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**Environment and Poverty: The
Vicious Circle**

V. A. Jafarey and Nausheen Farrukh

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Mailing Address: PO Box 2342, Islamabad, Pakistan.
Telephone ++ (92-51) 2278134, 2278136, 2277146, 2270674-76
Fax ++(92-51) 2278135, [URL:www.sdpi.org](http://www.sdpi.org)

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Environment and Poverty: The Vicious Circle

V. A. Jafarey and Nausheen Farrukh

Abstract

While the proportion and numbers of Pakistanis below the poverty line have declined over time, the record on human resource development is still poor, primarily due to the low level of public expenditure on education and health. Given that poverty and environmental degradation are mutually reinforcing problems, the paper traces three links in their complex relationship: the greater likelihood that the poor will be victims of environmental degradation; the adverse effect of the poor on their environment; and the lack of institutions to protect the rights of the poor. In order to break this vicious circle, the paper calls for investment in human development, and especially in education and health for the majority. This can be done at the local level through appropriate infrastructure investment, building upon the success of participatory and community based programmes, and at the national level through legal and administrative reform.

Since the 1972 United Nations Conference on Human Environment, June 5th has been observed as World Environment Day. This day, celebrated throughout the world, is dedicated to the examination of our natural environment. This year World Environment Day focuses on the issues of Poverty and Environment. Last year, the nations of the world gathered in Rio de Janeiro to commemorate the twentieth anniversary of the Stockholm meeting and issued the Rio Declaration, which contained a statement of principles on poverty. The conference led to the signing of a convention to prevent climate change and protect biodiversity.

The eradication of poverty has long been recognized as among the central challenges to society. Yet today, more human beings suffer from chronic deprivation than ever before. The total global population below the poverty line is now estimated to be more than one billion, of which 939 million live in rural areas. The bulk of these, 633 million, live in Asia, mainly in South Asia.

Before defining the relationship between poverty and environmental degradation, it may be useful to examine poverty in Pakistan. The poverty line i.e., the estimated rupee cost of a food basket which will deliver the Recommended Daily Allowance (RDA) for an adult in Pakistan (2550 calories) can be defined as the dividing line between the rich and the poor. The poor are that proportion of the population that fall below this poverty line. In Pakistan, although the incidence of poverty is still unacceptably high, there is cause for both optimism and pessimism.

All surveys suggest that the proportion as well as the number of people below the poverty line has been declining consistently. Latest estimates, made by Sohail Malik, on the basis of the 1987-88 Household Income and Expenditure Survey, suggest that only 16 percent of the rural and 7 percent of the urban population falls below this level. This compares with an average of 30 percent reported by the Human Development Report for the decade of 1980s. Even this high estimate compares favorably with those for India (48 percent) and Bangladesh (86 percent). However, while poverty has declined since the late 1960's, income distribution has worsened.

Table 1 clearly shows a declining trend of poverty since 1960s. The studies indicate that the level of poverty in the urban areas has declined compared to the rural areas. Reasons generally advanced for this disparate trend are the introduction of new labour saving agricultural technology and the consequent displacement of rural labour force. In the urban areas, on the other hand, there may have been a rise in the wage rate due to immigration, growth of services and construction sectors, and receipts of remittances, and these may have played a major role in lowering the poverty level.

Table 1: Survey of Poverty Estimates

	Poverty Line	63/64	69/70	71/72 (% HH's)	78/79	84/85	87/88
Naseem (1977) (1959/60 Rs.) Capita							
Rural	250	43	26	19			
	300	61	60	58			
Urban	300	55	25	25			
	375	70	59	63			
Allauddin (1975) (1959/60 Rs.) Capita							
Rural	250	57	36	42			
	300	67	61	65			
Urban	300	50	30	42			
	375	71	60	62			
Naseem (1977) % of 2100 cal's RDA							
Rural	95	72	68	74			
	92	54	46	55			
Urban	90	45	36	43			
Mujahid (1978)% of 2100 cal's RDA							
Rural	250	27	35				
	300	40	48				
Urban	300	36	29				
	375	52	46				
Irfan & Amjad (1984) (1979/80 Rs)/Capita							
Rural	109	41	55		41		
	95	32	43		29		
Kruijk & Leewwen (1985) (1978/80 Rs)/ Capita							
Rural	700		73		51		
Urban	700		50		30		
Malik (1988) (1984/85 Rs)/ Capita							
Rural	159	37	44		29	24	
	172	43	51		35	29	
Urban	185	40	34		24	19	
	207	49	43		31	26	

Continued.....

	Poverty Line	63/64	69/70	71/72 (% HH's)	78/79	84/85	87/88
Ahmad & Allison (1990) (1979 Rs)/Capita							
Rural	100				25	20	
Urban	110				20	16	
Malik (1191) 2550 cals RDA							
Rural						21	16
Urban						11	7

Source: Compiled from Akhtar 1988, Mahmood 1989 and Malik 1991.

Table 2: Family Size and Income Distribution

Income Group	Urban			Rural		
	Adults		Children	Adults		Children
	Male	Female		Male	Female	
Poor	0.9	1.0	1.6	1.0	1.1	1.5
Middle	1.8	1.8	3.7	1.7	1.7	3.6
Upper	2.4	2.3	3.9	2.4	2.5	4.6
All	1.7	1.7	3.3	1.5	1.6	3.2
Dependency Ratios and Income Distribution						
Income Group	Rural per household members			Urban per household members		
	Earner	Earners	Members	Earner	Earners	Members
Poor	3.3	1.1	3.6	3.4	1.0	3.4
Middle	3.8	1.8	6.8	4.1	1.7	7.2
Upper	3.9	2.4	9.3	3.8	2.2	8.3
All	3.8	1.6	6.2	4.0	1.7	6.7
Female Headed Households and Income Distribution (% of Earners)						
Income Group	Female Headed	Female but non-Headed	Female Earning	Male/Female Income Ratio		
	HH's	HH's	HH's			
	Rural					
Poor	4.3	6.0	10.3			
Middle	0.8	4.7	5.5			
Upper	0.5	4.6	5.1			
All	1.1	4.9	6.0	17.1		
Urban						
Poor	9.5	3.8	13.3			
Middle	0.8	5.3	6.1			
Upper	0.8	5.7	6.5			
All	1.2	5.6	6.8	16.1		

Source: Hies 1987-88

Poverty in Pakistan is linked directly to the gender structure of income, though not to size and the number of dependants in a household. The poor have smaller families than middle and upper income groups (Table 2). The dependency ratio for the poor is the lowest at 3.3 per earner while middle and higher income groups have dependency ratios close to 4. This may be because the poor have almost as many earners as the middle or upper income groups. Given a bias against female employment, households reliant on women's income, especially female-headed households, are more likely to fall into poverty.

The result is that the poor have much higher proportion of female headed households, 4 percent in rural and 10 percent in urban areas compared to less than 1 percent for middle and upper income groups.

Government policies of taxation and public expenditure on social services have not had significant redistributive impact. These policies also do not appear to be based on full understanding of the composition and needs of the poor.

So far in the paper only the dimensions of poverty and income distribution in Pakistan have been highlighted. A more disturbing dimension of the Pakistani experience is its the poor record in human resource development. The basic objective of development is the enlargement of the range of people's choices by making development more democratic and participatory. These choices include access to income and employment opportunities, education and health, and a clean and safe physical environment. Ensuring political and civil rights is an even broader development goal.

The literacy rate estimated by UNESCO in Pakistan is 35 percent, life expectancy is 60 (1990), infant mortality rate per 1000 live births is 106, and the maternal mortality rate for every 100,000 births is 500. All these distressing figures are the result of very poor performance in human resource development. A major reason for this is the low level of public expenditure on health and education by the government.

In Pakistan, human resource development has been the most neglected area in the process of economic development. Despite an increase in the allocation of resources to social sectors in the late 1980's, public expenditures on social sectors even now do not exceed 4 percent of GNP. It is therefore no wonder that the quality of life indicators place Pakistan at 36th from the bottom. Lack of commitment, inadequate resources and poor utilization of limited resources have been responsible for the failure of the population welfare programs and inadequate development of human resources. The Sixth Plan allocated only 6.0 and 2.4 of public investment to education and health; the actual expenditures were even lower. Only 72 percent of the allocation for the education sector and 80 percent of that for the health sector was utilized. Between 1986-87 and 1990-91 the share of public expenditure on the social sectors as a proportion of total expenditures declined from 10.1 to 9.3 percent and its share in GDP from 2.7 to 2.3 percent. This distressing trend may be reversed if the Social Action Programme is implemented with full vigour. However, a number of doubts remain about the direction and efficiency of this programme.

A number of causes are responsible for the neglect of human resource development in Pakistan, but the foremost is the inadequacy of public resources. The decline in the relative allocation to the social sector has been accompanied by a fall in the ratio of public revenues to GDP from 18.1 to 17.7 percent. On the other hand, the increase in public revenues from 16.4 to 18.1 of the GDP was accompanied by an increase in social expenditure from 2.2 to 2.7 percent of the GNP. In other words, public revenues are directly proportional to social sector expenditure, and an increase in public revenues would automatically increase the share of the social sector in total expenditure as indicated in Table 3.

Table 3: Growth of Social Expenditures: 1980-81 to 1990-91

Growth Rate of Expenditure						
	Tax Revenues Total Revenues (% of GDP)		Total Social Sector (% per year)		Expenditure on social Sector	
					% of total	% of GDP
1980/81	13.1	16.9	16.5	27.4	8.0	1.8
1981/82	12.5	16.0	11.6	5.7	7.6	1.7
1982/83	11.1	16.2	22.7	37.6	8.5	2.0
1983/84	13.9	17.2	14.8	33.0	9.8	2.6
1984/85	13.0	16.4	16.8	6.8	9.0	2.5
1985/86	14.1	17.5	15.1	18.0	9.2	2.4
1986/87	14.5	18.1	13.3	24.9	10.1	2.7
1987/88	13.8	17.3	18.4	12.1	9.6	2.6
1988/89	14.3	18.0	11.5	11.4	9.6	2.5
1989/90	13.9	17.9	8.7	1.8	9.0	2.3
1990/91	13.8	17.7	12.7	14.5	9.3	2.3

Source: Based on GOP 1991

Given a literacy rate at the time of independence of only 13.2 percent, Pakistan started with a handicap in the education sector. Partly because of the low priority accorded to education, especially primary education, the literacy rate increased only to 26.2 percent by 1981. Even by 1990, according to UNESCO estimates, the literacy rate in Pakistan was only 34.9 percent. It compares very unfavourably with the average literacy rate of 56 and 74 percent for low and middle income countries respectively.

A major cause of this illiteracy is the low level of participation at the primary education level. This is both inefficient and inadequate, since the poor would benefit most from the expansion of primary education. Although they may participate in secondary education, they hardly benefit from university education because of its high opportunity cost. The poor also suffer disproportionately from the pathetic quality of education in government schools. I need not belabour the fact before you that most teachers of these schools are overburdened, poorly motivated, badly educated, ill paid, and inadequately trained and supervised.

The situation is not much better in the health sector. According to the *Human Development Report*, the coverage of curative health facilities for 55 percent of the country's population compares favorably with other South countries. Despite this, however, life expectancy at birth has risen from 33.8 years in 1951 to only 60 years in 1990 and is still one of the lowest in the world (7.4 years below industrialized countries). While the figures are uncertain, it is likely that infant mortality still exceeds 100 per thousand in comparison with 72 per thousand in low income and 52 per thousand in middle income countries. Health facilities show marked differences across urban and rural areas and gender and income classes. While public health facilities have increased, most remain overburdened and badly managed, giving rise to various forms of inequalities. The poor suffer disproportionately from high costs of medicines and long queues with less than 3-4 minutes with the doctor. Moreover health facilities are particularly bad in rural areas, where there are hardly any doctors, nurses, health centres or hospitals. On average public expenditure on health in urban areas is six times more than in the rural areas.

Finally, there is the issue of environmental health. Most diseases in Pakistan are waterborne. It is estimated that 80 percent of all sickness in Pakistan is due to the inadequate supply of safe drinking water and sanitation facilities. Therefore, the provision of safe drinking water and sanitation facilities is likely

to significantly improve health conditions in the country. Although 52 percent of the population have access to piped drinking water (80 percent urban and 45 percent rural), surveys indicate that the water in these pipes is far below acceptable standards. Only 22 percent of the population (55 percent urban and 10 percent rural) have access to sewerage and sanitation facilities.

The upshot of this discussion is that while overall growth and even poverty reduction in a statistical sense have been quite commendable, there are many areas of concern such as poor access to education and health facilities. In the past, the major cause has been government neglect, however, awareness and concern has been increasing over the years. Another reason is poor management and organization and ineffectual accountability towards the use of resources.

The second pillar of the issue before us is environmental degradation. The environmental crisis has now become one of the most pressing preoccupations of policy makers and opinion leaders the world over. The reasons are simple and apparent. Tropical rain forests, which supply much of the world's oxygen, are being depleted at a rate of 5 million hectares per year. The ozone layer, vital for our survival, is thinning out not only at the South Pole, but over the North Pole and in the northern hemisphere generally. Acid rain is destroying huge areas of forests and thousands of lakes. The concentration of greenhouse gases in the atmosphere has increased by 13 percent since 1950 and is likely to lead to a temperature rise of 1.5-4.5 Celsius between 2030 and 2050. In less than a hundred years it could be 8 Celsius warmer. With bleak figures such as these, it is not surprising that environmental awareness has increased over the years.

In Pakistan, the environmental problems are equally enormous. Pakistan is not a resource rich country--although once it may have been so. Whatever resources we had have been squandered, partly through misuse, partly through over-population. As a result, we have started to run out of cultivable land, forests, irrigation water, and clean urban air. The key economic resources in the agriculture sector are close to maximum utilization. Our growth in agriculture since independence was made possible in part by the increase in cultivated area from 13 million to 20 million hectares, and increase in water use from 52 million acre feet to over 110 million acre feet. Neither is likely to increase noticeably from now on, nor is there any hope of matching past records.

The situation in forests is even more bleak. Pakistan has one of the lowest endowments in the world, and it is being depleted at a very fast rate. Although the precise figures for forest cover are only now being estimated by the Energy Wing of the Planning Commission, the Forestry Sector Master Plan, and the office of the Inspector General Forests, most observers believe that forest cover has steadily eroded since independence.

Pollution is also on the rise. The contamination of the ground water by agricultural run-offs, industry effluent, human excrement and hospital waste is increasing daily. The air in the urban areas is being polluted at a rapid pace by vehicular and industrial emissions. An average Pakistani vehicle emits 25 times as much carbon monoxide, 20 times as much hydrocarbons and 3.6 times as much nitrous oxide in grams per kilometre as the average vehicle in the US.

However, there is some ground for optimism. The most significant is the emerging bipartisan consensus over the need for sustainable development. As part of this consensus, we have seen the development and the approval of the National Conservation Strategy (NCS) on March 1, 1992. The NCS took the approach that degradation is caused by the pressure of economic and demographic increase on finite resources and that the solution is to reduce pressure, to improve management of resources and where possible to increase their availability.

High fertility and morbidity derive to a great extent from complex socio-economic and cultural factors. Illiteracy and women's low status combine to sustain Pakistan's high levels of population growth and poverty. Pakistan's literacy levels are the lowest in the region at 34.9 percent with rural women's literacy a poor 7.3 percent. Mr. Jafarey in the preceding line had quoted the 1981 literacy rate of 24%, which I have changed to the 1990 rate. You should check to make sure that he has not also quoted the rural female literacy rate for 1981. It has been established beyond doubt that women's education, health and income not only directly impact upon their children's education and health but also affect fertility levels. This is one of the central determinants of the vicious circle of population and poverty. While inadequate resources have been the major constraint on the development of human resources and alleviation of poverty, such socio-economic factors have abetted the decline produced by official neglect.

It is because of these and other factors that over the last few years the links between poverty and environment have become evident. The Brundtland Commission stated in 1987 that "poverty is a major cause and effect of global environmental problems." To combat poverty, it is thus necessary to address environmental issues efficiently and vice versa. However, though poverty and environmental degradation are mutually reinforcing, their relationship is far from simple. Three kinds of links can be identified here. First, the poor are far more likely to be the victims of environmental degradation than the rich. Second, it may be that the poor are so concerned with subsistence that their actions might be harmful to the environment. Third, the poor may often lack the institutions and organization to protect even their individual rights, let alone collective property rights.

Poverty is characterized not only by lack of income and of wealth, but also by physical weakness, isolation, vulnerability and powerlessness. Isolation is not only physical but also refers to lack of education, ignorance, and lack of access to services, information and technology. Vulnerability means external and internal stress, high exposure to risk, and the continual danger of becoming poorer. Powerlessness is the inability to adapt and to cope, and constant weakness in the face of exploitation and demands by the powerful. The poor lack access to influence and are ill represented at the seat of government. They usually till poor soils in marginal areas with inadequate rainfall. In addition, the institutions that would enable them to cooperate with each other and other groups in society for collective ends are absent. As a result, they will generally not be in a position to protect themselves against the anticipated changes of a global nature.

This is true at both the national and international levels. Poor countries have low levels of education, the poorest health, the least access to safe water and sanitation and the most impoverished natural resource base. These countries have to provide basic human necessities, stabilize populations and stimulate economic development that can alleviate poverty, while conserving natural resources essential to economic growth. On the other hand, the industrialized nations are not faced with such enormous challenges and can better manage their resources. As a result, it is likely that they will be better able to protect themselves from environmental deterioration. This means that one method of protecting the poor is to prevent environmentally harmful changes.

The second question, namely the causal link between poverty and environmental degradation, is far more controversial. For example, at the global level it is quite clear that environmental degradation and even the global warming crisis has been produced by the rich and not by the poor. The contribution of poor countries to global environmental problems, on the whole, is small or negligible. For example, Pakistan has 2.15 percent of the world's population, but contributes only 0.79 percent to the global carbon dioxide emissions. The situation is substantively the same for all poor countries. The richest one-fifth of the world's population consume four-fifths or more of the world's resources and have almost single-handedly

presented us with a crisis. This does not mean that the poor are entirely blameless, but their problems are more localized and have been caused not by excessive consumption or waste but by mismanagement and neglect.

In general, environmental degradation in poor countries is characterized by a reduction in the productivity of natural resources, principally because of overuse. Inadequate human and financial resources, low yielding and environmentally dirty technologies, poor governance as manifested through policy failure all suggest that the vicious circle of poverty and environment continues unabated in many local contexts.

Population growth clearly accelerates the process of poverty-induced degradation of the environment. The linkage between poverty, population and environment is described as a vicious circle. Poverty is associated with high rates of population growth and low yielding farm technology, causing the rural poor to use available natural resources, principally land, unsustainably for short term gain in order to secure their livelihood. Socio-economic factors leading to an otherwise rational decision about appropriate household size to provide necessary farm labour can easily lead to cumulative and unsustainable pressure on a limited and often fragile resource base. Population pressure can also result from expansionist movements of better-off groups among the poor population; the poor are forced out of their land into even more marginal areas which are inappropriate for agriculture, or they move to cities. Those who stay feed their livestock on land where vegetation is sparse and the soils or shrubs are easily damaged. As more and more people exploit open-access resources in an often desperate struggle to provide for themselves and their families, they further degrade their environment. With the increasing degradation of land and other natural resources poverty is continued. It is mostly in the rural areas that poverty and localized environmental degradation come together acutely. In countries that are highly dependent on natural resources, this degradation will contribute to economic stagnation and poverty.

This suggests that rather than poverty being the cause of environmental degradation, environmental degradation is the cause of poverty. The rapid degradation of the natural resource base of the poor significantly worsens its poverty. Secondly, the impact of poverty on degradation comes not from the behavior of the poor, but from the inability of the poor to protect the resources that provide them subsistence and livelihood.

A major cause of such inability is the lack of security of private as well as collective rights. Insecurity of land ownership and tenure is a major factor that discourages the farmer from investing in better management and operations. Insecurity of collective rights is even more damaging. The environment often refers to common property (*res communis*) over which societies generally have fairly elaborate customary rules of usufruct. Insecurity, however, transforms common property into open access property (*res nullis*), over which no rights are recognized. Open access (*res nullis*) resources are often mismanaged when the traditional mechanisms of control within the community break down. Occasionally the breakdown begins when effective communal arrangements exist but are not acknowledged by the government, which prefers other types of ownership.

Yet another dimension of this problem is the breakdown of societal rules in urban areas, particularly in slums. Southern countries are becoming increasingly urbanized, with accompanying deterioration in urban environmental quality. As growing numbers of the poor migrate to the cities in search of livelihoods, huge shanty towns emerge, where the poor live in unhealthy environments in ramshackle dwellings with inadequate water supply, minimal sewage and household waste collection, and increasing air pollution from traffic and industry.

Besides the rapid growth of the urban areas and the weak regulatory framework provided by governments, there are many other symptoms of urban environmental degradation.. A classic example in Pakistan is the poor enforcement record of legislation to regulate air, noise and industrial pollution in urban areas.

Conclusion

How is this vicious circle to be broken? In order to improve this situation, we need to invest in human development, including health and education. The urgent priority is to provide these services to the majority of the people, which in turn will have positive effects on other factors including the growth of population. This is not as impossible as it first seems. One of the bright lights of our development experience is the localized success of participatory and community-based programmes. We need to begin to think through the problem of implementing human resource development. This means supporting local initiative through appropriate infrastructure investments. Such investment is needed both at the local level, through programmes like AKRSP and OPP, and at the macro level or national level, in the form of legal and administrative reform, investment in management and information and improvement of training and supervision.

We know that the deterioration of the environment is a major threat to human well-being, even to human survival in the long run. In the rich countries, the problems concern primarily the quality of life. In the poor countries, the crisis has grown to such proportions that it could seriously undermine the very livelihood of the most vulnerable members of society. Therefore, the most important actions to conserve natural resources are those that are aimed at stabilizing population and alleviating poverty. Slower population growth increases the opportunities available to the current population, which in turn increases the people's capacity for responding to opportunities and incentives that protect the environment and promote economic development. Specific efforts to maintain as much as possible of the country's natural and modified ecosystem, to halt deforestation and to conserve biological diversity are badly needed. The spiral of poverty, population growth and environmental degradation that characterizes many poor countries is frequently aggravated by policies that actively encourage waste and resource degradation, particularly in agriculture, forestry and energy. Building the institutional capacity to enforce laws can allow the people themselves to play an enforcement role.

The challenge posed to us is great and will require political commitment and policies to enhance equity, participation and resource conservation. This may be difficult but necessary. The alternative may well be increased ecological disaster and poverty. We have to make sure we choose the right path.

Appendix

Comparative Statistics on Social and Economic Development

	Pakistan	Low Income Countries	Middle Income Countries	Industrial Countries
GNP/Capita 1989 (\$)	370	330	2040	18330
Growth rate of GNP/capita 1965-89 (% per year)	2.5	2.9	2.3	2.4
Infant Mortality Rate 1989 (per thousand)	106	70	51	9.0
Life Expectancy 1989 (years)	55	62	66	76
Illiteracy 1988 (%)				
Total	70	44	25	..
Female	81	58	31	..
Daily Calorie Supply 1988	2,200	2,331	2,834	3,398
Primary Enrollment 1988 (% of age group)				
Total	40	103	105	103
Female	28	101	95	102
Maternal Mortality Rate 1980 (per 100,00 live births)	600	..	..	..
Total Fertility Rate 1989	6.6	3.9	3.7	1.8
External debt (% of GNP)	46.9	32.3	46.1	..
Current account balance 1989 (\$)	-1,943	..	..	..
Reserves (in moths of imports)	1.6	3.5	3.1	3.1
Government revenue (% of GNP)	17.8	..	..	..
Budget deficit (% of GNP)	7.0	..	..	..
Expenditure on:				
Education	1.2	..	..	..
Health	1.1	..	..	..
Defence	39.9	..	..	..
(% of government expenditure)				

Source: World Bank 1991

SDPI is an independent non-profit research Institute
on Sustainable development

Mailing Address: PO Box 2342, Islamabad Pakistan

Street Address: 3rd Floor, Taimoor Chamber, 10-D West,
Fazal-ul-Haq Road, Blue Area, Islamabad.

Telephone: +(92-51) 2277146
2278134 2278136 2270674-6

Fax: +(92-51) 2278135

URL: www.sdpi.org e-mail: main@sdpi.org