ISSN: 1321-6619

BIODIVERSITY CONSERVATION: STUDIES IN ITS ECONOMICS AND MANAGEMENT, MAINLY IN YUNNAN, CHINA

Working Paper No. 23

India's Economic Development and Its Environment: General Patterns, Issues and Implications

By

Kartik Roy

and

Clem Tisdell

September 1995

THE UNIVERSITY OF QUEENSLAND

ISSN 1321-6619

WORKING PAPERS ON BIODIVERSITY CONSERVATION: STUDIES IN ITS ECONOMICS AND MANAGEMENT, MAINLY IN YUNNAN CHINA

Working Paper No. 23

India's Economic Development and Its Environment: General Patterns, Issues and Implications[1]

By

Kartik Roy[2]

and

Clem Tisdell[3]

September 1995

[1] A paper presented at the International Seminar at North Eastern Hill Univeristy, Aizawl, Mizoram, North East India, September 1995.

[2] School of Economics, The University of Queensland, St. Lucia Campus, Brisbane QLD 4072, Australia. Email: k.roy@uq.edu.au

[3] School of Economics, The University of Queensland, St. Lucia Campus, Brisbane QLD 4072, Australia Email: c.tisdell@economics.uq.edu.au

WORKING PAPERS IN THE SERIES, *BIODIVERSITY CONSERVATION: STUDIES IN ECONOMICS AND MANAGEMENT, MAINLY IN YUNNAN, CHINA are* published by the Department of Economics, University of Queensland, 4072, Australia, as part of Australian Centre for International Agricultural Research Project 40 of which Professor Clem Tisdell is the Project Leader. Views expressed in these working papers are those of their authors and not necessarily of any of the organisations associated with the Project. They should not be reproduced in whole or in part without the written permission of the Project Leader. It is planned to publish contributions to this series over the next 4 years.

Research for ACIAR project 40, *Economic impact and rural adjustments to nature conservation (biodiversity) programmes: A case study of Xishuangbanna Dai Autonomous Prefecture, Yunnan, China* is sponsored by the Australian Centre for International Agricultural Research (ACIAR), GPO Box 1571, Canberra, *ACT,* 2601, Australia. The following is a brief outline of the Project

Rural nature reserves can have negative as well as positive spillovers to the local region and policies need to be implemented to maximise the net economic benefits obtained locally. Thus an 'open' approach to the management and development of nature conservation (biodiversity) programmes is needed. The purpose of this study is to concentrate on these economic interconnections for Xishuangbanna National Nature Reserve and their implications for its management, and for rural economic development in the Xishuangbanna Dai Prefecture but with some comparative analysis for other parts of Yunnan

The Project will involve the following:

1. A relevant review relating to China and developing countries generally.
2. Cost-benefit evaluation of protection of the Reserve and/or assessment by other social evaluation techniques.
3. An examination of the growth and characteristics of tourism in and nearby the Reserve and economic opportunities generated by this will be examined.
4. The economics of pest control involving the Reserve will be considered. This involves the problem of pests straying from and into the Reserve, e.g., elephants.
5. The possibilities for limited commercial or subsistence use of the Reserve will be researched.
6. Financing the management of the Reserve will be examined. This will involve considering current sources of finance and patterns of outlays, by management of the Reserve, economic methods for increasing income from the Reserve and financial problems and issues such as degree of dependence on central funding.
7. Pressure to use the resources of the Reserve comes from nearby populations, and from villagers settled in the Reserve. Ways of coping with this problem will be considered.
8. The political economy of decision-making affecting the Reserve will be outlined.

Commissioned Organization: University of Queensland

Collaborator: Southwest Forestry College, Kunming, Yunnan, China

For more information write to Professor Clem Tisdell, School of Economics, University of Queensland, St. Lucia Campus, Brisbane 4072, Australia or email c.tisdell@economics.uq.edu.au or in China to Associate Professor Zhu Xiang, World Bank Loan Project Management Centre, Ministry of Forestry, Hepingli, Beijing 100714, People's Republic of China.

INDIA'S ECONOMIC DEVELOPMENT AND ITS ENVIRONMENT: GENERAL PATTERNS, ISSUES AND IMPLICATIONS

1. Introduction

The prosperity achieved by developing countries in South East and East Asia as well as in many other parts of the developing world, would have been unthinkable fifty years ago. The significant rise in standard and quality of life of the citizens of these countries cannot be explained by their current stock of natural resources or by their domination of other countries. But it can be explained by their policies that have encouraged investment and placed a premium on efficiency; their efforts to improve the quality of human resources and by their sustained thrust towards international competitiveness.

India began its development programmes under Five Year Plans from 1951 with similar objectives. As its principal objective, the Plan document (Government of India, 1957) stated that it proposed to initiate simultaneously a process of all-round balanced development which would ensure a rise in national income and a steady improvement in living standards over a period.

In the second and in all subsequent Plans, the same objective reappeared. Although India's performance has not been as impressive as those of South East and East Asian countries, it is not true that India recorded very low growth rates in comparison with these countries. In fact, as Tisdell has recorded (1995), during 1980-1992, India's 5.2 per cent average annual growth rate was higher than that of Bangladesh, Sri Lanka, the Philippines and slightly below that of Indonesia. Nevertheless, India's attempt to achieve a perceptible increase in the standard and quality of life for its citizens has not been so successful. The principal problem in India is manifestly her poverty. With about 15 per cent of the world's population, India has the misfortune of having almost twice as large a share of the world's poor (Bhagwati, 1993).

Poverty and population growth are interrelated and both move in the same direction. In India, the proportion of total population and of those living below the poverty line are higher in rural areas than in urban areas. Also, an overwhelming majority of the people belonging to scheduled castes and tribes live in rural areas.

High population growth and persistence of poverty in rural areas also have meant that the reliance of these people on natural resources and environment for their survival has increased greatly.

While the annual percentage increase in India's population has declined slightly from 2.3 per cent during 1970-80 to 2.1 per cent during 1980-90 (Tisdell, 1995), and this rate of increase is expected to decline further to 1.7 per cent per annum during 1992-2000AD, this 1.7 per cent growth rate also adds annually to India's total population, more than 15 million which is slightly below the total population of Australia and equal to the total population of the Netherlands. Such unsustainable population growth further accentuates the incidence of poverty. In this paper we will comment on the general pattern of and regional disparities in development and their implications for environment and sustainable development.

2. Development vs. Growth and Poverty Amelioration

It is well known that even high growth rates may not ensure adequate development which is about improving the wellbeing of people. Raising living standards and improving education, health and equality of opportunity are all essential components of economic development. However, since growth provides the essential means for enabling development, without adequate growth, it would be difficult to realise these goals. While growth in itself is an imperfect proxy for progress, it also cannot be blamed for the failure of countries to distribute the benefits of growth despite achieving high growth. Nehru while introducing India's Third Five Year Plan in 1960 observed:

> "It is said that the national income over the First and Second Plans has gone up by 42 per cent and the per capita income by 20 per cent. A legitimate question is where has this gone...I can see that people are better-fed and better-clothed, they build brick houses...but some probably have hardly benefited" (India, 1964).

The implication of this statement is that alleviating poverty and meeting basic needs require both growth and a range of well-targeted social programs unless the productivity of either in achieving the target overwhelmingly dominates the other. The neglect of the growth process, even if its indirect impact on poverty through increased income for the poor is negligible or harmful, would impair in the long run the ability of the state to sustain the expenditures required to finance the more productive direct route especially in an India with a growing

population (Bhagwati, 1993).

Unfortunately the problem with India's development strategy was that until the 1980s it treated growth as a target rival to poverty alleviation, not as a means to reach the poverty alleviation target. As a result, with the acceptance of poverty alleviation as the primary objective of development planning, the pursuit of growth as a target was relegated to the background.

3. Development Impacts: Social and Economic Welfare

India has been implementing development programmes through development planning for 44 years. But what progress has been made in terms of social and economic welfare?

The UNDP's Human Development Index (HDI) which involves a weighting of life expectancy, adult literacy, mean years of schooling and GDP per capita is nowadays used widely to indicate the level of social and economic welfare achieved by a country for its people.

Table 1 presents HDI for India and its neighbouring countries.

Table 1: Human Development Index (HDI) 1992 for selected Asian countries

Country	Index
Thailand	0.798
Sri Lanka	0.665
China	0.644
Pakistan	0.393
India	0.382
Bangladesh	0.309

Source: UNDP (1994) Human Development Report 1994, New York: Oxford University Press.

It can be seen from the table in terms of UNDP's HDI values, that India along with Pakistan and Bangladesh has fared very badly. Thailand's human development level is more than twice that of India.

However, it has also been pointed out by Pearce (1993) that the method of scaling of HDI's implies that the indifference curves of the social welfare function depicted by HDI are linear and that the components of the function are perfect substitutes.

Thus for example, an increase in the education variable pr. in GDP per capita would provide perfect substitutes for reduced life expectancy if HDI applies. One is likely to have doubts about this substitution especially if the degree of substitution is large (Tisdell, 1995). Tisdell further points out that it provides only a partial indication • of the quality of life and does not measure the extent to which development is sustainable. In addition, HDI is not affected by the incidence of forestry or by inequality in the distribution of income. However, it is difficult to believe that social welfare is not affected by such factors.

However even as a rough measure of human development, the UNDP index suggests that after four decades of development activities India has made very little progress in this area.

Fulfilment of some minimum basic needs such as food and water availability is an essential prerequisite to development. The following Tables 2 and 3 illustrate India's record in this regard.

Table 2: Net availability of cereals and pulses

	Per Capita Net Availability Per Day (grams)		
	Cereals	**Pulses**	**Total**
1951	334.2	60.7	394.9
1961	399.7	69.0	468.7
1971	417.6	51.2	468.8
1981	417.3	37.5	454.8
1991	470.7	40.3	511.0
1992	443.0	33.4	476.4
% change between 1951 and 1992	+32.6	-45.0	+20.6

Source: Government of India (1993) Economic Survey 1992-93, New Delhi: Government of India

Table 3: Population with safe drinking water and sanitation facilities (% of total population)

	1985	1990	1992
Rural water supply	56.3	73.9	78.4
Urban Water Supply	72.9	83.8	84.9
Rural Sanitation	0.7	2.4	2.7
Urban Sanitation	28.4	45.9	47.9

Source: Government of India (1993) op. cit.

Table 2 illustrates that after 40 years of development planning, per capita net availability of

pulses per day has declined by 45 per cent from 60.7 grams in 1951 to only 33.4 grams in 1993, suggesting that the amount of protein consumption by the poor has reached an alarmingly low level. Even the per capita net supply of total food (cereals and pulses) exceeded 500 grams only once during the 42 years.

Table 3 shows that while people's access to safe drinking water has increased considerably since 1985 in both the rural and urban areas, their access to sanitation facilities in rural areas has hardly improved. In 1992 only 2.7 per cent of total rural population was covered by sanitation facilities. Lack of adequate food and nutrition, drinking water and sanitation can also impact on infant mortality rate, under 5 mortality rate, malnutrition, maternal mortality rate and the incidence of poverty.

Table 4 presents an estimate of the incidence of poverty.

Table 4: Incidences of poverty (per cent)

	1972-73	**1977-78**	**1983-84**	**1987-88**
Rural	54.1	51.2	40.1	33.4
Urban	41.2	38.2	28.1	20.1
All India	51.5	48.3	37.4	29.9

Source: Government of India {1993) Economic Survey 1992-93, New Delhi: Government of India.

Although the incidence of poverty in both rural and urban areas declined considerably since 1972-73, it was still considerably higher in rural than in urban areas in 1987-88 as the table illustrates.

The above noted comments relate to the general impact of development at the all India level. However at the state level, economic development programmes created considerable regional disparities which if not curtailed, can have considerable implication for the sustainability of development and even for the federal polity.

4. Development and Regional Disparities

Table 5 presents the regional distribution of population and disparities in total and per capita NDP. To get a clearer picture of the regional disparities in development large western and southern states and large central, northern and eastern states have been placed under two separate groups in descending order according to the size of their population.

It can be seen from the table that Maharashtra heads the list of countries in Group A and Utter Pradesh (UP) heads the list in Group- In 1980-81 seven large countries in Group A accounted for 43.12 per cent of total population whereas 6 countries in Group B accounted for 53.41 per cent of total population. This means that there were 10.3 per cent or 70.6 million more people in Group B countries than in Group A countries. In 1990-91, although the share of both regions in total population declined, large northern, central and eastern states (Group B) continued to account for a significantly larger share of total population of the country than the large western and southern states. Even in 1990-91, 53.7 million more people lived in Group B countries than in Group A countries. Apart from this factor, the concentration of poverty also appears to be significantly higher in northern and eastern states than in western and southern states because of the greater concentration in Group B countries of tribal and scheduled caste people who are very poor and of rural people who are generally poorer than the non-rural people.
Impact of large population on the level of poverty is reflected in the level of per capita income enjoyed by countries in Group B.

Thus in 1980-81the share of UP in total NDP was 12.70 which was just 1 per cent below the share of Maharashtra, the richest state in India, but UP's per capita NDP was only 52.7 per cent of Maharashtra's NDP and about 21.6 per cent lower than all India per capita NDP. In Group B, except West Bengal, all other five states had lower per capita NDP than the national per capita NDP. Whereas the total Group A per capita NDP was 104.1 per cent of all India figure, the total Group B per capita NDP was 74.7 per cent of all India figure and only 71.7 per cent of Group A figure.

Table 5: Regional Distribution of Population 1Per Capita and Total NDP (% share of each State and region in the total.)

	1980-81						1990-91					
	Total Population 1	Scheduled Tribes 2	Total ST+ SC Population 3	Rural Population 4	NDP 5	Per Capita NDP 6	Total Population 7	Scheduled Tribes 8	Total ST + SC Population 9	Rural Population 10	NDP 11	Per Capita NDP 12
All India	685.32 million (100%)	51.62 million (100%)	156.38 million (100%)	524 million (100%)	RS1106 billion (100%)	RS1630	846.30 million (100%)	67.75 million (100%)	205.97 million (100%)	628.97 million (100%)	RS4139.43 billion (100%)	RS4974
Group A												
Large Western and Southern States												
Maharashtra	9.16	11.17	6.60	7.78	13.70	2427	9.33	10.78	7.79	7.69	13.39	7409
Andhra Pradesh	7.81	6.15	7.11	7.83	6.61	1380	7.86	6.18	7.17	7.73	7.27	4722
TamilNadu	7.06	1.00	6.01	6.16	6.52	1498	6.60	0.84	5.47	5.85	6.00	4428
Rajasthan	5.00	8.10	6.40	5.14	3.72	1222	5.20	8.07	6.34	5.39	4.24	3983
Gujarat	5.00	9.39	4.56	4.48	6.00	1951	4.80	9.09	4.47	4.30	5.95	6060
Kerala	3.71	0.50	1.80	3.94	3.50	1623	3.44	0.47	1.55	3.40	2.77	3843
Karnataka	5.41	3.53	4.74	5.03	5.40	1623	5.31	2.81	4.50	4.94	5.15	4737
Total regional	43.12	39.90	37.30	40.44	45.32	1696.92	42.49	38.27	37.32	39.32	37.52	4320.07
Group B												
Large Northern, Central and Eastern States												
Uttar Pradesh (U.P.)	16.17	0.45	15.14	17.35	12.70	1278	16.44	0.41	13.53	17.73	11.61	3553
Bihar	10.20	11.25	10.19	11.67	5.42	868	10.21	9.75	9.31	11.93	5.26	2539
West Bengal (W.B.)	8.00	5.94	9.63	7.65	7.90	1580	8.04	5.60	9.65	7.85	7.63	4750
Madhya Pradesh (M.P.)	7.61	23.21	12.40	7.93	5.53	1183	7.82	22.71	12.14	8.08	5.56	3614
Orissa	3.84	10.06	5.80	4.43	2.91	1231	3.74	10.37	5.89	4.36	2.39	3180
Assam	2.64	NA	NA	3.40	2.12	1200	2.63	4.23	2.19	3.16	2.05	3427
Total regional	53.41	50.93	53.14	48.03	36.54	1216.81	48.83	53.13	52.74	53.13	34.67	3234.00

Source Table: (a) Government of India (1991), *Economic Survey 1990-91*, New Delhi: Government of India.
(b) Government of India (1992), *Economic Survey 1992-93*, New Delhi: Government of India.
(c) Central Statistical Organisation, Government of lndia (1992), *Statistical Pocket Book, India, 1992*, New Delhi: Government of India.
(d) Government of India (1995) India 1994, New Delhi: Government of India

In 1990-91, the situation for both regions deteriorated as regional per capita NDP's were lower than the all India figure. Nevertheless, Group A per capita amount accounted for 84.9 per cent of all India amount whereas Group B amount accounted for only 65.1per cent of national amount and only 79.9 per cent of Group A amount.

The effect of such pronounced disparities in population and income between regions is reflected in significant regional disparities in several indicators of human development as Table 6 illustrates.

In Table 6, States have been placed in descending order in accordance with their per capita NDP.

Maharashtra and West Bengal head the list of their respective groups of states. Apart from Kerala, which even with the lowest per capita income of the group, recorded highest performance level in all social indicators, the performance of most states generally seem to relate to their level of per capita NDP.

In Group B, except for Assam, the percentage of population below the poverty line seems to be higher for states with lower per capita NDP. Apart from Kerala, Gujarat and Rajasthan, a similar trend is noticed for other states in Group A.

In literacy rate, infant mortality rate, birth and death rate and umber of hospital beds, although West Bengal's record is far better than other states in Group B and better than some states in Group A, generally, the performance of Group B as a whole is worse than that of Group A.

Table 6: State level differential in other socio-economic indicators 1991.

	1	2	3 Literacy Rate			4	5		6	7	8	9
	Per capita NDP	Population below poverty line	Total	Male	Female	Infant mortality rate	Birth rate	Death rate	No. of beds	Percentage of Village electrified	Work force participation rate	Factory employment (Q)
Group A Large Western and Southern States	RS	% of total population	% of total population			Per 1000 (Nos)	Per 1000 (Nos)		Per 100,000 of population (Nos)	(%) of total villages	Total workers as % of total population	% of total population
Maharashtra	7409	29.2	64.87	76.56	52.32	60	26.2	8.2	192	100	33.11	1.51
Gujarat	6060	18.4	61.29	73.13	48.64	69	27.5	8.5	161	100	25.96	NA
Karnataka	4737	32.1	56.04	67.26	44.34	77	26.8	9.0	103	100	29.39	1.09
Andhra Pradesh (AP)	4722	31.7	44.09	55.13	32.72	73	26.0	9.7	71	99	34.32	0.90
Tamil Nadu	4428	32.8	62.66	73.75	51.33	57	20.7	8.8	NA	100	29.89	1.46
Rajasthan	3983	22.4	38.55	54.99	20.44	77	34.3	9.8	78	70	27.40	0.57
Kerala	3843	17.0	89.81	93.62	86.17	17	18.1	6.0	275	100	15.85	0.97
Group B Northern, Central and Eastern States												
West Bengal (WB)	4750	27.6	57.70	67.81	45.56	70	26.7	8.1	97	61	11.25	1.34
Madhya Pradesh (M.P.)	3614	36.7	44.20	58.42	28.85	122	35.8	13.8	NA	78	32.68	0.74
Uttar Pradesh (UP)	3553	35.1	41.60	55.73	25.31	93	35.1	11.1	48	70	12.32	0.41
Assam	3427	22.8	52.89	61.87	43.03	81	30.9	11.5	70	89	21.61	0.48
Orissa	3180	44.8	49.09	63.09	34.68	126	28.8	12.7	52	63	20.79	0.42
Bihar	2539	40.8	38.48	52.49	22.89	69	30.5	9.8	. NA.	65	14.86	0.56

Note: (a) For 1988.

Source Table: (a) Government of India (1991), Economic Survey 1990-91, New Delhi: Government of India.
(b) Government of India (1992), Economic Survey 1992-93, New Delhi: Government of India.
(c) Central Statistical Organisation, Government of India (1992), Statistical Pocket Book, India, 1992, New Delhi: Government of India.
(d) Government of India (1995) India 1994, New Delhi: Government of India.

Electricity is the most essential prerequisite to better amenities of life and to all manufacturing activities. Column 7 shows that except in Rajasthan, in all other states in Group A, 100 per cent of villages were electrified, but in Group B none reached that level. This may indicate that such availability of power would have facilitated the growth of manufacturing activities in rural areas in western and southern states. In work force participation rate, apart from Madhya Pradesh, in all other states in Group B, the share of workers in total population was lower than in most states in Group A.

In factory employment, apart from West Bengal, in most other states in Group B, the share of persons employed in factories in total population was lower than in all states in Group A.

Thus it would appear that economic policies and their implementation have provided greater benefits to the states in western and southern India than to those in central, northern and eastern India.

At this stage it is pertinent to bring attention to some of the demographic features of the north-east states of India compared to those for all India. These are specified in Table 7. The most obvious feature is that the population growth rates for these states is much above that for the rest of India and are quite high. This means as a rule that the proportion of dependent children in the population tends to be higher than in the rest of India. Except for Assam and Tripura, population densities in the North-east are well below the average density for India, but with high rates of population growth in the North-east states, these densities are rising rapidly. Literacy throughout the North-east varies considerably. In some states it is below that all India average but for others, such as Mizoram and Tripura, it is significantly above it. Mizoram stands out as having high rates of literacy for *both* males and females. In fact, Mizoram has the distinction of being the most literate state in India after Kerahi and naturally has the highest literacy rate in the whole of East India. However it seems that the high rate of literacy in Mizoram, particularly amongst females, has not moderated the rate of Mizoram's population growth significantly whereas it has been sometimes claimed to be a moderating factor in population growth in Kerala. Furthermore, the participation rate of women in the work force, according to official Indian statistics, is much higher in Mizoram than in Kerala. Women's participation in the work force is believed by some economists to reduce family size.

For discussion of economic theories of population increase see Todaro (1981) and Tisdell (1994).

Table 7: Demographic Features of the States of North-east India Compared to All India - 1991

	(1)	(2)	(3)	(4)	(5)
INDIA	2.14	17.94	274	64.3	39.2
Arunchal Pradesh	3.14	21.12	10	51.45	26.69
Assam	2.17	19.73	286	61.87	43.03
Manipur	2.57	16.69	82	71.63	47.60
Meghalaya	2.84	22.18	79	53.12	44.85
Mizoram	3.34	18.60	33	88.61	78.60
Nagaland	4.45	17.15	73	67.62	54.75

(1) Annual exponential growth rate of population 1981-91 percent.
(2) Population aged 0-6 years as percentage of total population.
(3) Population density per square kilometre. (4) Literacy rate percent- male.
(5) Literacy rate percent - female.

Source: Based on Table 9.2 Ministry of Finance (Economic Division) 1994.

5. Regional Disparities and Sustainable Development

Such regional disparities, if allowed to persist, can seriously undermine the capacity of the country to sustain development. Greater concentration of population and higher level of poverty in Group B countries have placed considerable pressure on natural resources and environment in these states. Total area of land maintained as permanent pastures, forest and woodland and others have declined to some extent during the 1980s (Tisdell, 1995). Annual deforestation rate expressed as percentage of total forest area was 0.6 per cent during 1981-90. Although in percentage terms, this was significantly lower than the rate of deforestation in other South Asian countries, in terms of land area, this represented 3.4 thousand square kilometres (World Bank, 1994).

The lack of employment opportunities and declining supply of natural resources combined with the degradation of rural environment have contributed to rural urban migration (Roy, Tisdell and Alauddin, 1992).

Increased population pressure in urban slums further deteriorates the urban living condition and environment.

If the population in the northern and eastern states continue to live in relative poverty and deprivation compared with their counterparts in the western and southern states, then the relative wealth and prosperity of these states could not be maintained for long and the poverty of the northern and eastern states may bring the wealth and prosperity of the west and south down.

Also, this type of regional disparity, if allowed to be maintained, may create political tension and may undermine the delicate fabric of India's federal polity.

6. Factors in Regionalisation of India's Development

What factors then may have contributed to the regionalization of India's development?

Prevention of concentration of wealth in fewer hands and regions, reduction of inequality in income and wealth and provision of minimum basic needs to all citizens were some of the most important objectives of India's development plans. However in policy formulation and implementation, economic consideration and overall national interest were placed on the back burner.

Five states - Madhya Pradesh, Bihar, Orissa, West Bengal and Assam together account for 90 per cent of India's mineral resources.

Also the eastern region had an adequate supply of professional manpower, well developed transport and communication network. If the principle of comparative advantage was allowed to dictate the location of industry and investment, then much of the wealth generating activities would have been located in Group B countries. However, much of India's industrial activities were located in western and southern India. Because of the failure of the Planning Commission to evolve a national economic policy on industry location, states with stronger political muscle were able to obtain a larger share of public and private sector investments even if economic considerations would not have justified such a location of

industries (Roy, Tisdell and Sen, 1995). This failure of the Planning Commission, combined with the passing of the Freight Equalisation Bill in the federal Parliament in 1954 and continued industrial unrest in the eastern region since the early 1960s, would have provided the much needed impetus for the withdrawal of entrepreneurship and capital from the eastern states. The current structural reform provides the opportunity to correct the regional imbalance in development and thereby to ensure the sustainability of Indian development.

7. Concluding Remarks

Sustainable development is development that lasts. The general principle of sustainable development adopted by the World Commission on Environment and Development (1987) that current generations should meet their needs without compromising the ability of future generations to meet their own needs has become widely accepted by both the UN and World Bank.

However the adoption of this principle by respective governments in their economic development requires them to ensure that the majority of their population do not suffer from poverty and deprivation due to the persistence of regional disparities in development As a result of the persistence of disparities, the future generation of the impoverished area may inherit a far more degraded environment than the present generation is facing. A similar disparity which is noticed in China between the relatively poor vast interior regions and prosperous coastal regions can also destabilize the country's political system and make the current development programme unsustainable.

The present authors' extensive field work in rural West Bengal and in the tribal belts of West Bengal, Bihar and Orissa border over the last five years revealed that the villagers were economically worse off as a result of natural resource and environmental losses that have occurred over the last 5 to 10 years. In tribal belts while land owners tend to blame tribals and vice-versa, it is clear that all are caught in a vicious cycle of poverty, population growth with attempts at economic growth exacerbating the problem and leading to unsustainable development (Roy .and Tisdell, 1993a, 1993b). Regional imbalances in economic development if allowed to persist will make development more unsustainable.

8. REFERENCES

Bhagwati, J. (1993) *India in Transition: Freeing the Economy*, Oxford: Clarendon Press.

Central Statistical Organisation, Government of India (1992) *Statistical Pocket Book, India, 1992*, New Delhi: Government of India.

Government of India (1957) *Review of the First Five Year Plan*, New Delhi: Government of India.

Government of India (1964) *India 1964*, New Delhi: Government of India.

Government of India (1991) *Economic Survey 1990-91*, New Delhi: Government of India.

Government of India (1992) *Economic Survey 1992-93*, New Delhi: Government of India.

Government of India (1995) *India 1994*, New Delhi: Government of India.

Ministry of Finance, Economic Division (1994) *Economic Survey, 1993-94*, New Delhi: Government Printer.

Pearce, D. (1993) *Blueprint 3: Measuring Sustainable Development*, London: Earthscan Publications.

Roy, K.C. and Tisdell, C.A. (1993a) Poverty amongst females in rural India: gender deprivation and technological change, *Economic Studies*, 31(4), 1993.

Roy, K.C. and Tisdell, C.A. (1993b) Technological change and poor women, specially tribal women in India, *Savings and Development*, 21(4), 1993.

Roy, K.C., Tisdell, C.A. and Alauddin, M. (1992) Rural urban migration and poverty in South Asia, Journal of Contemporary Asia, 22(1), 1992.

Roy, K.C., Tisdell, C.A. and Sen, R.K. (eds) (1995) *Economic Development and Environment -A Case Study of India*, 2nd Edn., New Delhi: Oxford University Press.

Tisdell, C.A. (1995) The environment, biodiversity and Asian development, *Biodiversity Conservation* Working Paper No. 20, University of Queensland, Brisbane: Department

of Economics.

Tisdell, C.A. (1994) Population economics, development and environmental security, pp. 63-84 in N. Polunin and M. Nazim (eds) *Population and Global Security*, Geneva: The Foundation for Environmental Conservation.

Todaro, M.P. (1981) *Economic Development in the Third World*, 2nd Edn, New York: Longman.

UNDP (1994) *Human Development Report 1994*, New York: Oxford University Press.

World Bank (1992, 1993, 1994) *World Development Report*, New York: Oxford University

World Commission on Environment and Development (1987) *Our Common Future*, New York: Oxford University Press.

BIODIVERSITY CONSERVATION

WORKING PAPERS IN THIS SERIES

1. Biodiversity Conservation: Economics, Gains and Costs in China Illustrated by Xishuangbanna Nature Reserve, Yunnan by Clem Tisdell and Xiang Zhu, February 1994.
2. Does the Economic Use of Wildlife Favour Conservation and Sustainability by Clem Tisdell, March 1994.
3. The Environment and Asian-Pacific, Particularly East Asian, Economic Development by Clem Tisdell, March 1994.
4. Presenting Requests for Financial Support for Protected Areas: The Role for Environmental Economics and Commonsense by Clem Tisdell, March 1994.
5. Ranking Inter-Country and Inter-Regional Requests for Financial Support for Protected Areas: Environmental Economic Guidelines by Clem Tisdell, March 1994.
6. Conservation, Protected Areas and the Global Economic System: How Debt, Trade, Exchange Rates, Inflation and Macroeconomic Policy Affect Biological Diversity by Clem Tisdell, March 1994.
7. Environmental and Resource Economics: Its Role in Planning Sustainable Development by Clem Tisdell, April 1994.
8. Conservation of Biodiversity is the Most Important Aspect of Ecologically Sustainable Development: An Economic Perspective by Clem Tisdell, April 1994.
9. Ecotourism, Economics and the Environment by Clem Tisdell, October 1994.
10. Socio-Economic Issues and Strategies for Biodiversity Conservation in China with Observation from Xishuangbanna by Clem Tisdell, November 1994.
11. Ecotourism – Its Boundaries and its Economics with Examples from China by Jie Wen and Clem Tisdell, February 1995.
12. Reconciling Economic Development, Nature Conservation and Local Communities: Strategies for Biodiversity Conservation in Xishuangbanna, China by Clem Tisdell and Xiang Zhu, February 1995.
13. Tourism Development in India and Bangladesh: General Issues and Ecotourism in the Sunderbans by Clem Tisdell, March 1995.
14. Trends in Tourism Development in China: Issues and Opportunities by Clem Tisdell, March 1995.
15. Tourism Development and Conservation of Nature and Cultures in Xishuangbanna, Yunnan by Clem Tisdell and Xiang Zhu, May 1995.
16. Protected Areas, Agricultural Pests and Economic Damage: A Study of Elephants and other pests from Xishuangbanna State Nature Reserve by Clem Tisdell and Xiang Zhu, May 1995.
17. Financing Nature Reserves in China – The Case of the State Nature Reserve of Xishuangbanna, Yunnan: Financial Issues, Political Economy and Conservation by Clem Tisdell and Xiang Zhu, August 1995.
18. Investment in Ecotourism: Assessing its Economics by Clem Tisdell, May 1995.
19. Rapid Rural Appraisal (RRA), Participatory Rural Appraisal (PRA) and their Application in the Global Environmental Facility (GEF-B) Programme in China by Xiang Zhu, August 1995.
20. The Environment, Biodiversity and Asian Development by Clem Tisdell, September 1995.
21. Biodiversity, Conservation and Sustainable Development: Challenges for North-East India in Context by Clem Tisdell, September 1995.

22. Economic and Environmental Perspectives on Sustainable Agricultural Developments by Clem Tisdell, September 1995.
23. India's Economic Development and Its Environment: General Patterns, Issues and Implications by Kartik Roy and Clem Tisdell, September 1995.
24. Sustainability of Land-Use in North-East India: Issues Involving Economics, the Environment and Biodiversity by Clem Tisdell and Kartik Roy, December 1995
25. Criteria for Sustainable Tourism: Why a Cautious Attitude is Needed by Clem Tisdell, January 1996.
26. Protected Areas, Agricultural Pests and Economic Damage: Conflicts with Elephants and Pests in Yunnan by Clem Tisdell and Xiang Zhu, January 1996.
27. Alternative Economic Instruments for Regulating Environmental Spillovers from Aquaculture: An Assessment by Clem Tisdell, January 1996.
28. Economics as a Basis for Conserving Nature by Clem Tisdell, February 1996.
29. Final Report on ACIAR Small Project: Economic Impact and Rural Adjustment to Nature Conservation (Biodiversity) Programmes: A Case Study of Xishuangbanna Dai Autonomous Prefecture, Yunnan, China by Clem Tisdell, March 1996.
30. Tourism in Yunnan Province and the Xishuangbanna Prefecture of China: Achievements and Prospects by Jie Wen, March 1996.
31. Developing Community-Based Forestry in the Uplands of Yunnan: Dictates of the Environment and Socio-Economics by Zhuge Ren and Clem Tisdell, April 1996.
32. China's Environmental Problems: Selected Issued and Solution in Context by Clem Tisdell, May 1996.
33. Agricultural Sustainability and Conservation of Biodiversity: Competing Policies and Paradigms by Clem Tisdell, May 1996.