Poverty, Environment, Development
A Many Patterned Nexus

The thesis that poverty leads to environmental degradation and thence to more poverty deals with only one of the several patterns of the poverty-environment-development nexus prevailing in India and the third world. The other patterns include a trade-off between poverty alleviation and conservation of the environment; necessary conservation which hurts the poor, at least in the short run; development which aggravates both poverty and environmental degradation; and persistent poverty helping the cause of the environment. There are also heartening instances of this cause prospering side by side with that of poverty alleviation.

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The relationship between poverty, environment and development is quite complex and not amenable to easy generalisation. Within a country like India, too, there is a big diversity of patterns and situations. To capture this diversity in terms of a single perception of 'vicious circle' (poverty – environmental degradation – more poverty) would be naive. It would be equally naive to rule the perception out altogether. It would be realistic and reasonable to treat the 'vicious circle' as one of the several situations prevailing, particularly in a vast and diverse country like India, and to assess its extent.

The basis for the 'vicious circle' perception lies in the fact that in developing or relatively poor countries the poor depend directly on the natural resource environment for their livelihood. In fact, a sizeable chunk of gross domestic product (GDP) is generated out of the use of natural resources in such countries. Agriculture, forestry, fisheries and mining have a fairly good share of GDP in such countries.

For example, as late as in 1970-71 agriculture and allied activities contributed 44.5 per cent to India's GDP, and mining and quarrying contributed another 1.3 per cent. Thus, the economic sectors which depended directly on the harnessing of nature accounted for 45.8 per cent of GDP in 1970-71. By 1991-92, however, the share of agriculture and allied activities had dived to 30 per cent and that of mining and quarrying increased to 2 per cent. The shares had fallen to 26.1 per cent and 1.7 per cent respectively by 1996-97. The worrisome aspect of the situation lies in the fact that these declining share of the primary sector in GDP is not accompanied by a corresponding decline in its share of the workforce. Thus, the proportion of agricultural workers (cultivators and agricultural labourers) in the total workforce, which was 69.7 per cent in 1971, declined only slightly (to 64.9 per cent) in 1991 in spite of a continuous and large decline in the share of agriculture and allied activities in GDP. This only means that while non-agricultural sectors have grown fast in terms of income generated, they have not grown correspondingly in terms of employment generated. The pressure of poor people, the residual not absorbed by the fast-growing sectors, remains on land, forests and fisheries.

It is necessary here to understand the distinction between pressure on land to raise food production and pressure to earn a livelihood. The substantial increase in yields per hectare achieved during the 'green revolution' eased the former pressure, but not necessarily the latter. Though there is now enough food to feed the increasing population, persistent (though declining) poverty is still a source of pressure on land. This can get reflected in the form of encroachment on forest and other common lands for extending the cultivated area and over-exploitation of forests and fisheries.

Encroachments on common property resources (CPRs) like grazing lands and forests, even if they are done by the poor, have the effect of depriving the other poor people of their access to such resources, quite apart from the environmental effect. But not all encroachments are done by the poor. On the contrary, more powerful sections of society are found to encroach on CPRs to a greater extent [Nadkarni 1990:127-30; Nadkarni and Pasha 1991].

The important point here is that as the poor are dependent on nature for livelihood, they are very vulnerable to natural calamities, environmental degradation and ecological disasters. Some of these occurrences may be natural, like floods and droughts, and some may be man-made. Even natural disasters like floods and droughts may be aggravated by human action. For example, deforestation on mountain slopes can increase the flood-proneness of areas down below. Similarly, droughts may be aggravated by neglect of water and soil management resulting in soil erosion, increased vulnerability of crops to failure of rainfall and increased instability in crop output.

The poor suffer most at the hands of floods and droughts. They lose their productive assets, sometimes through distress sale, which adversely affects their capacity to resume normal economic operations when normalcy is restored. Even disasters which look temporary may have a lasting debilitating impact on the economy of the poor. Man-made ecological disasters like the poisonous gas leak in Bhopal in India in December 1984 have affected the poor the most. Some 3,500 people were killed and 2 lakh injured in the Bhopal tragedy. Most of them were poor. If the possibility of such disasters is not drastically reduced, poverty aggravation is inevitable.

While the poor are more vulnerable to environmental degradation and natural disasters, the question is whether they are themselves responsible for creating them, as the 'vicious circle' thesis would have it. In other words, the crucial question is whether or not the poor people dependent on natural resources use them in a sustainable way.

There is a widely held view, particularly in the west, that poverty is the main cause of environmental deterioration, because

the poor are not in a position to use natural resources sustainably [Duraiappah 1996, Prakash 1997]. This degradation in turn, it is believed leads to aggravation of poverty, suggesting the completion of the 'vicious circle' or 'poverty trap' process. The poor in this view are perceived as having a short time horizon, discounting the future benefits from conservation rather heavily owing to the urgency to make a livelihood and avoid hunger. Such a time horizon leads to unsustainable use of natural resources.

The examples used to illustrate the vicious circle generally relate to land and forests. G Hardin took the case of grazing pressure on pastures or common property resources to illustrate this conceptualisation of the vicious circle in terms of what he called the 'tragedy of the commons' [Hardin 1968]. The pressure on the grazing lands led to their depletion and aggravation of poverty. Cultivation on fragile mountain slopes leading to soil erosion and floods is another example. Shifting cultivation with shortened fallow cycles is often viewed as being ecologically destructive.

But encroachment on forests for permanent or settled cultivation can be even more injurious than shifting cultivation, particularly where the farmers concerned do not adopt measures for soil and water conservation. Farmers who have no title to lands do not take the necessary care of such lands. Such happens to be the situation in encroached lands [Nadkarni and Govindaru 1995]. But a liberal grant of ownership rights to encroached lands would open the floodgates of encroachment on forests. Another example of the 'vicious circle', is the use as a fuel of cowdung, which could be used more productively as a manure, in view of the scarcity of fuelwood.

The perception of the 'vicious circle' as characterising the environmental degradation and poverty in developing countries is vulnerable to criticism on several counts. It is a simplistic, exaggerated and misleading thesis, especially if presented in terms of an overall generalisation. For one thing, several researchers argue that the poor too have a concern for the future and are conscious of their stake in the sustainable use of natural resources. For example, poor farmers "put in a tremendous amount of planning and labour into building and maintaining terraced fields, controlling soil erosion, nurturing tree species for fuel, fodder and soil fixing, and intricate soil and engineering mechanisms responsible for conserving, harvesting and distributing irrigation water" [Prakash 1997:4-5]. Where the poor appear to degrade the environment, it is basically because of lack of incentives and appropriate institutions, including lack of clarity on property rights.

But the question is whether the rural poor would care for the sustainable use of common lands even if they use their private lands sustainably. The 'tragedy of commons' notion, in terms of which each user sees himself involved in a zero-sum game with other users and rushes to use common resources before others make use of them, is based on the assumption of open access to them and the absence of any property rights or management. Field observations have shown that on the contrary CPRs have traditionally been subject to some form of collective management or the other, which ensured their sustainable use. Even in ecologically fragile ecosystems like mountain regions or arid areas, "local control over local resources and adherence to social sanctions empowered the community to protect and enhance community stake in natural resources and enforce measures which helped in balancing supply-and-demand aspects of resource use in the community context" [Jodha 1998:2385].

The existence of sacred groves and 'van panchayats', which have evolved over the years to restrain indiscriminate use of forests, and that of 'pani panchayats' [Deshpande and Reddy 1990] for managing irrigation tanks and canals is proof that rural people of developing countries had the necessary vision and ingenuity to promote sustainable – and equitable – use of resources. Case studies of such institutes have been fairly well documented [Wade 1998, Singh and Ballath 1996]. Unfortunately, such traditional institutions came under tremendous pressure owing to their subjugation by state authority and market forces, person-oriented political patronage and political encouragement to encroachment.

The second criticism of the 'vicious circle' thesis is that not all environmental degradation is due to pressure from the poor. The deforestation which took place during the 19th century and the early 20th century was mainly on account of the pressure to meet the timber requirements of expanding railway networks and wood requirements in urban areas (house construction, wooden poles for street lighting, etc). The second world war put further pressure on the forests. The development of the iron and steel industry (the initial stages) and the paper and rayon industries augmented this pressure on forests [Nadkarni et al 1989]. Even where forest areas stayed with forest departments, they became poorer in timber.

Much of the deforestation in Brazil is due to cattle ranching. It has been observed that if North America and Europe cut the consumption of beef by half deforestation in Brazil can be checked without delay. These examples show deforestation under the formidable impact of market forces. The same story is repeated in the case of fisheries – over-exploitation by mechanised trawlers, not by poor fishermen operating country boats.

When we look at the problem over a fairly long period of time, the 'vicious circle' thesis seems to collapse totally. In the past, when poverty levels were much higher in developing countries, there was not much environmental degradation. Now that poverty levels are declining significantly, it does not seem sensible to attribute environmental degradation to poverty. Evidently, other factors play a more important role.

Further evidence in support of the proposition that the pressure on the environment comes more from the rich than from the poor lies in the pattern of CO_2 (carbon dioxide) emissions from fossil fuels and cement manufacture. The 'World Development Reports' clearly show that per capita CO_2 emissions of rich countries are many times higher than those of poor countries and that the total emissions of several of them far surpass the total emissions of countries like India or China though the latter have much bigger populations.

But now there is a sharply rising trend in the per capita CO_2 emission of developing countries too owing to accelerated industrialisation, including the shifting of polluting industries from 'the North' to 'the South'. If, moreover, we take the pattern of CO_2 emissions from deforestation, the role of the developing countries becomes more important. Deforestation took place on a large scale in the north up to the early part of 20th century, but it was halted thereafter. It is now difficult to restrain developing countries before they go through the same cycle.

The third criticism of the 'vicious circle' thesis is that just as not all environmental degradation can be attributed to poverty or the poor, not all poverty can be attributed to environmental degradation. As a matter of fact, most of the poverty in developing countries is due to a history of colonial exploitation and continuing feudal structures which are both exploitative and a hindrance to economic and social

development. Whatever development takes place bypasses the poor relatively, if not absolutely. The relative neglect of human development and of sectors like agriculture which have the largest potential for generating employment and meeting the needs of the masses is the main way in which the poor are so bypassed. Corruption on the part of political leaders and officialdom also hinders development and comes in the way of benefits going to the poor. None of these important factors have much to do with natural resource environment.

However, denial to the poor of access to the natural resource environment has caused distress to them in several cases involving CPRs. But in such cases the reduction in the availability of the biomass needed by the poor has been due to the larger market forces or the state denying this access more often than it has been due to environmental degradation brought about by the poor.

The fourth criticism is that even in the limited area in which the 'vicious circle' is a reality it is only one of the multifold diversity of patterns and situations governing the poverty-environment nexus, as observed at the beginning of this Part. To a focus exclusively on one situation is to prevent a proper understanding of the overall complexity of relationships. Let us review the other facets of this nexus.

Poverty Alleviation vs Environment

A growing concern with poverty and belief in the capacity of the development process to reduce it led to the perception that development, not the environment, is the main concern of developing countries. At about the time of the Stockholm Conference on Environment and Development (1972), poverty was seen as the worst form of pollution. Before industrial pollution needed attention, poverty had to be dealt with as a matter of the highest priority. Environmental concerns had to be subservient to the need to promote development and alleviate poverty.

The trade-off implicit in this perception reflects the dilemmas facing India and other developing countries burdened with mass poverty. India feels that accelerating economic growth is necessary for eliminating poverty, that direct programmes targeted at the poor would not serve the perpose by themselves. Excessive concern with environment, it is feared, can dampen the development effort and poverty alleviation.

A major example of this conflict is the question of developing hydroelectric power whenever this has involved the submergence of forests. Electric power is seen as crucial for stepping up industrialisation and employment generation, and for improving the quality of life of the people at large. The benefits of forest conservation do not seem so conspicuous and immediate. The dilemma becomes acute when micro hydro-power units which would have a minimal adverse impact on the environment are deemed to be uneconomical, unstable and undependable and when forests facing submergence through major power projects are rich in biodiversity. The loss of such forests cannot be made good by compensatory afforestation, since man-made forests cannot be as rich in biodiversity as natural forests.

The Silent Valley hydel power project in Kerala was given up for such reasons. Interestingly there was popular backing for the environmental movement which pressured political leaders, including the then prime minister, Indira Gandhi, to give up this project. No displacement of people was involved here as in the Narmada projects, and the Silent Valley scheme would have generated significant employment. Yet, there was a strong movement, in which grass roots organisations and intellectuals joined hands, to save the unique forests. It is to the credit of people of Kerala that they placed conservation of the environment and the natural heritage above immediate economic gains.

It is not as if developmental concerns always weigh more with the people than the environment. Where local people assess the potential benefits from development as low and the cost of environmental degradation as high, they have spurned and even forcefully opposed official development projects.

Nearly every development project has externalities which affect a section of the people adversely. Even if the number of people and people adversely affected is smaller than the number of prospective beneficiaries, there can be no justification for carrying out a project. The adversely affected people have to be so compensated that they are at least no worse off. The worthwhileness of a project has to be assessed taking into account the costs of such compensation or rehabilitation. Obviously, the project must be such that it can absorb the cost of compensation and rehabilitation, leaving a surplus of benefits.

Even if this criterion is met, the dilemma of poverty and unemployment on the one hand and environmental impact on the other cannot be brushed aside. It can arise from the opposite end: concern for the environment leading to aggravation of poverty. One of the reasons why pollution-control laws are not enforced strictly is because of the fear of the unemployment that such enforcement would cause. Several industries, particularly small units, find it difficult to observe the pollution control standards prescribed by law.

Many such industries were set up decades ago, and any pollution control they may exercise is an add-on rather than a process-integrated or built-in system. On many occasions such units have been ordered shut down, usually by the higher courts in response to writ petitions filed by environmentalists. For example, the Supreme Court ordered 8,378 industrial units in Delhi closed down and relocated elsewhere in March 1995 [Delhi Janwadi Adhikar Manch 1997:1524-27]. Tanneries in Kanpur which had been releasing very toxic pollutants into the Ganga were similarly ordered closed down. In all such cases in which thousands of low-paid workers lose their jobs and almost become destitutes, environmental concern clearly leads to aggravation of poverty.

Wildlife sanctuaries are another example of conservation of the environment having the potential of aggravating poverty by causing deprivation. There is an extensive network of protected areas in India consisting of natural forests and wildlife sanctuaries. Accounting for above 4.5 per cent of the country's geographical area this network is intended to conserve biodiversity. Though the total forest area in the country is much larger (about one-fifth of the geographical area), it is the protected areas that have the largest number of restrictions on the use of forests by local people. Many of the forest-dwellers engage in shifting cultivation and the hunting of wildlife.

When these people had a self-contained and isolated economy of their own, there was no problem. When, however, outside market forces penetrated these economies and started hiring the forest-dwellers as agents for poaching and smuggling, human habitation began to be seen as a nuisance. Even if one or two of the forests-dwellers are so used for illegal purposes, an entire group comes under suspicion. Zealous foresters try to relocate forest-dwellers on the fringes of natural parks, thus depriving even the innocent among them of their right to traditional sources of livelihood. Concern for conservation

here conflicts with the interests of the local poor, aggravating their poverty.

There is now a move to achieve conservation with the co-operation and participation of the forest-dwellers themselves – by making them share the responsibility for safeguarding natural parks with forest departments [Kothari et al 1996]. Professional wildlife experts dismiss this as a romantic idea. They argue that wildlife conservation is simply incompatible with human settlements within parks, with people undertaking cultivation or grazing cattle there.

Collecting forest produce can be permitted in community forests subject to some regulation, but even regulated exploitation would cause problems in wildlife sanctuaries. When forest use for personal benefits is minimised, there cannot be much scope for joint management of such parks. Forest-dwellers could, however, be employed as forest guards or watchmen. Employing them would enable the park authorities to benefit from tribal people's knowledge of wildlife and forests. But the forest-dwellers cannot be given the freedom to exploit the forests in the way joint forest management would permit.

It would be interesting to see how this debate culminates in India. This question has emerged in concrete shape in the case of the Nagarahole (Rajiv Gandhi) National Park, not to mention the Rajaji National Park.

Similarly, campaigns for the beautification of cities can hit the poor the hardest. Most of the poor live in slums, with hardly any planning of lay-outs, drainage or roads. The dwellings are poorly constructed from cheap makeshift material. They are usually located in government open lands without authorisation. The campaigns for beautification take the form of demolition of huts and the levelling down of whole areas to raise multi-storeyed tenements and parks. Though proper eviction notices are given several times, the slum-dwellers usually ignore them. And then one day they are taken by surprise: their belongings are thrown out and they are forced to vacate. Most often the slum-dwellers have nowhere else to go, and they join the ranks of the homeless and end up living on the streets and in places more unhygienic than their earlier habitations.

The drive for a cleaner urban environment, if it takes this form, is definitely anti-poor. The more humane and practical policy would be to improve conditions in slums: providing more drinking water outlets in a clean environment, proper drainage and sanitation.

In spite of the many instances of the possibility of conflict between development and environment concerns, developing countries cannot ignore negative externalities, including environmental problems list these externalities further aggravate poverty. The introduction of chrome tanning in the tanneries of North Arcot district of Tamil Nadu promoted employment and increased incomes for quite a few in an otherwise backward area. On the other hand, it led to contamination of the river on the banks of which the industry was located, which in turn affected the supply of drinking water. This forced the poor downstream villages to search for drinking water much farther away. It cut into the time available to the villagers for remunerative work, apart from causing severe hardship. The courts order heavily polluting industrial units closed down for the same reason.

Developing countries are now realising that whatever be the rhetoric of preferring development to environment they cannot ignore environmental problems if they are to take care of the poor. This has raised the costs of development for them. At a comparative stage of development today's advanced countries could ignore human and environmental costs, relatively speaking. The developing countries of today cannot, however, permit themselves to this luxury.

Destructive Development

We cannot take it for granted that all economic development alleviates poverty. It is possible for 'development projects' to be capable of stepping up the rate of growth of gross national product (GNP) and yet deprive the poor of employment and even of access to their natural resource environment. Elitist development, tilted in favour of the urban or rural rich, may belong to this category. Additionally, development projects may be environmentally destructive. There are cases of destructive development which aggravate poverty and contribute to environmental degradation at the same time. Unfortunately, negative externalities hardly figure in GNP measurement, and such projects get clearance.

An example of this is provided by shrimp farming in the coastal areas of Andhra Pradesh and Tamil Nadu. Both the urban and rural rich bought paddy cultivating areas from poor farmers and converted them into aquaculture plots for shrimp farming. Salt water was mixed with fresh water, driving these lands permanently out of paddy cultivation. The enterprise may have created jobs for a few and raised their incomes. But a study carried out by the Peoples' Union for Civil Liberties (PUCL) showed that for every person employed in shrimp farming five agricultural workers were rendered jobless. Moreover, it cost much more to create a job in shrimp farming than in the agriculture which it displaced (*Deccan Herald*, July 26, 1997, p 24). If shrimp farming had been confined to natural sites of brackish water a tragedy would not have occurred.

Another example of destructive development is the conversion of natural forests and grazing lands used by the poor to industrial plantations. In the name of social forestry, several such areas were brought under eucalyptus, pine and other trees needed by industry. In the first two decades after independence, thousands of hectares of natural forests in the Western Ghats were converted to eucalyptus plantations though the letter were not suitable for the climate. This deprived the poor of their access to sources of biomass vital to their livelihood and damaged the ecology of the regions by destroying biodiversity and otherwise.

These are instances of development which may help a few poor people but which makes many more worse off and miserable. Development projects of this type are not even amenable to correction through the payment of compensation to the adversely affected. This is because the cost of compensation to really prevent people from becoming worse off is so high that it far exceeds the benefits in the form of value added or income generated by the project. If an honest cost benefit analysis which takes into account adequate compensation and the cost of rehabilitation as well as the environmental damage caused by the project, were to be undertaken, such projects would not be considered viable.

Lack of transparency in project appraisals comes in the way of proper selection of projects. When projects are launched without such a transparent appraisal, it only induces strong resistance in democracies. The continuing and strong movement against the Narmada projects is because of the fear that the projects would spell destructive development.

Environment Helped by Poverty

The consumption patterns of the rich vis-a-vis the poor are such as to indicate that the environment is protected today because of the existence of poverty. If the people of developing countries reach the

standards of living of Americans and Europeans and adopt their lifestyles, it is doubtful if the aggregate consumption of resources and the quality of our environment could be sustained at all. What has prevented the further deterioration of the environment is the fact that the lifestyles which make massive demands on the environment are confined only to a fraction of the world's population, frugality being imposed on the rest.

Both among and within countries for example, the consumption of fossil fuels is accounted for mainly by the rich. Even the per capita consumption of potable water is many times higher among the rich. The poor do not go in for swimming pools and tub baths. Many of them do not even have a single tap in their houses; they have to fetch drinking water from a distance. Such circumstances do not permit the wasteful use of water.

Even if land be scarce from the point of view of society, it may not be so perceived by rich landlords owning hundreds or thousands of acres. Such landlords stint on the labour necessary for taking care of soil erosion and water conservation. Land degradation through neglect is more likely in larger holdings than in small ones. In many such instances it is found that poverty has promoted the cause of the environment.

Waste recycling takes place to a much greater extent in developing countries like India than in developed countries. Wastes which are largely incinerated in developed countries are recycled in developing countries. For example, old newspapers are stored by households, sold to traders once in a month or so and reused in industries such as cracker making or recycled in the paper and pulp industry. Glass bottles and plastic wastes likewise are collected and sold. This is possible because even the low trade margins involved in the collection of waste are considered worth earning. The poor, especially children, do not mind working hard at unimaginably low wages for such collection because even this pittance is difficult to come by.

A special case of the poor promoting the cause of the environment at a great cost to themselves needs attention. This is the case of urban ragpickers helping waste recovery and recycling. More than half the urban workers – sometimes even 75 per cent of them – eke out a meagre living in informal sectors. Women and children earn particularly low incomes. Waste-picking is one occupation where women and children dominate. As poor parents almost force their children to supplement their meagre earnings, children account for the bulk of the workers engaged in waste-picking. A survey in Bangalore showed that about 8.6 per cent of the total waste generated and 14.4 per cent of the waste received is taken care of by waste-pickers [Beukering et al 1994:22].

Waste-pickers have to be distinguished from traders in waste and retail collectors of used newspapers. Also a lot of waste is turned into compost in several cities. The waste-pickers are outside the purview of this endeavour. They usually concentrate on glass, metals and plastic materials.

The waste-pickers hardly ever use gloves. They operate with bare hands. A survey in Delhi showed that children suffered from several cuts to their fingers [Venkateswaran 1994:51], exposing themselves to tetanus, hepatitis B and other infections. Long exposure to hot sun often induces nose-bleeding. Fumes in disposal sites cause respiratory problems. Since the children operate in unhygienic surroundings, they are exposed to various diseases. Containers of chemicals expose them to chemical poisoning risks. In addition, the children are harassed and exploited by municipal workers handling waste and by police. Sometimes they are forced to pay municipal workers 'commission' for permission of pick waste.

The waste-picker children also bear costs other than health costs – mainly the costs of deprivation. Though primary schooling is compulsory up to 14 years of age, it is difficult to enforce it among the poor even though schooling is free. Poor people give the pittance their children bring in as supplementary income greater weight. Waste-picking provides no scope for skill formation or mobility to more paying occupations. The children wait till they get unskilled manual work on daily rages.

A few non-government organisations (NGOs) like wastewise in Bangalore have tried to organise these street children, giving them gloves and pushcarts for collecting waste from households rather than from garbage dumps. Special schooling is provided in the evening so that the children can become literate and capable of acquiring skills. Recycling is thus sought to be promoted with least personal cost to the waste-picker children.

If we depend on the persistence of poverty for conserving the environment, such conservation is not going to be sustainable. Moreover, since the general incidence of poverty has been declining over the years, the role of poverty in helping waste recovery and recycling would also decline. The trend in the future would have to be towards ways of handling waste which are more sophisticated and consistent with human dignity.

Towards 'Virtuous Circle'

If institutional mechanisms are so developed as to permit sustainable use or even betterment of the environment we would have good possibilities of a 'virtuous circle' operating instead of a vicious one. An improvement in the natural resource environment improves the resource base of the poor and can alleviate poverty, which in turn can strengthen their capability of the poor to enrich their environment. A vicious circle, to the extent that it operates, can be turned into a virtuous circle, with the poor becoming the protectors of the environment.

This is not just an imaginary possibility. There have been many instances of rural Indian's ingenuity turning a vicious circle into a virtuous one, particularly when they had the benefit of inspired leadership and guidance. This is illustrated by the case of Ralegan Siddhi village, in Ahmednagar district of Maharashtra.

Ralegan Siddhi was once perpetually drought-prone and poverty stricken. Only one industry thrived there – illicit distilleries, which helped the men to forget their miseries and frustrations in the evenings, but at a great cost to themselves and their families. The villagers systematically overgrazed and exploited the surrounding forests and experienced shortage of fodder and water. Agriculture and animal husbandry were in a poor state in the village. Most of the families lived in absolute poverty.

Anna Hazare, a native of Ralegan Siddhi who had joined the army, returned to the village in 1975. In a war with Pakistan, he had the mortifying experience of seeing all the other soldiers in his group being killed. He thought that God saved him with a purpose – the purpose of helping the people of his village to overcome backwardness and misery and live with dignity. Hazare won the confidence of the villagers by renovating an old village temple, using his retirement benefits, and turning it into a centre for intra-village discussions on developmental activities. Believing that moral reconstruction was a basic prerequisite to village development, he built a youth club and placed a ban on all the distilleries and liquor shops in the village. This helped people to save money, buy more and better food and work better.

All this, and more, this author learnt by visiting the village and interviewing Hazare.

The former serviceman mobilised local people to offer 'shramdan' (voluntary physical labour) for development schemes planned by them. To the extent that the schemes needed money, he sought loans from co-operative societies and banks. He and his people rejected the idea of donations from outside and relied on their own efforts and shramdan. They took a systematic inventory of Ralegan Siddhi's natural resources and devised plans for their sustainable use and enhancement of their productivity.

One of the first steps was to regulate grazing and regenerate uncultivated lands. Treating the village watershed as a unit for planning the villagers took up civil works for sonserving soils and water and storing rain water. They built check dams and developed agro-forestry themselves. Once the grazing lands and the water storage capacity were restored, they developed animal husbandry. Cowdung was used for generating biogas, the remaining sludge being used as manure. The village could thus have clean drinking water and enough milk not only for home consumption but also for sale in nearby cities.

Attention was also devoted to other dimensions of development: the achievement of total literacy, full enrolment in schools and adequate health care. The villagers fought social evils like dowry and the exploitation of dalits and tribal people. The weaker sections of the population were integrated into the mainstream, and equality was promoted. It has thus became a model village and a centre of development tourism. What is more, by developing an institutional base, Hazare has tried to see that the villagers depend on themselves and not on constant guidance from him.

There are many such examples in India now. Sukhomajri [Chopra et al 1990] and 'pani panchayats' [Deshpande and Reddy 1990] have attracted wide publicity. For more case studies see Nadkarni (1990), Singh and Ballabh (1996) and Dantwala et al (1998). The excessive exploitation of forests by local people was sought to be transformed into a virtuous circle by the now well-known Arbari experiment of joint forest management in West Bengal in 1970. The initiative was taken by a government forest officer, A K Bannerjee, who involved the village communities in the protection of natural forest by giving them responsibilities and a share in the benefits of joint management. Joint forest management has now become a major movement throughout the country, and guidelines have been given to states to promote it [SPWD 1992].

These examples are mainly from rural sectors. There should be similar possibilities, involving slum improvement and informal sector development in the urban sphere as well. The case of street children working as waste-pickers for example, can be turned into a virtuous circle if child workers' health and schooling were taken care of and at the same time waste recovery and recycling takes place in hygienic ways as described in the preceding section.

There are two basic ingredients of the process of generating a virtuous circle. One is the idea of 'chakreeya vikas pranali' or cyclic system of development, and the other is the mobilisation and the involvement of the people [Chopra and Kadekodi 1999:232-33]. The two ingredients are closely integrated. Regeneration and renewal are basic to the whole process, which includes minimising pollution and depletion and encouraging recycling and reuse. There is also emphasis on the dignity of physical labour and voluntary contribution of such labour. If the rich are not in a position to contribute physical labour, they would have to contribute in cash or kind.

The benefits would be shared equitably. For example, in pani (water) panchayats, every rural household has an equal share in irrigation and water resources. The water rights are tradeable, so that even the landless labourers gains from the irrigation resource generated. Equality may not have been fully be achieved in all cases, but now every one in the villages is keenly conscious of the concept, and the poor do not hesitate to speak up for their rights. The village committees for managing common lands provide equal representation to all rural households, and there is an attempt to give women their due through reservation of one-third of the seats in the committees for them. Grass roots democracy is used to integrate environmental regeneration and rural development to alleviate poverty.

Women and Environment

Probably the first victims of any environmental degradation are the women among the poor. A fuelwood crisis as a result of deforestation, for example, forces village women to travel for miles in search of wood [Agarwal 1986]. This involves waste of energy and time which the women could have devoted to more remunerative work. Sometimes poor families starve for want of fuelwood even when foodgrains are available! In such cases the husbands sometimes thrash their women accusing than of laziness. Shortage of drinking water imposes similar hardships on women. They have to bring water for cooking and washing from great distances. Fodder scarcity also affects women first: the care of livestock is their responsibility.

This burden on women in turn has an impact on girl children. When the mothers' time is spent on fetching fuelwood and drinking water, girl children are kept at home and discouraged from attending schools. They have to look after younger children, sweep the house and do other household chores.

Women are also the immediate victims of the smoke which fills the houses of those who cannot afford clean fuels like natural gas and electricity. Both rural and urban women who have to wash clothes are affected by the quality of the detergents they use, since washing is done mostly by hand. Professional washermen are also thus exposed.

Vulnerability to environmental degradation induces women to become agents of eco-restoration in organised efforts [Nadkarni 1990]. Women have taken keen interest in planting fruit, fodder and fuelwood trees around their houses and on common lands. They have played an enthusiastic role in preventing over-exploitation of forests by commercial interests. There have been instances of women, undeterned by apathy and indifference on the part of their men folk, launching struggles for protecting grazing lands and forests from disruptive developments like mining [Bhat 1987]. Women's participation is valuable for improving sanitation conditions in rural areas and urban slums. Since women are so closely linked with health and the environment, they represent a constructive and protective force for the environment. They can play a crucial role in turning vicious circles into virtuous ones.

Conclusion

The tremendous complexity and diversity of India have to be reckoned with when studying the nexus between poverty, environment and development. The rates of growth of the country's GNP have jumped from below 3 per cent up to the 1980s to above 5 per cent during the 1990s. But this jump has not been enough to make a substantial impact on poverty. The incidence of poverty has declined significantly over the last three decades, but still every third Indian is below the poverty line. Direct, target-oriented programmes alone are not enough to deal with this problem, and the stepping up of economic devel-

opment is considered a more effective strategy for eliminating poverty. Besides, the direct programmes will have continue on a larger scale. But they need more resources, which can be generated only through higher growth rates.

Higher growth rates and higher levels of development have to be so achieved as to arrest the degradation of the environment. In fact, just as there are pressures to achieve higher levels of development, there are pressures to reverse environmental degradation, conserve India's rich biodiversity and see that industrialisation proceeds in a humane and environmentally sound way. India is committed to this requirement and has set up elaborate institutional machinery backed by legislation, to protect the environment. But given the low per capita income, shortage of financial resources at the government's and disposal and a clamour for resources to promote infrastructure and economic development, the goal cannot be reached without hard struggle.

In a country like India the environment is a source of livelihood for many, particularly the poor. Environmental degradation has tremendous human costs. It hits the poor most – and directly too. The environment is not just an amenity valued for its recreation potential or its aesthetic appeal. The very survival of the poor depends on it. Even if development projects help poverty, alleviate their effects on the environment should not be such as to exacerbale the poverty of some.

We have to be particularly on guard against destructive development which reduces total welfare. Every development project may have some negative externalities – which can be taken care of if the additional income (net of direct costs) generated by it is large enough to provide for minimisation of the adverse effects and for compensating/rehabilitating the people deprived by it. In a case of destructive development this is not possible. Every project should undergo a proper appraisal of its environmental costs, so that projects which are not worthwhile, are not taken up in the first instance.

Unfortunately, even conservation projects necessary for promoting national or global interests, such as the preservation of biodiversity, may have an adverse impact on the poor. If, for example, the dependence of the poor on forests for livelihood is seen as a hindrance to their conservation, particularly of wildlife, the adverse effect of the projects on the poor would have to be minimised. The poor would have to be properly compensated and resettled in case they are shifted out of national parks or wildlife sanctuaries. The dilemmas and debates involved in this are illustrated by the cases of the Rajiv Gandhi National Park in Karnataka and similar parks elsewhere.

India, like several other developing countries with low levels of per capita income, has the difficult task of stepping up its growth rates and achieving higher levels of development while minimising the human and environmental costs of economic growth. The developed countries of today had ignored these costs with impunity when they were developing. They could achieve higher levels of development with much greater ease than today's developing countries. However, the developing countries of today cannot afford the luxury of ignoring the costs. Neither domestic laws no international conventions to which they are signatories allow this.

Though the developing countries have contributed much less to environmental costs, they have to shoulder greater responsibilities for care of the environment – such as biodiversity conservation, the benefits of which are global. These countries have to do the needful at significant costs to themselves – both direct costs and forgone development opportunities. It is the duty of developed countries to help the developing countries to carry out these responsibilities. Such help as is provided by the Global Environment Fund (GEF) is a small fraction of the real costs borne by these countries. A more generous gesture is called for.

One can no longer have environmental prevention through continuation of poverty and the denial of development opportunities to countries. It would be far better for the globe if the developing countries are helped in their struggle to achieve higher levels of development in an environmentally sound way. EPW

[This article is based on a paper submitted as part of 'Poverty and Environment in the Asia-Pacific Region: A Comparative Study in Eight Countries', at the 13th Biennial Conference of the Association of Asian Social Sciences Research Councils (AASSREC), Seoul, October 18-22, 1999.]

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