SUSTAINABLE DEVELOPMENT AND THE PHILOSOPHY OF GRAND NATIONAL HAPPINESS: SOCIO-ECONOMIC AND GENETIC PARADIGM

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Abstract

The issue of development is based, in all forms and levels, on attaining equilibrium of development and environmental sustainability over time. Development is related to enhancement of the quality of human life in terms of increase in economic growth, infrastructure, industrial output, per capita income, adequate social security and polity, which is partly achieved by exploitation of nature or sometimes one section of people for the benefit of another section. Just as a gold medal has another face, development has also a dark hidden face. Development being an economic action tends to cause environmental damage. Environmental degradation disrupts the developmental process in the LDCs by imposing heavy cost on expenses on health as well as reduction on the productivity and human resources. In such a mad race of development, instead of growth statistics, the LDCs should look into a Grand National Happiness Index (GNHI) in framing the regional development co-ordinates. In this paper an attempt is made to highlight the philosophy of GNHI by encompassing socio-economic, genetic and envi-ronmental elements.

INTRODUCTION

The ultimate aim of physical development brought by economic activity and technological achievement is to contribute towards enhancing human happiness. Economic development on the other hand is also related to enhancement of the quality of human life primarily in terms of increase in economic growth. Does the mere rise of development index, income and other affluence make one happy? In recent years, there is a very active debate going on in this area (Shermer, 2007; Krakovsky, 2007) regarding what makes an individual in a micro sense, and a society at large, happy. Happiness is a relative, rather a very illusive term and difficult to define in a concrete form. Of various definitions, the acceptable term may be that happiness is a state of the mind in individual case. The measurement scale of happiness index in macro sense should encompass not only the level of human development but also the socio-political and genetic factors.

During the last fifty years, the per capita income has increased along with new technological advancements and development of other infrastructure. But are we happier than our forefathers?

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Even in a single society, irrespective of social affiliation or type of prevailing economy, some people with less income are more contended than others with more money to spend. The rich ones are afraid that they may lose and their affluence may not sustain their lifetime. Satisfaction arises as a result of conscious decision making to do something. On the other hand windfall gains leads to pleasure only and not satisfaction. Happiness is better equated with satisfaction and not with pleasure (Shermer, 2007).

Another factor which compliment happiness is development, which is related to enhancement of the quality of human life in terms of increase in economic growth, infrastructure, industrial output, per capita income, adequate social security and polity, which is partly achieved by exploitation of nature or sometimes one section of people for the benefit of another section. Just as a gold medal has another face, development has also a dark hidden face. It is said that 'development has some visible price tag but has huge hidden cost in terms of environmental damage' which has cascading effect. However, the words 'Development' and 'environmental sustainability' are becoming cliches with poor understanding of their implications. There is no denying of the fact that environmental degradation is a direct outgrowth of development, both planned and unplanned, started since industrial revolution in England. John Stuart Mill said 'the very aim and object of any action is to alter and improve nature'. Hence, development being an economic action tend to cause environmental damage, the very process which bring fruitation to some section of the society. Every productive process has two major goals, viz., maximize production and minimize waste. By dumping waste products in rivers and lakes or by burning them, we may minimize the cost of their disposal, but this results environmental degrada-

tion. Many poor and socially excluded people in the Less Developed Countries (LDCs) maintain an unadulterated relation to nature and consider individual's sustenance as an integral part of an organic community. Some development experts (Stiglitz, 2003), however, maintain that poverty can lead to environmental degradation and environmental degradation can contribute to poverty. A circular logic indeed! In the developing countries, the poor share a marginal gain from the development initiatives and at times the groan of the poor and its cumulative effects shadows the overall benefits from development. Development, therefore, does not mean the freedom to exclude others from a genuine relation to nature and fruitation of life's possibilities; but rather the freedom of all to share in life's development as part of organic community. But the development efforts in a globalized economic system have created islands of exclusion and compartmentalization of social groups as well as marginalization of their potential. This globalized market oriented outlook has also fragmented the delicate ecological harmony for immediate benefit of the exclusive few. This aspect has been brilliantly focused by Giovanna Ricoveri as "People are also part of nature, and the exploitation of nature is therefore also the exploitation of some people by other people. Environmental degradation is also the degradation of human relationships" (Foster, 2003).

Already there is a mad race for enhanced growth among all the countries including the LDCs, without taking into account the other aspects in a holistic way. Everybody wants immediate share of the growth and it seems they want to live always in the 'present'. Empirical generalizations, moreover, has indicated that environmental impact has direct relationship with per capita income and population in the form of (Callan, et.al., 1996):

Environmental Impact	=	Income Per Capita	X	Environmental Impact Per Unit of Income	X	Population

The Philosophy of Grand National Happiness Index

As the LDCs are aspiring for the growth in per capita income which is a prerequisite for development and eradication of absolute poverty. Hence, environmental impacts in these countries can be minimized by checking population growth and environmental impact per unit of income. Ironically, most of the LDCs have failed to get any breakthrough in population control and hence the only option left out is the reduction in the 'environmental impact per unit of income generated', reduction of which demands sustainable development of agriculture, minimization of industrial pollution, minimization of urbanization induced pollution, restoration of non-renewable resources, maintaining required forest cover, etc. Environmental degradation disrupts the developmental process in the LDCs by imposing heavy cost on expenses on health as well as reduction on the productivity and human resources. In the LDCs the people in the lower strata of the society are worst hit. Hence, though such unsustained and unplanned development leads to immediate rise in gross national product (GNP) of a country or a section of a society, in the absence of environmental considerations in the calculations of GNP, it will not be a determining factor in the long run. The sustained net national product (SNNP) for the LDCs, though difficult to calculate, would be,

$$SNNP = GNP - \left(D_c + D_e + E_m + E_a + P_l + HE_p \right)$$

where, D_c = Depreciation of the capital assets, D_e = Depreciation of the natural capital assets, E_m = Expenditure required to partially restore environmental damage, E_a = expenditure required to avert environmental damage, P_l = Expenditure required to compensate the adverse affects of pollution, HE_n = Expenditure required for restoration of health affected by pollution.

Beside, exponential growth of population in the LDCs, the worst perpetrator of disturbed environmental balance is the unplanned economic development. High rural-urban migration makes it difficult to provide access to minimum facilities needed for maintaining a good quality of life. Too much dependence on biomass fuel leads to deforestation. Depletion of ground water, and unsustained agriculture in these countries are adding fuel to the fire. One of the glaring offshoots of development and concomitant ecological damage is the global warming which has resulted in most unusual weather condition in recent times, due to which millions of people are exposed to flood havoc, damage to crops and property and destruction of valuable infrastructure.

The less developed countries (LDCs) of the present day world are facing a disturbed and unsynchronized relationship of regional development co-ordinates with global development network co-ordinate. This has two implications. First, the yardstick of measuring development needs to be looked from different perspectives for developed and LDCs. Second, this may lead to misallocation of resources in the LDCs as well as dumping of surplus products in these countries. This makes the achievement of the dynamic equilibrium between development and environmental sustainability difficult. The improper use and misallocation of resources are generally associated with serious all cascading environmental effects in the LDCs. Both planned and unplanned developmental efforts in such economies have got its threshold tolerance limit of environment to absorb the damage by its assimilative capacity. In such a mad race of development, instead of mere growth statistics, the LDCs should look into a Grand National Happiness Index (GNHI) in framing the regional development co-ordinates in the form of

$$GNHI_t = \left\{ \left(SNNP_t + Q_t + P_t \right) / k_t \right\} + g$$

Q is a qualitative and relative term indicating the quality of life in terms of education, general aspirations, health care, social security and employability. P is a term derived from social engineering encompassing polity, social norms, ethics, laws and spirit of democracy and k is the term indicating population. g is the genetic factor defining level of happiness in human beings. The human genes account for rougly half of our predisposition to be happy (Shermer, 2007). To achieve a higher GNHI, k must be kept to a minimum by persuasion via mass education and awareness or by enlarging the terms in the numerator, which is a bit difficult process. Beyond a threshold limit of k, however, GNHI cannot be increased by mere increase of the numerator.

For optimizing the Grand National Happiness Index function in a semi quantitative form (assuming that it cannot be guaranteed that P, Q and g will be linear over time), we can write the objective function in the following form:

Maximize

$$\int_{t_0}^{t_1} \{SNNP_t / k_t\} dt + Q_t + P_t + g$$

Subject to

$$g \leq \overline{g}$$

where, $\overline{k}$, $\overline{g}$ and λ are constants with temporal character defining the threshold limits.

While $\int_{t_0}^{t_1} \{SNNP_t / k_t\} dt$ indicates contribution of the economic parameters towards achieving GNHI, which is variable and reflecting relative state of the economy, which can be controlled along with quality of life, other non-trivial factors P_t and g contributes major parts in the aggregate towards achieving GNHI.

The issue of development is based, in all forms and levels, on attaining equilibrium of development and environmental sustainability over time. One of the concepts to quantify environmental benefits is concept of augmented gross national product. It is defined as the GNP plus the value of all other public goods and non-market services (Nag Choudhury, 1983). But it also fails to embrace the elements of environmental sustainability over time.

The growth curves of developing countries points that GDP growth has only led to greater polarization into dual societies of rich and poor. Unfortunately, the benefits of growth have been skewed in favour of a group of people compared to the poverty-wounded majorities.

In individual scale, the term happiness indicates a state of our mind filled with a good level of satisfaction. Hence, happiness is induced more by inner state and to some extent influenced by our external surrounding. When the "ego within us control and dominate our consciousness with attitude that demand the world should do exactly what we want and give us exactly what we want. Our egos continuously distract us by demanding we satisfy the wants and needs of its 'outer' reality, rather than be satisfied with the abundance to be found within our 'inner' reality…………... unhappiness arises from the more or less continual disappointment, frustration and emotional tension we experience when life repeatedly serves up to us very things we do not want to accept." (www.findhappiness.org). The happiness then is a simple acceptance of the world and its workings as it is. Further, a sense of sacrifice and giving rather than receiving from the world surrounding us can give a great sense of happiness - which has been taught by various moral and religious teachers along the ages. When one learns to control the inner state of our being, one learns to be happy with whatever we have. This trend can be inherited and passed on to next generations as similar to other genetic traits. Such learning can also be described as societal binding force which gives a particular society at large a common will, unified consciousness to be happy without even much material wealth or comforts. As a society is a cluster of individual bound by some common force, a force that can obscure the individual traits and unhappiness to a large extent. That is why

we find some societies are quite happy in the same situation than others. The scientists at the Princeton University (www.findhappiness.org) rightly observed that "income and education were found to have less impact on the enjoyment of daily activities than temperament and sleep". Daniel Kahneman (www.findhappiness.org), a 2002 economics Nobel Laureate says, "Measures of wealth or health do not tell the whole story of how society as a whole or particular populations within it are doing. A measure of how different categories of people spend their time and of how they experience their activities could provide a useful indication of the well being of society". It is very right that economy or health alone cannot make one happy and these are external, controllable parameters. Happiness comes more from within it seems. Richard Suzman (www.findhappiness.org) has aptly said, "The current measures of well being and quality of life need to be significantly improved. In the future I predict that this approach will become an essential part of national surveys seeking to assess the quality of life. The construction of a national well-being account that supplements the measure of GNP (Gross National Product) with a measure of aggregate happiness is a revolutionary idea". The quality of life is a relative and a qualitative term, which may vary from population to population or societies concerned. Even, contentment arising due to harmony with nature may supplement to our happiness. In a more obvious and apparently crude way, philosopher and scholar, Lin Yutang (Lin Yutang, 1994) says that happiness is sensuous, i.e., biological.

The Rationale of GNHI: The Case of India

After several years of economic reforms, Indian economy is poised at the threshold of a paradigm shift in development perspective. Indian economy is now poised for an accelerating mode. Though the economy could achieve 8.1 per cent growth in the GDP, but have failed to provide adequate employment opportunities, tackling poverty and maintaining environmental sustainability.

One reason for such a contrasting scene in the economy could be the poor performance in the agricultural front. Although the agricultural sector is the backbone of Indian economy it is starved of capital, innovative methods and guarantee against natural vagary. The profit from agriculture has gradually declined. The share of agriculture in the total gross capital formation has declined from 21 percent in 1951-52 to 15.4 percent in 1980-81 and further to 8 percent in 1999-00. This, in turn, has dampened the initiative to develop the agro based rural industries. Hence, the fruits of '8.1 per cent growth' are likely to be transitory as it fails to address the burning agricultural issues. Hence it shall not sustain. Deterioration of soil fertility and depletion of country's water resources has not received adequate attention and appropriate ameliorative measures are yet to be mooted.

Nevertheless, the better side of the story is that the National Planning Commission is optimistic of achieving the poverty reduction target of 5 percent at the end of the stipulated period. But the latest round of survey conducted by the National Sample Survey Organization (NSSO) of India on 'household consumer expenditure and employment-unemployment situation' stated that at the all India level, three rural households per thousand and one urban household per thousand do not get enough to eat in any month of the year. The all India poverty ratio, however, went down, only marginally, from 26.1 percent in 1999-2000 to 24.9 percent in 2003. While the rural poverty went down from 27.1 percent to 25.2 percent, urban poverty went up from 23.6 percent to 23.95 percent. However, the two sets of data are not that comparable because the figures for 1999-2000 are based on a large sample round whereas the figures for 2003 are small sample rounds. But still it reflects the dimension and the direction of the burning problem faced by the country.

Projection of National poverty ratios in percentage are given in Table 2. It is seen that projected national poverty ratio is lees that 5 percent in the year 2011-12 which may be considered as satisfactory for a populous developing country like India.

But the fall in the poverty ratio is to be seen in the perspective of uncontained developmental initiatives. During the past two decades the composition of per capita consumption expenditure has been changed dramatically particularly in urban India (table 3). Such significant change within a short span of time indicate pressure on environment as the non-food segment (both production and consumption) is associated with diseconomies in the form of environmental degradation.

Indicators of Changes in Forest Cover

Economic indicators of loss of forest covers are many and varied, viz., urban non-food consumption expenditure, urbanization rate, number of persons below poverty line, per capita net state domestic product are some of the main indicators. In this section, a cross sectional analysis is done to identify the indicators that have bearing in the position of poverty in India. The correlation coefficient matrices has been calculated by taking state level data for 28 states and union territories of India with reference to two periods of time, viz. 1993 and 1999. It is tried to analyze the effects of (1) urban non-food consumption expenditure (X_1), (2) urbanization rate (X_2), (3) number of persons below poverty line (X_3), (4) per capita net state domestic product (X_4) on forest cover (X_5) for the year 1993 and 1999. Table 4 and Table 5 show the correlation coefficient matrices for 1991 and 1999 respectively.

The correlation matrix-1991 shows that though there are negative correlation between X_1, X_2, X_4 with X_5, but they are not significant. On the other hand correlation between population below poverty line (X3) with forest cover (X5) is positive and significant at 5% level of significance.

Similar findings are noted in the correlation matrix-1999. The scatter plots between X3 and X5 for 1993 and 1999 s reveals weak but positive correlation between the variables.

Energy Use Pattern and Sustainable Development in India

For achieving a sustainable GNHI equilibrium in a multivariate force field, other important factors like containing carbon emission to a threshold limit and judicious use of energy should be prioritized. Carbondioxide is not only a trivial gas which controls the thermal balance of the earth but also a serious pollutant as well. "*With the present value of the concentration of carbondioxide in the atmosphere at 373 ppm, humans and other mammals are already in unknown territory with regard to physiological effects of an atmosphere with a much higher concentration of carbondioxide*" (Robertson, 2006). The concentration of carbondioxide beyond a threshold limit has severe adverse affects on health of the mass population and agricultural output.

The rapidly growing population in India is posing serious threat to the ecosystem. Deforestation, soil erosion, land degradation, water and air pollution continue to worsen and are indirectly hindering the achievement of a higher GNHI over time. "*At the same time India's energy consumption has increased manifold in the recent years. Total energy consumption has increased from 4.16 quadrillion Btu in 1980 to 12.8 quadrillion Btu in 2001*" (www.india%20 environmental%20issues.htm). This 208 per cent increase over 20 years period is mainly due to the pressure of population, industrialization and rapid urbanization in the country. Coal accounts for 50 per cent of India's total energy consumption. Contrary to this, geothermal, wind and solar energy exploitation levels in the country is meager. Consumption of energy is associated with carbon emissions and greenhouse gasses. Be-

tween 1990 and 2001, India's carbon emissions increased by 61 per cent. If such trend persists, then it will be difficult to attain a high GNHI in a multi-dimensional pressure field active in the framework of GNHI. Carbon intensity, i.e., carbon emissions per unit of GDP is also high in India in comparison to her neighbours. In the absence of carbon intensity budgeting such problems are likely to persist. If coal is substituted by other sources particularly non-conventional ones, then the carbon emissions can be reduced. Though India has good administrative set-up for non-conventional energy as well as vast potential for the same, still the country has a long way to go in this sector. Nevertheless, the better side of the story is that, of late, India could make albeit very slowly, significant dent in the field of environmental protection and sustenance.

Contrary to the above picture of so called stronger economy with 8-9 per cent growth, in the same India there are some pockets of tribal society where people are not much concerned about GDP growth or development, but they practice practical sustainable living in harmony with natural surrounding. Although they are far away from globalised market economy, we owe them the knowledge of sustainable development; their concern for forest is remarkable (Box 1 and 2).

Box 1

….The main issue is to save the remaining natural forest. Artificial and planted forests, however big, can never be their substitute. Therefore, all have to join their efforts in safeguarding the threatened and endangered natural forests. If saved and improved, they will not only regulate the present day climate but will also ensure the very survival of the next generation.

Source: Thomas, K.T. (2001): *Climate Change and Tribal Sustainable Living: Response from the North East*, NESRC, Guwahati, p.119.

Box 2

….The chief forest produce are timber and firewood. The owner of a piece of forest can cut trees for timber or firewood or employ others to do so. He can get as much timber or firewood as he needs. If he does have the desired type of timber in his personal property, he can get it from the common clan or village elders. Though a person can get as much timber or firewood from his own forest as he needs, he cannot sell it. The principle that one can get timber and firewood only for one's needs but not for sale probably reflects the situation, as it existed in former times. In the past, no one sold timber or firewood simply because there were no buyers in the village, and the practice of selling it to outsiders did not exist. This past situation has been gradually turned into a norm more by observance than through conscious enactment.

Medicinal plants, edible fruits and leaves, tubers and roots for human consumption and to feed the pigs and other animals, can be collected by anyone from anywhere. But the general principle is that they should not be wasted. Any destructive method invites censure or even punishment in the form of fines.

An interesting feature in the Angami area is that a tree is never cut and uprooted completely. Two or three feet of the tree trunk are usually left. Often such a trunk grows branches and the growth of these branches is fast because of the strong trunk with its deep roots. This practice is probably an adaptation of pollarding Alder trees, which symbolize their sustainable forest management.

Source: D' Souza, Alphonsus (2005): *Traditional Systems of Forest Conservation in North East India: The Angami Tribe of Nagaland*, NESRC, Guwahati, pp.46-48.

It is seen that GDP, in the case of India, does not reflect the level of happiness. Under the circumstances, it is of need to construct a GNHI for a country like India so that the level of happiness in macro sense is reflected.

CONCLUSION

Planned development, however, is welcome with a minimal damage to the ecosystem, which sustains agriculture and natural resources, along with the maximum benefit to all sections of the society. Much of the environmental damage in the urban areas and consequences on SNNP can be made avoidable. For this, the whole matrix of the problem and the ways through which these interacts with the society need to be evaluated.

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Table

Table 1: Population below the poverty line (As per the Expert Group Methodology) Population in Millions in India.

Poverty Ratio (%)						
1	Rural	56.4	45.7	39.1	37.3	27.1
2	Urban	49.0	40.8	38.2	32.4	23.6
3	Total	54.9	44.5	38.9	36.0	26.1

Sources: Planning Commission of India, Ninth Five Year Plan 1997-2002, Volume-1, "Number and Percentage of Population Below Poverty Line by States", The Hindu, 26.2.01

Table 2: Projection of National Poverty Ratios (in percentage) in India

Region	1996-97	2001-02	2006-07	2011-12
Rural	30.55	18.61	9.64	4.31
Urban	25.58	16.46	9.28	4.49
Total	29.18	17.98	9.53	4.37

Source: Planning Commission of India, Ninth Five Year Plan 1997-2002, Vol. 1.

Table 3: Composition of Urban Per Capita Consumption Expenditure (in percentage) in Different States of India

States	1983		1993-94		1999-00	
Food	Non-Food	Food	Non-Food	Food	Non-Food	
Andhra Pradesh	54.57	45.43	53.84	46.16	47.44	52.56
Arunachal Pradesh	-	-	60.82	39.18	57.65	42.35
Assam	63.77	36.23	59.68	40.32	55.38	44.62
Bihar	66.14	33.86	62.92	37.08	57.24	42.76
Goa	59.18	40.82	59.09	40.91	51.33	48.67
Gujarat	61.75	38.25	58.41	41.59	49.58	50.42
Haryana	57.80	42.20	53.87	46.13	45.87	54.13
Himachal Pradesh	54.00	46.00	42.45	57.55	45.34	54.66
Jammu & Kashmir	64.00	36.00	56.41	43.59	55.51	44.49
Karnataka	57.88	42.12	55.71	44.29	46.32	53.68
Kerala	58.96	41.04	53.93	46.07	49.04	50.96
Madhya Pradesh	58.99	41.01	52.85	47.15	47.60	52.40
Maharashtra	57.53	42.47	53.02	46.98	45.31	54.69
Manipur	71.56	28.44	63.82	36.18	56.40	43.60
Meghalaya	-	-	56.38	43.62	47.02	52.98
Mizoram	58.90	41.10	54.14	45.86	52.04	47.96
Nagaland	64.64	35.36	58.85	41.15	47.64	52.36
Orissa	65.13	34.87	57.79	42.21	56.95	43.05
Punjab	55.92	44.08	53.03	46.97	47.12	52.88
Rajasthan	57.58	42.42	56.65	43.35	50.85	49.15
Sikkim	55.17	44.83	55.18	44.82	47.53	52.47
Tamil Nadu	58.40	41.60	54.60	45.40	45.61	54.39
Tripura	-	-	56.96	43.04	56.18	43.82
Uttar Pradesh	59.13	40.87	55.99	44.01	50.49	49.51
West Bengal	60.90	39.10	55.93	44.07	52.28	47.72
Andaman & Nicobar	-	-	43.78	56.22	51.26	48.74
Chandigarh	-	-	35.79	64.21	38.82	61.18
Dadra & Nagar Haveli	-	-	62.68	37.32	47.72	52.28
Daman & Diu	59.18	40.82	62.79	37.21	53.70	46.30
Delhi	54.00	46.00	48.58	51.42	41.04	58.96
Lakshadweep		-	67.14	32.86	60.03	39.97
Pondicherry	56.09	43.91	57.71	42.29	51.00	49.00
All India	58.69	41.31	54.65	45.35	48.06	51.94

Source: *National Human Development Report 2001*, Planning Commission, Govt. of India, 2002.

Table 4: Correlation matrix (1991)

Variables	X1	X2	X3	X4	X5
X1	1.000				
X2	0.255	1.000			
X3	-0.171	-0.122	1.000		
X4	0.320	0.681*	-0.329	1.000	
X5	-0.091	-0.195	0.391**	-0.288	1.000

*significant at 1 per cent level of significance.

** significant at 5 per cent level of significance
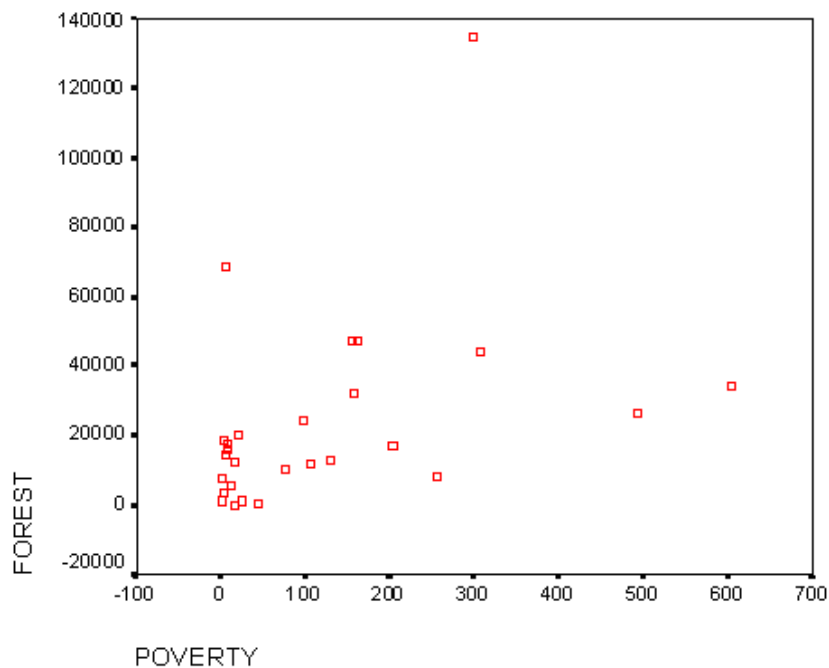
Table 5: Correlation matrix (1999)

Variables	X1	X2	X3	X4	X5
X1	1.000				
X2	0.494*	1.000			
X3	-0.111	-0.183	1.000		
X4	0.530*	0.762*	-0.327	1.000	
X5	-0.116	-0.174	0.451**	-0.277	1.000

*significant at 1 per cent level of significance.

**significant at 5 per cent level of significance

Figures

Scatter Plots (1993)

Scatter Plots (1999)