed, they would get naturally re-established over time. Infact, the bottom silt in the kayal is itself a very important source of nutrients. According to the NTPC's own report:

"In the inshore waters of Alleppy region, extending upto Calicut, there is a vertical acceleration resulting in the lifting up of silt-laden bottom waters. This silt is kept in a state of suspension extending over wide region popularly known as mud banks. The area is store house of nutrients like phosphates promoting rich plankton production. The abundance of plankton attracts crustacean groups and shoals of pelagic fishes, such as prawns, sardines, mackerels, soles, etc." (P 4.11-10).

Even if it is true that the kayal would eventually recoup, that hardly seems a ground to clear the proposal for dredging for, by the same principle, the MOEF should allow all the forests in the country to be cut for, eventually, they would recoup themselves.

5. When the project was discussed by the committee on 3.3.1992, it was confirmed by representatives of NTPC, ICAR and the state government that there were no further studies disputing the evidence given in

the NTPC's EIA report which clearly established the great impact such activities would have on the kayal.

6. The representative of the Government of Kerala also stated, in response to a question, that the State Government had not done a complete search of possible sites in the state. This is especially important considering that an alternate site for the power-station is available very close to the proposed site. This site is, according to the NTPC's own report, larger than the originally proposed site and locating the power plant there would not have major negative environmental impacts on the kayal.
7. The question of allowing the dumping of fly-ash was also considered by the committee. The committee specifically recommended that fly-ash dumping should not be allowed because of the existing guidelines on the matter, communicated by the Secretary (Power), GOI vide his letter No. 5/34/85-US(CT), dated 11.7.90 wherein he had said:

"All organisations implementing coal based Thermal Projects are hereby directed to note that in future while submitting proposals for setting up coal based thermal power plants at all stages including approval of Revised Cost Estimates of ongoing projects should include specific proposals for full utilisation of Fly-Ash generated by the thermal plant".

It seems that this letter was based on a decision of the Union Cabinet, though this could not be confirmed. The full utilisation of fly-ash was supported by the Secretary, MOEF, in general and specifically for Kayamkulam TPS, vide his D.O. No. 1(2)/89-PL/HSMD/part file, dated 24.12.1990 to Secretary (Power), GOI, wherein he had said:

"In a meeting of the National Waste Management Council held recently, it was noted that despite your specific 'Secret' circular No. 5/34/85-US(CT), dated the 11th July, 1990, directing all organisations implementing coal based Thermal projects to include specific proposals for full utilization of fly ash, while submitting proposals for approval, the project authorities continue to submit their projects for environmental clearance or for approval of the Revised Cost Estimates (RCE) without any specific plan for fly ash utilization. Indeed, even the 'Notes' to the Public Investment Board submitted by the Department of Power do not include a specific plan for full utilisation of fly-ash. (Notes on Kayamkulam and Mangalore Super Thermal Power Projects are examples).

It was, therefore, decided in the meeting that all the thermal power projects submitted to the Ministry of Environment and Forests for clearance without a component for fly-ash utilisation, would have to be reformulated before their consideration in this Ministry. (A list of such projects is enclosed for ready reference).

It would be appreciated if you could kindly direct the concerned authorities to ensure compliance with your orders and submit the proposals to this Ministry complete in all respects. This would considerably cut down delays in examination and consideration of the projects.

Consequently, all projects are being asked to conform to this and any deviation would be unfair.

Also, dumping of fly-ash near kayamkulam was not found acceptable because the water tables in the Kayamkulam area are so high and the soil so permeable, that the risk of ground water contamination from fly-ash dumps is very high. This is confirmed by the NTPC's EIA report, which states that the soil in the ash pond area is "Highly permeable" (P 4.2-3). It goes on to say that:

"It can also be seen that the fluctuation in water table due to recharge from rainfall, even after only 2-3 weeks of down pour, varies in the range of 0.60 to 1.60 m below ground level. This indicates the high infiltration rate as well as high permeability of the soil present in and around the project area" (P 4.6-5).

The water table, according to the NTPC report, is between 0.43 m to 2.94 m below ground level (P 4.6-5).

The threat to the groundwater of the region is even more acute because

"There seems to be an active exchange of water between the upper aquifer with open estuary channels and drainage system" (NTPC, P 4.6-4).

Regarding impact of fly-ash on the ground water, the NTPC report has the following to say:

"The ashpond area is a low-lying area and remains water logged throughout the year except in dry season (Feb-May). Most of the year shallow groundwater table is very high, and almost close to the ground surface (less than 1.0 m below ground level) during or after rains indicating impeded drainage conditions. The free water surface in the ash pond seems to coincide with the water table of the adjoining area contributing to an active flow of water between ash pond and the adjoining area. In addition, the soil in and around the ash pond area is sandy loam and acidic (pH 4.4 to 5.6) in nature, and, therefore, contributes to a condition of an active exchange between the constituents of the ash through ashpond leachate, the soil and the ground water. Though the ash pond leachate is normally alkaline, owing to the acidic nature of the soil, the complex interaction between soil and ashpond leachate may not allow the cations particularly heavy metals to settle much and they would tend to remain in solution. The CEC is moderate and SAR value is high for the soil representing that most of the active clay sites in acidic pH are occupied by Na⁺ and H⁺ ions limiting the soil to a very small number of absorption sites. Moreover, the ashpond leachate may contain a lot of Na⁺, K⁺, Ca⁺⁺ and Mg⁺⁺ ions which would predominantly compete with the heavy metal cations to replace the Na⁺ and H⁺ ions. Therefore, most of the heavy metals in solution would pass through the soil and ultimately join with the shallow ground water storage rendering it unusable particularly in the downgradient areas" [P 5.8-2, emphasis added].

The impact of such contamination is particularly worrying for, according to NTPC (table 4.5.11) nearly 60% of the households in the region get their drinking water from ground water sources. In addition, as already mentioned, the kayal is also very "fragile" and "vulnerable".

Infact, during the committee's site visit, the issue of full utilisation of fly-ash was discussed with the Minister of Power, Kerala, and he had given the undertaking that the State Government would do all that is necessary to ensure full utilisation of fly-ash. However, the NTPC did not pursue this further with the State Government and the committee took note of this at a subsequent meeting. The committee had also requested the NTPC to carry out a study to determine the techno-economic feasibility of fly-ash utilisation for the project so that the constraints, if any, to the full utilisation of fly-ash could be identified and tackled.

8. The value of this kayal, both ecologically and as a breeding ground for fisheries for the whole region, has already been established by the NTPC's own EIA report. According to this report the kayal supports 108 fish and prawn varieties, over 70 species of zooplanktons and surface planktons, 67 types of benthos and 40 types of fish and prawn larve (tables 4.11.2 to 4.11.7). There are also numerous scientific papers in reputed journals, which the committee took note of, which not only establish beyond doubt the value and vulnerability of this kayal but also the fact that much of the backwaters of Kerala have already been degraded or are severely threatened. This large amount of independent scientific evidence reiterated the Committee's judgment that protecting this kayal was very crucial and that the STPS, as proposed, was not conducive to this.

ANNEXURE I

Extract

MINISTRY OF ENVIRONMENT AND FORESTS

NOTIFICATION

New Delhi, 29th-January, 1992

[Under Section 3(1) and Section 3(2) (v) of Environment (Protection) Act, 1986 and Rule 5(3) (a) of environment (Protection) Rules, 1986 on Environment Clearance].

Whereas considerable adverse environment impact has been caused due to degradation of the environment with excessive soil erosion and water and air pollution on account of certain development activities, thereby engendering not only the destruction of natural resources like forests, mangroves, wetlands, rivers, lakes, genepool reserves and vegetation cover which is fast dwindling in large parts of the country, but also affecting the health and very survival of living beings-both animal and human;

And whereas it is necessary to protect and improve the quality of environment by controlling pollution of air, water and soil along with biotic pressure on natural resources, which is so intense that our natural biological and genetic wealth is threatened with severe damage;

And whereas certain development projects should be carried on within the carrying capacity of the eco-system through judicious location beyond defined distances from eco-systems which will otherwise come under stress, so as to ensure that developmental activity takes place in harmony with the environment and improvement thereof;

And whereas the aforesaid goals can be achieved only by careful assessment of a project proposed to be located in any area, on the basis of an environmental Impact Assessment of each project and the necessary Environment Management Plan for the prevention, elimination or mitigation of the adverse impacts, right from the inception stage of the project;

Now, therefore, in exercise of the powers conferred by sub-section (1) and clause (v) of sub-section (2) of section 3 of the Environment (Protection) Act 1986 (29 of 1986), the Central Government hereby directs that on and from the date of the final publication of this notification under clause (d) of Sub-rule (3) of rule 5 of the Environment (Protection) Rules, 1986, the expansion or modernisation of any existing industry or new projects listed in Schedule II shall not be undertaken in any part of India, unless it has been accorded environmental clearance by the Central Government or, as the case may be, the State Government concerned in accordance with the procedure hereinafter specified in this notification.

2. Notwithstanding anything contained in Schedule-II, any project proposed to be located within 10 kilometres of the boundary of reserved forests, or a designated ecologically sensitive area, or within 25 kilometers of the boundary of national park or sanctuary will require environmental clearance from the Central Government.

3. Notwithstanding anything contained in Schedules I and II the Central Government in the Ministry of Environment and Forests may review the environmental clearance given to any project by any State Government if:

- (a) written representation is received by that Ministry against such clearance from the affected parties or
- (b) it is prima facie evident that environmental imperatives and norms specified by that Ministry have been ignored by the State Government concerned while giving such clearance.

4. Procedure for seeking environment clearance of projects - (1) Any person who desires to undertake any project in any part of India or the expansion listed in Schedules I and II shall submit an application to the Secretary, Ministry of Environment and Forests, New Delhi, where environmental clearance is required from the Central Government, or to Environment Secretary of the State Government concerned, where the environmental clearance is required from the State Government. The application shall be made in the proforma appended to this notification and shall be accompanied by a detailed project report which shall inter alia, include an Environmental Impact Assessment Report and an Environment Management Plan prepared in accordance with the guidelines issued by the Central Government in the Ministry of Environment and Forests.

(II) In case of the following site-specified projects:

- (a) mining;
- (b) pit-head thermal power stations;
- (c) hydro-electric power projects; and
- (d) Multi-purpose river valley projects,

a preliminary site clearance will be required from the Central Government in the Ministry of Environment and Forests before initiating any investigations involving cutting of trees, drilling, digging or construction of any sort temporary or permanent.

The said site clearance will be granted for the sanctioned capacity and will be valid for a period of 5 years for commencing the construction.

(III) (a) The detailed project report submitted with the application shall be evaluated and assessed by the Impact Assessment Agency of the Central Government or, as the case may be, of the State Government in consultation with a committee of Experts, having a composition as specified in Schedule III to this notification.

The said Committee of Experts will have full right of entry and inspection of the site or, as the case may be, factory premises at any time prior to, during, or after the commencement of the operations relating to the project.

(c) The Impact Assessment Agency will prepare a set of recommendations based on technical assessment of documents and data furnished by the project authorities supplemented by data collected during visits to the site or factory, interaction with affected population and environmental groups. The recommendations and the conditions subject to which environmental clearance is given may be made available to concerned parties. The assessment shall be completed within a period of 3 months on receipt of the requisite documents and data from the project authorities.

(IV) In order to enable the Impact Assessment Agency concerned to monitor the effective implementation of the recommendations and conditions subject to which the environmental clearance has been given, the project authorities concerned shall submit a halfyearly report to the concerned agency.

5. Any person interested in filing any objection against the proposed directions contained in this notification, may do so in writing to the Secretary, Ministry of Environment and Forests, Paryavaran Bhavan, CGO Complex, Lodi Road, New Delhi within 60 days from the date of publication of this notification in the Official Gazette.

[No. Z-12013/4/89-IA-I]
R. RAJAMANI, Secy. (E&F)

LIST OF PROJECTS REQUIRING ENVIRONMENTAL CLEARANCE
FROM THE CENTRAL GOVERNMENT

1. Atomic Power
2. Thermal Power
3. Multi-purpose River Valley Projects
4. Ports, Harbours and Airports
5. Railway lines (involving acquisition of non-railway land)
6. Refineries
7. Fertilizers
8. Pesticides and Insecticides
9. Petrochemicals
10. Explosives and Accessories
11. Drugs and Pharmaceuticals (except formulations)
12. Production of Plastics
13. Rubber-Synthetic
14. Asbestos and asbestos products
15. Sodium or Potassium Cyanide
16. Primary metallurgical industries (Zinc, Lead, Copper Aluminium and Steel)
17. Integrated Steel Plants
18. Tyre/tubes of trucks, jeeps, cars and other heavy vehicles.
19. Alkalis (Na OH)
20. Integrated Paint Complex.
21. Man-made fibres (Synthetics & semi-Synthetics, Rayon. Nylon and Polyester)
22. Storage batteries with lead processing
23. Incineration plants for hazardous waste and chlorinated hydrocarbons.
24. All projects with threshold criteria above those specified in Schedule-II

SCHEDULE-II

LIST OF PROJECTS REQUIRING ENVIRONMENTAL CLEARANCE FROM THE STATE GOVERNMENT

Nature of Project	Threshold Criteria (if any)
1. Ceramics	
2. Coal Washery	
3. Briquetting	
4. Carbonising Plant	
5. Engineering (Tubings, Castings, Rolling Mills)	
6. Refractories	
7. Pipelines (RCC, Steel, Seamless)	
8. calcium Carbide	
9. Carbon Black	
10. Reprocessing Lubricating Oil	
11. Glass	
12. Drugs and Pharmaceuticals (Formulations)	
13. Electroplating	
14. Storage Batteries (non-lead processing)	
15. Alkalis (Na Co and Ca Co)	
2 2 3	
16. Plastics Processing (HDPE, LLDPE, LDPE, PVC, PP, etc.)	
17. Tyres/Tubes of two-wheelers and cycle rickshaws	
18. Retreading of all types of tyres	
19. Paints (Varnish, Coal Tar Chemicals, Pigments)	
20. Dye Single Industry	
21. soaps and detergents	
22. Food Processing (Meal, Fish, Animal Products)	
23. Milk Processing	
24. Paper Products	
25. Incineration Plants for non-hazardous waste	
	PRODUCTION CAPACITY
26. Hydro-electric power	
(a) New projects	Upto 10 MW
(b) All power houses to be located on existing canal falls or existing dams with already embed depend stocks	Upto 10 MW
27. Cement	Upto 200 TPD
28. Steel Plants	Upto 50,000 TPA
29. Leather Tannery	Upto 5,000 Skins PD
30. Distilleries	Upto 150 KLD
31. Sugar	Upto 4,000 TPD cane
32. Textile	Upto 500 Mts/d
33. Pulp, Paper & Newsprint	Upto 33,000 TPA
34. Dye Intermediates	Upto 5 TPD
35. Thermosets Phenol and Urea formaldehyde	Upto 5,000 TPD
36. Acids	Upto 500 TPD
37. Vegetable Oil Processing	Upto 500 TPD
	CAPITAL COST
38. Foundries	Upto Rs. 20 crore
39. Communications	Upto Rs. 20 crore
40. Tourism and other projects within 1 Km. of HTL of sea or at locations with an elevation of more than 1000 mts.	Upto Rs. 5 crore

	AREA
41. Irrigation	Upto 2000 Hectare command
42. Mining	Upto 5 hectare lease
43. Roads (in Himalayas or involving forest land)	Upto 5 kms. length
44. Industrial Estates	Upto 100 units
45. Industrial Township (New & Expansion)	Upto 5000 dwelling units

Extract

MINISTRY OF ENVIRONMENT AND FORESTS
NOTIFICATION

G.S.R. 329(E).- In exercise of the powers conferred by sections 6 and 25 of the Environment (Protection) Act, 1986 (29 of 1986), the Central Government hereby makes the following rules further to amend the Environment (Protection) Rules, 1986, namely:-

1. (1) These rules may be called the Environment (Protection) Second Amendment Rules, 1992.

(2) They shall come into force on the date of their publication in the Official Gazette.

2. In the Environment (Protection) Rules, 1986,

(a) after rule 13, the following rule shall be inserted, namely:-

"14. Submission of environment audit report.-

Every person carrying on an industry, operation or process requiring consent under Section 25 of the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974) or under section 21 of the Air (Prevention and Control of Pollution) Act, 1981 (14 of 1981) or both or authorisation under the Hazardous Wastes (Management and Handling) Rules, 1989 issued under the Environment (Protection) Act, 1986 (29 of 1986) shall submit an environmental audit report for the financial year ending the 31st March in Form V to the concerned State Pollution Control Board on or before the 15th day of May every year, beginning 1993.

ANNEXURE III

Extract from Department of Industrial Development letter No. 10/157/85-
LP dated 17 February, 1987.

"With a view to ensuring that ecologically fragile regions in the country are protected from adverse effects of industries which emit harmful effluents, the Department of Environment in the Ministry of Environment and Forest have identified a list of districts which they consider as totally protected and also those districts where non-polluting industries could be located. They have also identified a list of industries which could be set up in these districts in the various States/Union Territories".

LIST OF INDUSTRIES THAT CAN BE CONSIDERED IN PROTECTED DISTRICTS

Subject to the fulfillment of the four conditions listed below, the following industries can be considered:

1. Assembly of
 - Musical instruments
 - Scientific and surgical instruments
 - Domestic electrical appliances
 - Electronic equipment
 - Photographic and optical equipment
2. Cottage level units of
 - Handloom weaving
 - Cotton and woolen hosiery and garments
 - Handicrafts.

CONDITIONS :

1. Should be non-obnoxious and non-hazardous.
2. Setting up of the unit, appurtenant structures and other infrastructural facilities including approach roads do not involve:
 - (a) Forest and agriculture land
 - (b) Butting of hill features; and
 - (c) Removal of orchards, trees or mangroves.
3. Do not discharge any effluents of a polluting nature.
4. Do not use fossil fuel in their manufacturing process.

LIST OF INDUSTRIES THAT CAN BE CONSIDERED IN NON-POLLUTION DISTRICTS

The following industries can be considered with adoption of suitable pollution control measures and fulfillment of the conditions as stated in List-II.

1. Rubber Processing Industries
 1. Repair of tyres and tubes
 2. Footwear (rubber)
 3. Rubber goods involving cold process only.

2. Solid Waste disposal
 4. Composing
 5. Refuse incineration (controlled)
3. Food Processing Industries
 6. Flour mills
 7. bakery products and confectioneries
 8. Malted food
 9. Vegetable oils including solvent extracted oils.
 10. Milk processing
 11. Chilling
 12. Pasteurisation
 13. Canned food including fruits and vegetables.
 14. Fragrance: flowers and food additives
 15. Aerated water/soft drink.
4. Assembly Units
 16. Musical instruments
 17. Scientific and surgical instruments
 18. Domestic Electrical Appliances
 19. Electronic equipment
 20. Photographic and technical equipment.

