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INTEGRATED RURAL DEVELOPMENT PROGRAMME IN WEST BENGAL: AN APPRAISAL IN ALL INDIA PERSPECTIVE

SACHINANDAN SAU*

Programmes of general economic development have not succeeded in mitigating the massive problem of rural poverty in India. Integrated Rural Development Programme as a target-group-oriented one has been adopted. Though its targets have been more than fulfilled, its impact on rural poverty has not been satisfactory mainly on account of low per beneficiary investment resulting from its inadequate outlay in relation to the size of the problem it desires to tackle. In West Bengal, however, its impact in crossing the poverty line of Rs. 3500 has been greater mainly on account of the involvement of common people in the process of selection of beneficiaries and schemes, and implementation of the programme. But its impact in crossing the poverty line of Rs. 6400 has been very low in this state principally due to low volume of government outlay and bank finance.

I

Introduction

The problem of rural poverty in India is old and massive. A variety of programmes under Five Year Plans have been adopted since the initiation of the First Five Year Plan of India to alleviate this problem. Of the poverty alleviation programmes, Integrated Rural Development Programme (IRDP) which has been recently introduced in India is a single most important and the much-talked-of programme for the improvement of the lot of the rural poor. Briefly, this programme is a target-oriented one and aims at increasing the income-generation capacity of the beneficiary families in such a way that they are raised above the poverty line. A large volume of literature has already developed on this programme both on all-India basis[1] and on regional and state basis[2]. In the former group of studies there are indications that the share of the poorest of the poor in the selected beneficiaries is not adequate, there are considerable proportions of non-poor households among the selected beneficiaries and the average investment per bene-

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ficiary is too low to create the kind of permanent income streams which could raise poor households above the poverty line. Regional and state level studies on IRDP cover particular regions and states. For example, Gupta's study covers some selected blocks of West Bengal[3] and Sau's study analyses the physical performance of IRDP in this state during the Sixth Plan period.[4] But no comprehensive appraisal of this programme in West Bengal has yet been made. The present note makes an attempt for an evaluation of IRDP in West Bengal and that is done in an all-India perspective. We have here tried to analyse the factors that may explain both quantitative performance of IRDP in West Bengal and the impact which this programme has got as an anti-poverty programme. Besides, it examines the adequacy of this programme in alleviating the problem of rural poverty of this state.

The plan of the rest of the paper is as follows. Section 2 discusses rationale for IRDP in India and West Bengal. Section 3 reviews the performance of this programme. Section 4 discusses its impact on rural poverty. Section 5 examines the adequacy of IRDP as an anti-poverty programme in relation to the size of rural poverty. Section 6 summarises earlier discussion and makes concluding observations.

II

Rationale for IRDP in India and West Bengal

In this Section we first review the problem of rural poverty historically and then proceed to discuss the rationale for IRDP in India and West Bengal. In British India the problem of rural poverty was explained in terms of drainage of resources from rural India. The Permanent Settlement of Bengal that was effected in 1793 converted the revenue farmers into the proprietors of land and from proprietor of land the cultivator was reduced to the status of a mere tenant. There was no restriction on the enhancement of rents and this device was constantly used to transfer surpluses from cultivators to intermediaries. The absentee landlords brought to the towns an enormous purchasing power from the rural areas and were instruments through which the rural surplus was transferred to the primate city of Calcutta[5]. As the statistical exercises show, agricultural production remained virtually stagnant during the British period.[6] The absentee landlords had neither the knowledge of agriculture nor they were interested in effecting permanent improvements in land. Their sole interest lay in maximising the rent of land: they were more interested in squeezing higher land rents than in agricultural progress. This reduced the chances of technological improvements in agriculture. As a result,

agricultural techniques remained almost static. In the Ryotwari areas of Bombay and Madras also there was the rigidity with which the land revenue was collected and the cultivator hardly possessed any resources of his own to effect improvements in soil or to use modern implements and fertilisers to increase productivity of land. Both agriculture and the agriculturists languished in the country in the nineteenth century.[7]

Besides, the European planters forced the cultivators of Bengal on their land to cultivate and sell the indigo plant at a very low price. India's agriculture became commercialised to serve the interests of Great Britain by exporting tea, coffee, spices, oil seeds, sugar cane and other foodstuffs, besides other raw materials. The volume of rural indebtedness was usually larger in the regions affected by commercial farming than those where the economy was largely subsistence-based.[8] India's handicrafts were destroyed and she became an importer of manufactured goods. The British also exploited India through the economic drain via home charges. The net result of the exploitative British policies was poverty and stagnation of the Indian economy.

Against this background the Government of India after Independence adopted programmes of general economic development for the alleviation of rural poverty and poverty in general in the course of successive Five Year Plans. There was a school of thought which was of opinion that programmes or measures of general economic development would benefit all sections of the society. In the work of Adam Smith also we get some hints of this percolation theory. To quote from his great work, Wealth of Nations :[9]

> It is the great multiplication of the productions of all the different arts, in consequence of the division of labour, which occasions, in a well-governed society, that universal opulence which extends itself to the lowest ranks of the people.

Smith here seems to propagate two things. First, economic growth caused by capital accumulation and technological improvement trickles down to the poorest. Second, he alludes to 'the great inequalities of poverty' in the modern civilised societies.[10]

Planners in early decades of planning in India perhaps subscribed to this percolation theory of economic development. The rural development programmes of the 1950s and 1960s included land reforms, irrigation extension, power development, Community Development (CD) programmes, National Extension Service (NES), Intensive Agricultural District Programmes (IADP), Intensive Agricultural Areas Programme (IAAP) and High Yielding Varieties Programme (HYVP)—all directed to the overall agricultural and rural development of India.

At the time of Independence, over 40 per cent of the agricultural area in India was under the Zamindari tenure. The tenants of Zamindars and

other intermediaries were poorer than the rest of the rural population and were intolerably oppressed. One of the first measures of the government of independent India was to abolish all intermediary tenures. The abolition of intermediaries started in 1948 with the enactment of legislation in Madras. Legislation was passed in all states but for a few minor tenures and inams as in Assam, Gujarat, Madras and Maharastra. West Bengal, the state worst affected by the ravages of absentee landlordism, was among the late comers to adopt legislation in 1954-55. Efforts were also made to legislate ceiling limits on landholdings and to distribute the surplus land to the landless.

The Community Development programme as one of the rural development programmes was introduced in 1952 and the National Extension Service in 1953. They emphasised mainly on agricultural production and socio-economic changes. The CD programme was gradually degenerated into and limited to group development — the development of a particular class, i.e., the rich farmers. It was realised that the benefits of these development programmes were, in the main, being grabbed by those who were better endowed with land resources.

In the late 1950s India was in the grip of acute shortage of food. Emphasis was made on food production. This led to the Intensive Agricultural District Programme in 1960 and subsequently to Intensive Agricultural Areas Programme and the High Yielding Varieties Programme in 1965. These programmes led to an increase in agricultural production which came to be known as the Green Revolution. But they were by their design focused on areas and farmers with complementary resources, primarily assured irrigation, and soon it became clear that their benefits remained largely confined to such farmers and areas. The problem of poverty of people and whole areas lacking in productive resources came to the surface.

Let us now, for a short while, dwell on recapitulating the classical theory of class conflict. Adam Smith was at pains to establish class harmony. Smith, while recognised the distributional anomalies that inhere in the capitalist system, hoped that under a system of free trade and free enterprise, technology would improve and the competition among capitalists would tend to reduce profits to a socially permissible level. David Ricardo in the first and the second edition of 'Principles' also held that machinery, by reducing cost of production and hence prices, benefits all classes of producers and consumers. In the third edition of the Principles, Ricardo, however, adds a new chapter 'On Machinery' which mirrors his change in attitude, regarding the effects of machinery.[11] Here he broke new ground and shocked his contemporaries by maintaining that new machinery might be injurious to workers. While considering the effect of machinery he discovered that inventions leading to the use of machinery

benefit the capitalists, while they not infrequently injure the labouring class. While investments towards the creation of fixed capital, which is what introduction of 'improved' machinery implies, increase the 'net revenue' of the society, of which profits are a part, they would, at any rate in the short run, reduce the 'gross revenue, out of which wages are paid. Thus he says in his Principles :

> The opinion entertained by the labouring class, that the employment of machinery is frequently detrimental to their interest, is not founded on prejudice and error but is conformable to the correct principle of political economy.

Capitalists introduce machinery in their own interest, but by so doing they injure the labouring class ; the introduction of machinery, Ricardo argues, reduces the wages fund (in the short run at any rate) and hence it either lowers the wage rate or creates unemployment.

Ricardo implicitly destroys the harmony of social interests. He recognised disharmony in class relations and the deprivation of workers which the capitalist system entails. He saw deficiencies in the institution of capitalism. There was the spectare of a stationary state before him, which he viewed with abhorence.[12]

In recent years economic experts[13] have shown in their studies that whereas economic growth may be able to raise per capita incomes in developing countries it may not be accompanied by a reduction in poverty as well as elimination of unemployment and under-employment. Rather the process of economic growth in third world countries has benefited relatively developed areas and better-off people. In other words, the percolation of benefits of economic growth to backward areas and the poor people have not taken place.

Based on the past developmental experience in India we realise that the poor continue to be by-passed in the development process as growth does not trickle down to .the poorest. Thus, the first half of the decade of the '70s in India was dominated by the widespread concern by the large-scale poverty in rural India. It was estimated that at least 40 per cent of the rural households were poor, and this proportion had remained undiminished despite considerable growth in the aggregate national income as well as income in the rural sector. The distribution of additional income generated was very uneven. It accrued in more than proportionate measure to those who owned land and other productive assets, or were skilled in different types of work. The percolation of this increased income to the poor, who were largely resourceless and unskilled wage-earners, was a thin trickle, if at all[14].

In India, annual rate of growth of Net Domestic Product at factor cost at 1970-71 prices has been 3·4 per cent over the period 1950-51 to 1976-77 while that in agriculture has been 2·9 per cent over this period.

The average annual growth rate (average of annual growth rates) in per capita State Domestic Product of India at 1960-61 prices has been 0·9 per cent over the period 1960-61 to 1974-75. But the rural poverty ratios in the period from 1960-61 to 1977-78 have fluctuated between 45 and 56% and at no point of time could it be said that the impact of developmental programmes has shown a decline in these ratios. In fact, even in the 1960s when the Green Revolution was on, the poverty ratios continued to fluctuate and did not show any tendency to decline[15].

In West Bengal the average annual growth rate of State Domestie Product at 1960-61 price has been 2·3% during the period 1960-61 to 1974-75 and 2·45% during 1980-81 to 1984-85[16]. But the incidence of poverty in the rural areas of this state (as well as in the whole of India) has been high.

For the estimation of the number of the poor, i.e, persons below the poverty line, the information collected in the NSSO surveys on household consumption expenditure has been utilised. As per the recommendation of the 'Task Force on Minimum Needs and Effective consumption Demand (1979) the Planning Commission defined poverty line as monthly per capita income of Rs. 49·09 in rural areas and Rs. 58·64 in urban areas at 1973-74 prices, corresponding to the caloric requirement of 2400 per capita per day in rural areas and 2100 per capita per day in urban areas. On the basis of 32nd Round (1977-78, revised). Poverty situation in some states of India is given below :—

Table 1

POVERTY RATIO IN SOME STATES OF INDIA, 1977-78

States	Poverty Ratio (percentage)	
	Rural	Urban
Orissa	67·89	42·19
Tripura	64·28	26·34
Madhya Pradesh	61·63	48·09
West Bengal	58·31	34·71
Bihar	57·82	46·07
Rajasthan	33·48	33·80
Karnataka	53·15	43·97
Maharastra	60·36	31·62
Gujrat	43·10	29·02
All-India	51·20	38·19

Source : (i) *Rao*[17]
(ii) *Planning Commission : Sixth Five Year Plan*

West Bengal has been one of the 5 poorest states of India in respect of percentage of rural population below poverty line and here rural poverty has been more intense than urban.

In West Bengal, 58·31 per cent of rural population lived below poverty line in 1977-78, which is higher than the urban percentage of 34·71. Rural poverty ratio (percent) was estimated to be 51·2 for India as a whole.

It is thus apparent that social justice and increase in the income of the poor was not necessarily a 'fall out' of economic growth. A more direct attack on poverty is then called for.

By the seventies, it became imperative to take special measures for benefiting the proper sections and for the development of disadvantaged areas. Efforts, however, started in this direction during the Fourth and Fifth Plans. Beneficiary-oriented programmes were initiated. Individual beneficiary-oriented programmes aimed at Small and Marginal Farmers (SFDA/MFAL) have been subsequently supplemented by the Integrated Rural Development Programme (IRDP).

These programmes arose, as noted earlier, in the context of the Green Revolution in which it was widely felt that the small and marginal farmers and also agricultural labourers were not benefitted, thereby leading to widening the gap between them and the others in rural society.

Small Farmers Development Agency (SFDA) :

The SFDA programme designed for the target group of small and marginal farmers and agricultural labourers, has been in operation since 1971 and has covered 1,818 blocks in the country. The objective of the programme was to assist persons specifically identified from this target group in raising their income level. The SFDA was designed to facilitate extension of new technology including inputs, like seeds and fertilisers, and additional productive assets like wells/tubewells, pumpsets, bullocks, farm implements, etc., to farmers who would be in a position to use these successfully to increase their income above the poverty line and simultaneously repay the loans. For the others, there was visualised supplementary sources of income, like dairy and other types of animal husbandry bullock carts, and small handicrafts, in which provision for the necessary assets was to be made with loans at concessional rates and subsidy.

By the end of the Fifth Plan, however, the Planning Commission felt that SFDA had not been successful in attacking the problem of the rural poor. The coverage of SFDA was limited, less than half the districts in India and not every part of these districts at that. The performance had been more in the provision of current inputs than in the provision of additional productive assets, and the landless labourers had not been significantly touched by the programme. Moreover, different agencies

were expected to take care of different aspects of the programme and there was no co-ordination among them. The infrastructural developments necessary for the success of such programmes was often lost sight of.

The Integrated Rural Development was contemplated by the Planning Commission, in its Draft Sixth Plan 1978-83 (Revised) and it involves a mu'ti-pronged attack on the problem of rural development. 'Integrated' here covers four principal dimensions : integration of sectoral programmes, spatial integration, integration of social and economic processes, and above all, the policies with a view to achieving a better fit between growth, removal of poverty and employment generation. More specifically, it involves a sharp focus on target groups comprising small and marginal farmers, agricultural labourers and rural artisans, and an extremely location-specific planning in rural areas". The Draft Plan proposed to start the programme in 2,000 blocks and in fact. the IRDP was initiated in 1978-79 in 2,300 development blocks already covered by other special programme like SFDA, MFAL, and DPAP.

A new Sixth Plan, 1980-85, was formulated two years after the Draft Sixth Plan 1978-83 has been initiated. This plan document also reviewed the performance of SFDA. Besides the rather inadequate coverage, the Plan found poor provision of additional assets for the poor as its major shortcoming. It noted that the IRDP had also been no different from the earlier SFDA. It proposed to replace the multiple agencies in the field for the purpose by a single Integrated Rural Development Programme (IRDP). While the Draft Sixth Plan (1978-83) conceived Integrated Rural Development as a resource-based total development plan for a block into which the specific beneficiary-oriented schemes of poverty eradication will be integrated and proposed to start with the latter schemes only pending the formulation of block level plans, the Sixth Plan (1980-85) was quite clear and categorical in stating that the "IRDP has been conceived essentially as an anti-poverty programme".

'Rural Development' is now viewed not as a total development process involving both the economic and socio-political development of rural areas as a part of the modernisation of the entire society, but as a strategy specifically designed to improve the economic and social life of a specific group of rural people, viz., the rural poor.

As the World Bank Sector paper entitled 'Rural Development' published in 1975 points out "rural development is a strategy designed to improve the economic and social life of a specific group of people—the rural poor. It involves extending the benefits of development to the poorest among those who seek a livelihood in the rural areas. The group includes small-scale farmers, tenants and the landless."[18] It was thought

that the rural poor—small and marginal farmers, landless labourers and artisans—were poor because they mostly did not possess any productive assets other than their labour, nor did they, as workers, possess any special skills. Therefore, the Plan document says, "Any development strategy which aims at improving the lot of the poor must aim at creating new productive assets for them". These assets would include sources of irrigation for those with some land, bullocks and implements besides inputs like seed and fertiliser, animals for daily and other animal husbandry activities, and tools and training for cottage industries and handicrafts, etc. The basic strategy was to promote self-employment of the poor households with the help of these assets so that they may earn incomes above the poverty level.[19]

III

Performance of IRDP

The IRDP was extended to all the 5011 development blocks in 1980. As noted earlier, its objective was to provide assistance to families below the poverty line to enable them to attain an income level well above the poverty line and this is sought to be achieved by providing productive assets and inputs to identified families below the poverty line. The capital cost of the asset is subsidised to the extent of 25 per cent for small farmers, 33 per cent for marginal farmers, agricultural labourers and rurrl artisans, and 50 per cent for Scheduled Castes and Tribes. An individual family may receive subsidy upto Rs. 3000. The limit is Rs. 4000 in the DPAP areas, and Rs. 5,000 for Scheduled Tribes. Besides, it is stipulated that at least 30 per cent of the families assisted are drawn from the Scheduled Castes and Scheduled Tribes. The poor families consist of small and marginal farmers, agricultural and non-agricultural labourers, rural artisans and craftsman and these families are defined officially as households having an annual income of Rs. 3500.[20]

The programme is financed by subsidies provided by the government and loans from banks. The Sixth Plan allocated Rs. 15,000 million for the programme. Besides, the banks were expected to advance credit to the extent of Rs. 30,000 million. Thus the total investment in the programme during the Plan period was expected to be Rs. 45,000 million. A total of 15 million families were expected to receive assistance—600 families per development block per year for five years ($600 \times 5000 \times 5$). The achievements are shown in Table 2 below against the targets.

Total achievements have exceeded the targets—total investment by 5·84 per cent and total number of beneficiaries by 10·41 per cent. But per capita investment achieved fell short of targetted amount by 4·13

per cent on account of per capita credit advanced being less than targetted by 6·35 per cent. In TRYSEM (Training of Rural Youth for Self Employment) which is an integral part of the IRDP the achievement in respect of youths being trained exceeded the target by 350 per cent.

Table 2

TARGETS AND ACHIEVEMENTS IN IRDP 1980-85

Sl. No.	Items	Targets	Achievements	Percentage of Achievements to Targets
1.	Total Plan Expenditure (Rs. Crores)	1500·00	1661·17	110·74
2.	Total term Credit (Rs. Crores)	3000·00	3101·61	103·39
3.	Total Investment	4500·00	4762·78	105·84
4.	Total Number of beneficiaries (Lakhs)	150·00	165·62	110·41
5.	No. of SC/ST beneficiaries (Lakhs)	50·00	64·63	129·26
6.	Per Capita Subsidy (Rs.)	1000·00	1003·00	100·30
7.	Per Capita Credit (Rs.)	2000·00	1873·00	93·65
8.	Per Capita Investment (Rs.)	3000·00	2876·00	95·87
9.	Credit Subsidy Ratio	2·00	1·80	90·00
10.	Number of youths trained in TRYSEM (Thousands)	200·00	900·00	450·00

Source : ***Planning Commission***[26]

Investment per family in the Sixth Plan has been low. The Seventh Five Year Plan, therefore, envisages that the average subsidy be stepped up from Rs. 1,000 to Rs. 1,333 thus allowing a capital investment level of Rs. 4,000. Another change that has been effected in the programme is that the poverty line has now been defined at Rs. 6,400 per annum for a a household instead of the earlier limit of Rs, 3,500 (or Rs. 700 per capita income). The group has been subdivided into the following 4 categories on the basis of different slabs of yearly income :

(a) Destitute families with yearly income between Rs. 0 and Rs. 2,265

(b) Very very poor families with yearly income between Rs, 2,266 and Rs. 3,500

(c) Very poor families with yearly income between Rs. 3,501 and Rs. 5,000

(d) Poor families with yearly income between Rs. 5,001 and Rs. 6,400.

However, since the programme will continue to aim at the poorest of the poor, the operating limit for identifying the households for assistance has been fixed at Rs. 4,800 and 10 million beneficiaries are to be thus assisted. The other substantive modification that has been proposed in the programme is that while the allocations of funds under the IRDP as well as the fixation of targets was being done on a uniform basis throughout the country, it is now proposed to do this on the basis of incidence of poverty in the block/state presumably as reflected by the 38th round of the National Sample Survey. At least 30 per cent of the assisted families would continue to be drawn from SC & ST. The coverage of women under IRDP in the Sixth Plan was poor. In the Seventh Plan, at least 30% of total IRDP beneficiaries should be women as per new guideline.

Against this perspective we may now attempt to review the performance of IRDP in West Bengal where 341 Development Blocks (339 Panchayet Samities and 2 Municipalities) are functioing at present.

As per 1981 Census 75·33 per cent of 54·58 million population of West Bengal lived in rural areas. Most of the rural workers were engaged in agriculture and allied activities. Cultivators, agricultural labourers, plantation, forestry and livestock workers constituted 77·91 per cent of the total working force of rural West Bengal. The percentage of workers engaged in household industry was 5·26 per cent.[21] The excessive dependence on the primary sector and the very poor industrial base of rural West Bengal reflects the backwardness of its economy and high incidence of poverty among the rural poor.

In these economic circumstances the IRDP commenced in all the Development Blocks of West Bengal from 1980-81. Three agencies were engaged in the formulation and implementation of IRDP. They are (i) the panchayet system (i,e., 15 Zilla Parishads, 339 Panchayet Samities, 3305 Gram Panchayets), (ii) the banking set up, and (iii) the district level administration, particularly the District Rural Development Agencies (DRDAs) and the West Bengal Scheduled Castes and Scheduled Tribes Development and Finance Corporation (WBSCSTDFC). In the formulation of the said programme, the role of the Panchayet system and the banks were important.

In West Bengal, the panchayets at the vertex play the role of promoter and implementor. Out of the three tiers of the panchayet bodies, the gram panchayet is in direct touch with the beneficiaries. The gram panchayets act at the grass-root level on behalf of the panchayet samities. Having local feel and familiarity, they are in a much better position to help and identify the prospective beneficiaries.

Panchayet samities, in the absence of completion of village survey, organise camp-meetings at the gram panchayet level in collaboration with banks. Panchayet functionaries, block-level officials, bank representatives and applicants for IRDP benefits remain present at the camp-meetings to select the eligible candidates. Bank representatives are to finish up necessary interviews and spot verifications in respect of those assembled applicants on the same day and offer spot decision as to the viability and feasibility of the proposed schemes on the basis of spot findings.

The IRDP Sub-Committee at the panchayet samiti level in its meetings sponsores the proposed scheme and decides the problems that crop up in the formulation and implementation stages at gram panchayet and bank level and monitors the whole programme. It also prepares the Annual Action Plan for the whole panchayet samiti.

One DRDA at the district level prepares the District Plan and takes the lead in drawing up the model schemes suitable to the district. It obtains assistance from technical departments and the commercial banks. It has the responsibility to monitor the progress of implementation and to co-ordinate the activities of the different agencies at the district level. It organises the programmes of training the various functionaries and the candidates for IRDP benefits. Evaluative studies are also undertaken by it to review whether the programme is proceeding on correct lines.

After the discussion of the organisational, institutionrl and administrative set up of IRDP, we may review the performance of West Bengal in the IRDP during the Sixth Plan period. It is evident that the quantitative performance of IRDP has not been upto the mark and below the national average (Table 3).

During the Sixth Plan period (1980-85) West Bengal could achieve 68·73 per cent of the physical target and 46·43 per cent of the financial target in respect of IRDP. Per capita investment achieved was to the tune of 59·57 per cent of the target. Credit-subsidy ratio has been less than desired.

Table 3

ACHIEVEMENTS IN IRDP IN WEST BENGAL, 1980-85

Sl. No.	Items	Targets	Achievements	Percentage of Achievements to Targets
1.	Total Number of beneciaries	10,05,000	6,90,769	68·73
2.	Total Plan Expenditure (Rs. Crores)	100·50	53·55	53·28
3.	Total term Credit (Rs. Crores)	201·00	86·43	43·00
4.	Total Investment (Rs. Crores)	301·50	139·98	46·43
5.	No. of SC/ST beneficiaries	3,01,500	1,10,806	33·77
6.	Per Capita Subsidy (Rs.)	1000	775	77·50
7.	Per Capita Credit (Rs.)	2000	1251	62·55
8.	Per Capita Investment (Rs.)	3000	2026	67·53
9.	Credit Subsidy Ratio	2·00	1·60	80·00

Source : *Rural Development Department, Govt. of West Bengal.*

An analysis has been made by Sau of the various factors that may explain the phenomenon of the number of IRDP cases assisted falling short of the target during the Sixth Plan period.[4] The hypothesis that low banking coverage of the districts of West Bengal is responsible for the shortfall has been tested. It has been observed that there is little or no correlation between number of IRDP cases assisted per block and the avernge population per bank office for the districts and hence the hypothesis has been rejected. Another hypothesis that the low credit-deposit ratio of banks functioning in different districts of West Bengal may account for the shortfall in IRDP performances has been tested. It has been observed that there is a good and significant correlation (being 0·76) between the number of IRDP cases assisted per block and the credit-deposit ratio of banks in the districts and hence the hypothesis has been accepted.

The performance of West Bengal in IRDP during the first two years (1985-87) of the Seventh Five Year Plan has been satisfactory (Table 4).

The achievements of West Bengal in IRDP exceeded the target during the first two years (1985-87) of Seventh Five Year Plan both in

Table 4

PERFORMANCE OF WEST BENGAL IN IRDP, 1985-87

Sl. No.	Item	Year	Targets	Achievements	Percentage of achievements to targets
1.	Number of	1985-86	1,90,000	2,87,052(a)	151·08
	Beneficiaries	1986-87	1,89,500	2,43,921(b)	128·70
2.	No. of SC/ST	1985-86	57,000 (30%)	95,584 (33·3%)	167·69
	Beneficiaries	1986-87	56,850 (30%)	89,459 (36·7%)	157·36
3.	No. of Women	1985-86	57,000 (30%)	30,055 (10·47%)	52·72
	Beneficiaries	1986-87	56,850 (30%)	35,173 (14·42%)	61·87
4.	Total Plan Expenditure (Rs.	1985-86	3,246	3,241	99·85
	lakhs) (Budgetary Release)	1986-87	3,574	3,679	102·94
5.	Total Term	1985-86	6,492	5,532	85·21
	Credit (Rs. lakh)	1986-87	7,148	6,384	89·31
6.	Total Investment (Rs. lakhs)	1985-86	9,738	8,773	90·09
		1986-87	10,772	10,063	93·85
7.	Per Capita	1985-86	1,333	1,129	84·70
	Subsidy (Rs.)	1986-87	1,333	1,508	113·13
8.	Per Capita	1985-86	2,666	1,927	72·28
	Credit (Rs.)	1986-87	2,666	2,617	98·16
9.	Per Capita	1985-86	3,999	3,056	76·42
	Investment (Rs.)	1986-87	3,999	4,125	103·15
10.	Credit Subsidy	1985-86	2·00	1·70	89·00
	Ratio	1986-87	2·00	1·70	89·00

Source : *Government of West Bengal*[22]

Note : (a) Out of this, new beneficiaries are 2,54,311 and old beneficiaries are 32,741.

(b) This comprise 1,72,996 new beneficiaries and 70,925 old beneficiaries.

total number of beneficiaries and in the target of SC/ST beneficiaries. But the achievements have fallen short of the target in respect of women beneficiaries. Though total budgetary release during 1985-87 has exceeded the target, total investment has been less on account of bank credit advanced falling short of the targetted amount. Per capita credit advanced has been less than the target. The credit subsidy ratio has fallen short of the target and that by 11 per cent. It reveals that the banking sector has not adequately come forward to fulfil the financial target though physical target has been over fulfilled. The resulting per capita under-investment is a problem in fulfilling the overall objectives of IRDP, which we shall later discuss elaborately.

IV

Impact of IRDP on Rural Poverty

The impact of the IRDP as a poverty alleviation programme has not been satisfactory. The primary data / information generated by the concurrent evaluation survey[23] of IRDP carried out by reputed research institutions in the country on behalf of the Department of Rural Development of the Government of India during October 1985 — September 1986 reveals that in West Bengal 47·42 per cent of the eligible beneficiaries crossed the poverty line of Rs. 3,500 while the national average was 40·99 per cent (Table 5).

Table 5

PERCENTAGE OF PERSONS CROSSING THE POVERTY LINE OF Rs. 3500.

Sl. No.	States	Percentage of Persons
1.	West Bengal	47·42
2.	Bihar	42·18
3.	Orissa	16·21
4.	Madhya Pradesh	35·15
5.	Karnataka	33·53
6.	Maharastra	40·78
7.	Gujarat	38·67
8.	Rajasthan	46·20
9.	Meghalaya	20·00
10.	All-India	40·99

Source : *Government of India*[24]

Among the factors that may explain this somewhat better impact of IRDP in West Bengal, the most important is the involvement of the local common people in this programme of rural development/poverty alleviation through the panchayets. In West Bengal gram sabhas made the final selection of potential beneficiaries in cent per cent of cases. At the national level, 55 per cent of the beneficiaries were selected in the gram sabha meetings, 40 per cent by officials and the remaining 5 per cent by others including MPs and MLAs (Table 6).

This involvement of the local common people through the panchayets has been responsible for proper selection of schemes for them — the beneficiaries of IRDP.

Table 6

NATURE OF SELECTION OF POTENTIAL BENEFICIARIES

States	Gram Sabha	Officials	Others	Total
1	2	3	4	5
West Bengal	100	0	0	100
Bihar	18	77	5	100
Orissa	85	11	4	100
Madhya Pradesh	10	85	5	100
Karnataka	95	5	0	100
Maharastra	39	52	9	100
Gujarat	96	4	0	100
Rajasthan	79	4	17	100
Meghalaya	75	20	5	100
National average	55	40	5	100

Source : *Kurian*[25]

One of the repeated criticisms of IRDP is that it is nothing but a 'milch animal' and 'sewing machine' programme. The sectoral distribution of assets provided to the beneficiaries as obtained in the sample of the concurrent evaluation studies reveals that in West Bengal 35 per cent of the beneficiaries had assets in the Secondary Sector as against the national average of 10 per cent (Table 7).

Table 7

SECTORAL DISTRIBUTION OF IRDP ASSETS
(Figures in Percentage)

State	Secondary	Primary				Tertiary	Total
		Agriculture	Irrigation	Animal husbandry	Total		
1	2	3	4	5	6	7	8
West Bengal	35	5	6	23	34	31	100
Bihar	11	14	4	31	49	40	100
Orissa	16	8	4	20	32	52	100
Madhya-Pradesh	11	13	3	19	36	54	100
Karnataka	8	19	2	55	76	16	100
Maharastra	4	10	3	52	65	31	100
Gujarat	2	13	3	36	52	46	100
Rajasthan	8	10	1	46	57	35	100
Meghalaya	6	69	5	20	94	0	100
National Average	10	14	4	37	55	35	100

Source : *Kurian*[25]

From the Sector-wise break up of beneficiaries for 1986-87 in West Bengal we observe that 36·65 percent had assets in secondary sector 32·22 per cent in tertiary sector and 31·13 per cent in primary sector.

In West Bengal the panchayats as well as the beneficiaries participate in the implementation stage of the programme and thus much of the public criticisms of IRDP concerning about corruption, malpractices, bribery and other leakages is avoided. In this state as much as 73 per cent of the sample beneficiaries thought that the asset they got was worth the cost as against the national average of 68 percent.

The IRDP concurrent Evaluation Survey also reveals that 86 per cent of the beneficiaries in West Bengal have the asset intact with them two years after the assistance against 71 per cent at the national level.

The success or failure of IRDP assistance is generally shown in term of the absolute incremental income from the asset. From the concurrent Evaluation Studies it is revealed that in West Bengal the percentage share of sample beneficiaries in whose case the asset did not generate any income was 7 against the all-India average of 24 (Table 8).

Table 8

ANNUAL INCOME (IN RUPEES) FROM IRDP ASSETS

(Figures in Percentage)

State	0	1—500	501—1000	1001—2000	Above 2000
1	2	3	4	5	6
West Bengal	7	4	3	16	70
Bihar	24	9	13	28	26
Orissa	28	8	15	34	15
Madhya-Pradesh	20	5	11	29	35
Karnataka	26	13	22	25	14
Maharastra	21	13	21	22	23
Gujarat	2	31	36	8	23
Rajasthan	43	16	14	15	12
Meghalaya	39	50	2	7	2
National Average	24	11	15	24	26

Source : *Kurian*[25]

As shown in the Table, for West Bengal among the states of India the assets generated more than Rs. 2,000 of annual net income in 70 per cent cases (the highest for this state) of sample beneficiaries, against the nationol average of 26 percent.

A more sensitive measure (than the absolute incremental measure) of improvement in the levels of living may be the percentage in the family income. In West Bengal 10 per cent of the sample beneficiaries experienced no increase in family income after the assistance (national average being 16 per cent). Out of the remaining 93 per cent sample beneficiaries who experienced increase in family income during the post-assistance period, 33 per cent had an increase of upto 25 per cent of the pre-assistance income (national average : 22%), 22 per cent had an increase between 51 and 100 per cent (national average : 28%). The remaining 8 per cent sample beneficiaries experienced more than 100 per cent increase in the family income from IRDP assistance (national average being 15 per cent).

So far we have tried to analyse the differential impact of IRDP on the beneficiaries in terms of the commonly used criterion of 'crossing the poverty line' of Rs. 3500. We may now evaluate the effect and impact of this programme on the beneficiaries in terms of the criterion of 'crossing

the poverty line' of Rs. 6400, as fixed in the Seventh Five Year Plan. The percentage of the eligible sample beneficiaries who have crossed the poverty line of Rs. 6,400 is presented in Table 9. Only 2·35 percent of the eligible beneficiaries in West Bengal cro ·sed the proverty line of Rs. 6,400 as against 4·6 per cent at the national level.

Table 9

PERCENTAGE OF PERSONS WITH INITIAL INCOME LESS THAN Rs. 3500 CROSSING THE POVERTY LINE OF Rs. 6,400

Sl. No.	States	Percentage
	1	2
1	West Bengal	2·35
2	Bihar	4·08
3	Orissa	1·19
4	Madhya Pradesh	1·98
5	Karnataka	3·59
6	Maharastra	6·72
7	Rajasthan	7·26
8	Meghalaya	2·22
	National Average	4·60

Source : *Kurian*[25]

We may now analyse the factors that may explain this poor impact of IRDP in crossing the poverty line of Rs. 6,400 and the differential impact of the programme across the states of India. Basically the factors that determine the proportion of beneficiaries who cross the poverty line are : (i) the pre-assistance level of income, (ii) the level of assistance and (iii) the actual incremental capital output ratios (ICORs) of the projects. Average assistance given to beneficiaries in different pre-IRDP-assistance income classes on the basis of the sample is presented for some states in Table 10. It can be seen that in West Bengal average assistance is the lowest (Rs. 1822) for destitutes (Rs. 0—Rs. 2265 income class) and lower than all other states excepting Meghalaya for very very poor beneficiaries' (Rs. 2,265—Rs. 3,500 income class). It is not recognised that the lower the incomes, the higher should be the investment to generate sufficient income to enable the beneficiary to cross the poverty line.

Table 10

AVERAGE ASSISTANCE GIVEN TO BENEFICIARIES IN INCOME CLASSES Rs. 0 — Rs. 3,500

(Unit : Rupees.)

Sl. No.	State	0—2,265	2,265—3500
	1	2	3
1.	West Bengal	1822	2705
2.	Bihar	2570	2950
3.	Orissa	3979	3470
4.	Madhya Pradesh	2650	3288
5.	Karnataka	3173	3376
6.	Maharastra	3091	3635
7.	Rajasthan	3229	3405
8.	Meghalaya	1856	2235
	National Average	2930	3437

Source : *Kurian*[25]

The absolute quantum of the assistance in relation to the incremental income requirement for crossing the poverty line is determined by the ICOR. Assuming an average pre-assistance income of Rs. 2,000 for the beneficiaries from the destitute group, the income gap to be covered to reach the poverty line of Rs. 6,400 is Rs. 4,400. On the basis of the observed ICOR of 2·7 which is being adopted in the Seventh Plan, the average capital requirement is Rs. 11,880 for the destitute beneficiaries to cross the poverty line of Rs. 6400. As against this figure, the average value of asset provided to beneficiaries of this category is Rs. 1822 in West Bengal with a national average of Rs. 2930. Thus, it is quite clear that the assistance under IRDP was far below the requirement to enable the destitute group to cross the poverty line of Rs. 6,400 or of even Rs. 3500.

V

Adequacy of IRDP

The relevant question that may arise is : how far IRDP is adequate to solve the problem of rural poverty. This may be examined from two different stand points :

the outlay on IRDP in relation to the size of rural income, Second, the number of beneficiary families covered under IRDP in relation to the number of families below poverty line (i.e., in relation to the size of rural poverty).

The first measure is to examine the significance of IRDP as a rural development programme, as a programme leading to poverty alleviation and the second one is to examine the adequacy of IRDP as a direct poverty alleviation programme.

Let us take up the first measure. IRDP as an anti-poverty programme is expected to benefit primarily people in the agriculture-forestry-fishery and unorganised sectors[18]. The outlay on IRDP including the bank credit advanced in India during the Sixth Plan period constituted only 1·45 per cent of the NNP of the sectors and that during 1985-86 only 0·97 per cent. For West Bengal the respective figures are 1·63 per cent and 1·39 per cent (Table 11),

Table 11

OUTLAY ON IRDP IN INDIA AND WEST BENGAL IN RELATION TO THEIR NNP AND SDP, 1980-81 to '85-86

(Unit : Million Rupees)

Sl. No.	Items	India		West Bengal	
		1980-81 to '84-85	1985-86	1980-81 to '85 86	1985-86
1	2	3	4	5	6
1.	Plan Outlay	15,000	2,786	536	325
2.	Bank Credit	30,000	5,572	864	649
3.	Total Outlay	45,000	8,358	1,400	974
4.	NNP/SDP in agriculture, forestry, fishery and unregistered manufactures sectors	31,09,450	8,57,340	86,041	70,162
5.	Ratio of outlay on IRDP-cum-bank credit to NNP/SDP in rural sector (3÷4) (percentage)	1·45	0·97	1·63	1·39

Source : (a) *Planning Commission*[26]
(b) *Govt. of West Bengal*[22]

All this indicates that the size of the IRDP outlay is too small in relation to the size of the rural income to achieve economic development or to tackle the problem of rural poverty.

Second, we may try to relate the number of IRDP beneficiaries to the number of rural families below poverty line. As noted earlier, the target group under IRDP includes the poor families consisting of small and marginal farmers, agricultural and non-agricultural labourers, rural artisans and craftsmen. Thus, we may relate the number of IRDP beneficiary families (having land holding upto two hectares) and thus examine the adequacy of this programme.

Table 12

NUMBER OF IRDP BENEFICIARIES IN RELATION TO MARGINAL AND SMALL FARMER FAMILIES IN INDIA AND WEST BENGAL

Sl. No.	Items	India 1980-81 to '84-85	West Bengal 1980-81 to '86-87
1	2	3	4
1.	Marginal Farmers (holding below 1 hectare)	4,55,32,400(a)	40,96,001(b)
2.	Small Farmers (holding 1-2 hectares)	1,47,04,600(a)	11,48,936(b)
3.	Marginal & Small Fermers	6,02,37,000	52,44,937
4.	Number of IRDP beneficiary families	1,65,62,000	11,18,076(c)
5.	Percentage of IRDP beneficiary families to Marginal & small Farmers families being covered per annum	5·50	3·05

Source : 1. *Agricultural census 1976-77*
2. *Govt. of West Bengal*[27]
3. *Planning Commission*[26]
4. *Rural Development Department, Govt. of West Bengal.*

Notes : (a) Figures relate to 1976-77
(b) Figures relate to 1980-81
(c) Excludes old beneficiaries (of the Sixth Plan period) who have been given Second dose of investment during 1985-86 to '86-87.

Average annual rate of coverage of marginal and small farmer families by means of IRDP was 5·5 per cent in India in the Sixth Plan period while that in West Bengal was 3·33 per cent during 1980-87. Small and marginal holdings increase in number over time. Hence, it may not

be possible to cover all marginal and small farmers families by IRDP even in two-decade's time.

The yearly small coverage of poor families by IRDP in relation to the size of rural poverty (i.e, number of poor families) is on account of low percentage of IRDP plan expenditure in relation to total plan outlay (Table 13).

Table 13

OUTLAY IN IRDP IN RELATION TO TOTAL PLAN OUTLAY IN INDIA AND WEST BENGAL, 1980-'81 TO 1989-90.

Sl. No.	Items	India		West Bengal	
		1980-81 to '84-85	1985-86 to '89-90	1980-81 to '84-85	1985-86 to '89-90
1	2	3	4	5	6
1.	Outlay on IRDP	1500	3474	117·25	100·00
2.	Total Plan Outlay	175210	320000	2505·95	4125·00
3.	% of outlay on IRDP to total Plan Outlay	0·86	1·09	4·68	2·42

Source : (i) *Planning Commision*[28]
(ii) *Govt of West Bengal*[22]

In India the percentage of IRDP outlay to total plan outlay during Sixth and Seventh Five Year Plans was as low as 1 percent while for West Bengal it varied between 2 and 5 percent. Thus, though IRDP is the first major development programme[25] which directly addressess itself specifically to the poor families and offers assistance in the form of income earning assets it, with so low percentage of total plan outlay, can not be expected to make much dent on the massive rural poverty.

VI

Summary and Concluding Observations

The problem of rural poverty in West Bengal, as in the whole of India, is old and more acute and pervassive than many other States of India. Programmes of general economic development have failed to mitigate this problem through the percolation of its fruits. Integrated Rural Development Programme as a target-oriented programme which leads to direct attack on rural poverty has been adopted. Though

physical and financial targets of this programme in the Sixth Plan in India have been more than fulfilled, per capita investment has fallen short of the target on account of per capita bank credit being less than the target. In West Bengal both physical and financial achievements under IRDP have fallen short of the targets in the Sixth Plan mainly on account of the low credit-deposit ratio of Commercial banks in this state. Though physical achievement of West Bengal in IRDP in the first two years of the Seventh Plan exceeded the target, both total investment and per capita investment have fallen short of the target on account of inadequate bank finance. As per concurrent evaluation of IRDP by Govt. of India, Ministry of Agriculture, though the overall impact of IRDP as a poverty alleviation programme has not been satisfactory in India its impact on the extent of rural poverty (estimated on the poverty line of Rs. 3500) in West Bengal has been greater than in many other states and in the whole of India. The major factor explaining this has been the involvement of the local common people in West Bengal through the Panchayats at the stages of both selection of beneficiaries and projects and implementation of the programme. Other factors in favour of West Bengal are that in this State (than many other States of India) higher percentage of the beneficiaries get the assets worth the cost and had the assets in tact with them two years after the assistance, the highest percentage of assets belonged to the secondary sector and the assets generated the highest annual net income in the hignest percent cases of sample beneficiaries. However, in West Bengal as in the whole of India, very low percent of the eligible beneficiaries crossed the poverty line of Rs. 6,400 and in fact the impact of IRDP here has been lower than in many other states and in the whole of India. The major factors explaining this phenomenon have been the lower volume of IRDP assistance in West Bengal (on account of lower volume of bank credit) for the destitutes and very very poor beneficiaries than in many other states and in the whole of India. Given the incremental capital output ratio, the assistance under IRDP in West Bengal and in the whole of India was far below the requirement to enable destitute group to cross the poverty line of Rs. 6400 or of even Rs. 3500.

While examining the adequacy of Integrated Rural Development Programme we observe that both in India as a whole and in West Bengal the size of the IRDP outlay in the Sixth Plan and in the first year of the Seventh Plan has been small in relation to the size of the rural income to achieve rural development or to make much dent on rural poverty, Besides, the percentage of IRDP beneficiary families being covered per annum to total families below poverty line (marginal and small farmer families) is too low both in West Bengal and in the whole of India to make an immediate great impact on rural poverty. The yearly small coverage

of poor families by IRDP in relation to the size of rural poverty (i.e., number of poor families) in this state and in the whole of the country is on account of their low percentage of IRDP plan outlay in relation to total plan outlay. Hence, IRDP on such a scale can not be expected to make much dent on the problem of massive rural poverty in West Bengal and in the whole of India.

Hence, while there is the need for increasing the allocations on the Integrated Rural Development Programme, commercial banks are also required to improve their credit-deposit ratios for the poorer states. Panchayets, cooperatives and local bodies should also be revitalised and strengthened so that the elected representatives can participate in the mammoth dimensions of the programme. Much more emphasis should be placed on people's involvement in the planning, implementation and monitoring of IRDP by involving elected bodies.

IRDP is only one of a package of anti-poverty and minimum needs programmes. Its success critically depends on how well integrated it is with the various other programmes like rural employment programmes (i.e., National Rural Employment Programme and Rural Landless Employment Guarantee Programme) and minimum needs programmes like general education, rural roads, rural health, nutrition, rural water supply, rural housing and sanitation.

Also there is the need for improving the quality and efficiency of the IRDP by means of significant strengthening of the planning, implementing and monitoring machinery at the district level and below. We have to make proper administrative arrangements for rural development and poverty alleviation programmes.

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MEASUREMENT OF ECONOMIC SURPLUS AND POSSIBILITY OF UTILISING IT FOR ECONOMIC DEVELOPMENT—

A CASE STUDY OF THE DISTRICT OF MIDNAPORE IN WEST BENGAL

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Attempts are made in this paper (i) to measure the extent of economic surplus of the rich households and (ii) to check the possibility of using this surplus for generating more income by means of transfering income from the rich to the poor in a predominantly agricultural district in West Bengal. The paper establishes on the basis of statistical and economic analysis of relevant data that there is ample scope for this in the district under study.

It is the size and the mode of utilisation of savings or accumulation in a country that determine the rate and direction of economic development of that country. The higher the volume of savings and higher the degree of utilisation of these savings in the development of productive forces, higher will be the rate of economic development. Actual saving that is defined as the difference between the society's actual output and actual consumption can be increased by increasing output and/or reducing actual consumption. Output in a country can be increased by making productive use of the unproductive and unemployed workers and other existing productive apparatus and by evolving useful organisation of these productive apparatus that include the development of appropriate technology. Actual consumption can be reduced by curtailing the non-essential consumption. It is not so easy to define non-essential consumption. What is non-essential from the view point of a socialist society may not be so in a capitalist society. The 'bourgeoise economics', it is alleged, does not castigate anything as unproductive or non-essential since it believes that those which are called unproductive or non-essential contribute to the development of productive forces, and hence to the economic development of a country, in an indirect way. In 'bourgeoise economics' non-essential consumption is justified as providing indispensable incentives, unproductive labour is glorified as indirectly contributing to production.[1] But in a country where a large part of the population lies

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below the poverty line, such a justification does not carry much conviction. In such a country non-essential consumption is looked upon as the squandering of resources that could have been used for further useful production possibilities. Therefore, it pays the country to curtail non-essential consumption and divert the savings generated thereby to the production of those commodities that may be consumed by the people lying below the poverty line. Here, however, one question comes up : what is non-essential consumption ? We define essential consumption as that which is required to maintain the standard of living on the poverty line. In other words, essential consumption is defined as that which can be circumscribed in terms of the minimum calories required to maintain a certain standard of health and productive power, in terms of minimum clothing, dwelling space and the like[2]. Total income minus essential consumption and taxes to be paid to the Government is here defined as non-essential consumption. This non-essential consumption constitutes a part of potential economic surplus. The remaining part of potential economic surplus is contributed by the difference between the actual current output and the output that could be produced in a given natural and technological environment with the help of employable productive resources. In a country with unemployed factors of production, such as land, labour, natural resources and hence excess capacity, the difference between the actual current output and the output that could be produced might be significant. However, the difficulties involved in the measurement of the excess capacity are many[3] but it is not that difficult to measure that part of potential economic surplus which is accounted for by the non-essential consumption. If we can measure the non-essential consumption and the pattern of this consumption, we can get a rough estimate of the magnitude of surplus and the prospect of utilising this surplus in more productive activities and accelerating economic development.

The problem of reducing the excess consumption, if there be any, can be tackled in several ways. It can be reduced by a direct attack on excess consumption, policies followed in Soviet Russia during the period of war communism or the policies of war time rationing coupled with strong feeling for others. Another method of reducing excess consumption might be the redistribution of income from the rich to the poor provided that non-essential consumption is a function of income. But any attempt to reduce non-essential consumption through the redistribution of income will also reduce savings. If both the saving function and the consumption function are linear and marginal propensity to save and marginal propensity to consume non-essential items are equal to each other, reduction in income will reduce the amount of saving by the amount of fall in excess consumption, given that essential consumption

remains fixed, at a level that will ensure a certain acceptable standard of living. In this case, redistribution of income may not be an effective method for accelerating economic development, because there is a possibility that the positive effect on employment and income of the reduction in the non-essential consumption will be nullified by the negative effect of reduction in saving. But if the marginal propensity to consume non-essential items is higher than the marginal propensity to save and essential consumption remains fixed at a particular level, say at the level of poverty line, the redistribution of income from the rich to the poor might reduce the non-essential consumption more than savings. This excess amount that can be mobilised through taxes or by some other means may be used in a more productive way. In this situation, there is a possibility that the positive effect will outweigh the negative effect. However, in both the cases the utilisation pattern of savings and excess consumption will ultimately determine the nature of net effect of the policy of income redistribution. For example, if it is found that the actual saving is utilised in non-productive activities, the fall in actual savings may be a desired one from the economy's point of view. In contrast to this method of controlling non-essential consumption the mersure of controlling non-essential consumption by direct means such as rationing and high prices will be more effective in augmenting potential saving of the rich households. However, we assume that it is almost impossible to implement this measure in normal situations. In this paper we make an attempt to explore the possibility of implementing the indirect measure of income redistribution to augment potential savings and their use in productive activities in an underdeveloped agricultural economy.

The main objectives of our study are two-fold :

(i) To measure the marginal propensity to consume non-essential items MPC (NE) and marginal propensity to save, MPS, and

(ii) To check if income redistribution through taxation on income (here agricultural income mainly) is an effective measure to augment potential saving and accelerate economic development. In this connection the utilisation pattern of savings will be given due attention.

For empirical examination we have the following important operational definitinns :

Income : The income of a household includes the income of all members of the households—earned individually or jointly during the period under consideration, i.e. 1981-82.

Essential Consumption : It has been defined as consumption on poverty line. This has been done in the context of abysmal poverty and

hunger in the country and the crucial need for providing at least poverty level consumption to all people. Poverty level, as defined by the Planning Commission, Government of India, has been used to distinguish betwen essential and non-essential consumption in this paper. The consumption of different items at this level is then taken as the poverty level consumption. National Sample Survey collects data on consumption expenditure. The latest available data on consumption expenditure is for the year 1973-74. It has been estimated that food consumption in rural West Bengal in the expenditure group of Rs. 55—75 per capita per month in 1973-74 had been around 2400 calorie—the dividing line fixed by the Planning Commission for determining rural poverty. On the basis of this, the mix of the volumes/amounts of consumption of different items, recognised by the National Sample Survey, at the expenditure level of Rs. 55-75 at 1973-74 prices, has been taken as the basket of essential consumption that will ensure the desired standard of living at the poverty level[4]. The proper modification has, however, been made for the changes in the prices of different items over the period of 1973-74 to 1981-82.

Excess Consumption : The amounts consumed in excess of the consumption level of different items at the poverty level has been considered as excess consumption, evidently in the present context of the abysmal poverty and avowed principle of economic growth with justice—justice particularly for those who lie below the poverty line.

Data for the present study have been collected through field survey of 110 rich households in the ***rural areas of Midnapore district*** in West Bengal during the period 1981-82. The selection of sample households is accomplished in four stages. The first stage involves the selection of district. The second and third stage involve the selection of Panchayet Samities (Development Blocks) from the selected district and the selection of Gram Panchayet (cluster of villages) from the selected Panchayet Samities. The last stage involves the selection of households from the population of rich households of the selected Gram Panchayets. (It is assumed that the rich households have higher savings propensity).

The selection of the district is guided by the consideration of the concentration of land holding among the big land holders in the district. In Midnapore the concentration of land holding among the big landowners is found to be the highest of all the districts in West Bengal where agriculture is the main source of income of the people. Gini co-efficient for the district is ·68 compared to ·57 for the state as a whole. Two criteria—concentration of land holding and the possibility of co-operation from the Samities in the collection of data, were adopted to select the Panchayet Samities. The four samities that have been selected for our

study are Jhargram, Mohanpur, Ghatal and Contai-III with Gini coefficients of '57, '66 and '90 respectively. The same criterion is applied to the selection of Gram Panchayets and villages for our study. Gram Panchayets selected are four in number and they are Marishla, Sapdhara, 7/1, Dewanchalk and Mohanpur GP No.—3, 120 rich households are selected at random from amongst the rich households in these villages. Rich households, as defined in our study, include those who possess and cultivate five hectares or more of cultivable land and also those who own 2 hectares of cultivable land and earn income from various sources other than land so that their total income at least equal to the income from five hectares of cultivable land.

Income, consumption and saving of the sample households are presented in Table 1, Table 2 and Table 3 respectively.

Table 1 :

PER CAPITA PER YEAR INCOME OF THE SAMPLE RICH HOUSEHOLDS, 1981-82

(Unit : Rupees)

Sources of Income	Amounts of Income
Agriculture	1865 (60·97)
Service	687 (22·47)
Business	507 (16·57)
Total	3059 (100·00)

Table 2 :

PER CAPITA PER YEAR CONSUMPTIONS OF THE SAMPLE HOUSEHOLDS, 1981-82

(Unit : Rupees)

Types of Consumption	Amounts of consumption
Actual Consumption	2176
Essential Consumption or Poverty level Consumption	962
Excess Consumption	1215

Table 3

PER CAPITA PER YEAR SAVING OF THE SAMPLE HOUSEHOLDS

(in Rs.)

Types of Saving	Amounts of Saving
Actual Saving	883
Potential Saving	2098

Table 3 reveals that the volume of actual saving is much below the volume of potential saving and this gap is accounted for by the excess consumption of these households. Table 2 reveals that for the sample rich households 56 per cent of the actual consumption expenditure is excess consumption. Table 4 indicates the areas (group of items) where excess consumption is taking place. The excess consumption of food items accounts for 50 per cent of the total.

Table 4

NATURE OF PER CAPITA PER YEAR EXCESS CONSUMPTION OF THE SAMPLE HOUSEHOLDS

(in Rs.)

Group of Items	Amounts
Food	611
Clothing	177
Miscellaneous Goods	427
Total Excess Consumption	1215

Excess consumption in the miscellaneous goods that include items like toilet articles, cosmetics, amusements, ceremonies, conveyances, medicine, education etc. account for nearly 35 per cent. The excess consumption on clothing accounts for nearly 15 per cent of the total excess consumption. The commodity-wise break-up of the consumption as shown in Table 5 makes it clear that it is almost impossible to reduce the consumption of these items by any means other than effecting rationing of these items and developing strong fellow feeling for the neighbours as is done at war time or by effecting radical change in the socio-economic set-up as was done in Soviet Russia at the time of war communism.

Table 5

COMMODITY-WISE BREAK-UP OF PER CAPITA PER YEAR EXCESS FOOD CONSUMPTION

(in Rs.)

Food Items	Amounts
Cereals	109
Pulses	7
Milk	53
Edible Oils	28
Meat, Fish, Egg	90
Vegetables	97
Sugar & Gur	20
Spices	55
Beverages	6
Fuel	103
Miscellaneous Food Items	36
Total	611

The very nature of these items as revealed in Table 4 and Table 5. indicates the presence of demonstration effect (inter-rural and urban-rural) in the consumption pattern of rural rich households. The demonstration effect provides a stronger incentive to consume than to save. It also distorts the industrial structure by pushing up the demand for non-essential goods which in its usual process channelise a part of actual savings and other resources towards the production of lucrative non-essential goods.

Against this background, it can be argued that the excess consumption of miscellaneous goods and clothings do contribute that part of potential saving of the rich households which can in practice be turned into actual saving.

In the following paragraphs we propose (i) to explore the possibilities of reducing the excess consumption of these households through indirect methods of income redistribution, (ii) to measure the effect of this redistribution on actual savings and (iii) to check if the net effect of income redistribution is positive in terms of its contribution to better utilisation of productive resources or not. To accomplish this a linear non-essential consumption—income function and a linear saving—income function are assumed and marginal propensities to consume non-essential items and the marginal propensity to save are estimated and they are compared to measure the net effect of income distribution through consumption and saving. The pattern of actual saving is also studied for

the same purpose. In each of these relations wealth is included as an explanatory variable, because it is assumed that the volume of wealth in possession of a household determines the rates of savings and consumption. The non-essential consumption—income relation is assumed to be :

$$C_{(NE)} = b_0 + b_1 y + b_2 w + u$$

Where $C_{(NE)}$ is the non-essential excess consumption, y is the income, w is wealth and u is the disturbance term. Estimate of the above equation by applying least square technique to the data set pertaining to our sample households yields the following result :

$$C_{(NE)} = 20.0 + 0.3182\ y + 0.0197\ w$$
$$(0.56) \quad (8.4) \quad (3.7)$$
$$n = 110, \quad R^2 = 0.57, \quad F = 70.41$$

(Values in the parentheses are t values)

The estimated values of the parameters, b_1 and b_2 are found to be statistically significant at 1 per cent probability level. b_0 is not statistically significantly different from zero, implying thereby that when both income and wealth are zero, non-essential consumption is almost nil. The estimated values of b_1 and b_2 signify that an increase in income of Rs. 100 leads to increase in excess consumption by Rs. 32, while an increase in wealth of Rs. 100 leads to an increase in excess consumption by Rs. 2. Thus, the redistribution of income may be used as a policy variable to effect substantial reduction in the consumption of non-essential consumption goods and the fund thus available to the Government in the form of taxes may be used in the more productive activities. But it is very much likely that reduction in the consumption of non-essential consumption will be accompanied by the fall in the actual savings of the households. Now, the question that needs to be answered is : is the fall in saving equal to or more than the fall in the consumption in non-essential items. The answer to this problem lies in measuring the magnitude of the marginal propensity to save and in comparing it with the marginal propensity to consume non-essential items. The linear saving-income function considered in our study is :

$$S = a + b_1 y + b_2 w + u$$

The estimated savings function obtained by applying the OLS method to the data set for our sample households is :

$$S = -960 + .6819\ y - 0.02\ w$$
$$(10.09) \quad (-5.44)$$
$$R^2 = 0.62, \quad F = 88.21, \quad n = 110$$

(The figures in parentheses are t values)

Both the values are significant at 1 per cent probability level.

The necessary corrections for the presence of hetero-scedasticity have been made in both the consumption function and the saving function. From the above estimated saving-income function we see that the marginal propensity to save is 0.68 which implies that a fall in income of Rs. 100.00 will lead to a fall of Rs. 68.00 in saving.

Thus, considering the two functions—consumption and saving, together, we observe that a fall in income by Rs. 100.00 causes the savings of the household to fall by Rs. 68.00 and the non-essential consumption by Rs. 32.00 only. The income elasticity of consumption is much lower than the income elasticity of saving. Rs. 32.00 per one hundred rupees of income that would have been spent on non-essential consumption items can be utilised by the Government in more productive activities. But at the same time a fall of Rs. 68.00 in savings might not be available any more for productive purposes. Now the question is : how much of this saving of Rs. 68.00 is really used in productive activities by the households ? To answer this question we would like to study and analyse the savings pattern of the sample households in our study and this study will help us to assess the net effect of income redistribution from the rich to the poor on the productive investment.

Households' investments have been classified into the following five broad categories : (1) investment in agriculture, (2) investment in trade and industry, (3) investment in consumer durables etc. (consumption investment), (4) investment in financial assets including savings in the form of cash in the banks and/or other financial institutions, (5) investment on human resources in terms of furthering education and quality of life, Investment pattern of the sample households as revealed by Table 6 shows that the rich households in rural areas are investing mainly in activities other than agriculture.

Table 6

PATTERN OF PER CAPITA PER YEAR INVESTMENT OF THE SAMPLE HOUSEHOLDS, 1981-82

Types of Investment	Amount of investment (in Rs.)	
Agricultural	200	(11.70)
Trade & Industry	154	(9.00)
Financial	242	(14.15)
Consumer Durables	928	(58.01)
Education	122	(7.14)
Total	1710	(100.00)

It is seen that the 'Consumption investment' which includes capital expenditure on house construction and purchase of gold and silver ornaments and consumer durables accounts for as high as 58 per cent of the total investment expenditure. On the other side, agricultural investment which includes expenditure on land improvements, farm equipments, irrigation equipments and livestock accounts for as low as 12 per cent of the total investment expenditure. Financial investment which includes small savings in banks, co-operatives, post offices as well as contractual savings like provident fund and life insurance, accounts for near about 14 per cen of the total investment. Non-agricultural investment which includes investment on trade, small & cottage industries accounts for 9 per cent of the total investment. Another significant avennue where households are investing is education—it accounts for 7 per cent of the total investment expenditure.

Thus, the present study reveals that given the pattern of consumption and utilisation of savings among the rural rich households as revealed in our study, the redistribution of income, that may be effected through the imposition of agricultural income tax (agricultural income accounts for as much as 61 per cent of the total income of the rural rich households in our study), will reduce the excess consumption by 32 per cent and will make a substantial portion of saving up to the maximum ot 58% available to the Government for investment in more productive activities the benefits of which may accrue to those who lie below the poverty line which might been otherwise frittered away in ungainful investments by these households. (The standard deduction from the gross agricultural income of these households must be at least equal to the amount required to meet the essential consumption.) It may serve the twin purposes of accelerating agricultural development and reducing economic inequality in the rural areas.

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INCIDENCE OF HUMAN BONDAGE IN WEST BENGAL

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In this paper the authors study a peculiar system of labour relations fonnd in certain parts of Midnapur district in West Bengal. The study reveals that the features of this system, popularly known in the rural areas as Bhatua system, are not at all different from the features of human bondage in which the labourers work hard day and night for their masters just in exchange for minimum food and clothings without any protests. In this paper the authors make a detailed economic analysis of the system.

I

Introduction

A peculiar system of labour relations, known as Bhatua, is prevalent in Midnapur District, West Bengal. Its concentration is witnessed not only in Binpur, Gopiballavpur and Jhargram blocks but also in, one of the most commercialised blocks, Keshiari. As the name indicates, under this system a labourer renders labour throughout the year to the landlord in lieu of just a square meal. The study on "Agricultural Servitude in Bengal Presidency around 1800" (Dhar, 1963) reveals that in Midnapur there were a certain type of labourers who pledged their services for a specified period in exchange of food and clothing. The Bhatua system of labour employment as it is found to-day in certain parts of the district of Midnapur has many of the features that can be well compared with the features of human bondage highlighted earlier in Dhar.

The main objective of the present research is to find out the salient features of the Bhatua system and to establish that this system is not at all different from the system of human bondage where lobourers work for their masters day and night in exchange for minimum food and clothings.

The households of 26 villages stretching over the four Community Development Blocks mentioned earlier are enlisted and the Bhatua employee households are classified into three economic catagories, viz., landless labourers, marginal farmers and small farmers, basing upon the size of the farm. The number of the villages are fixed so as to interview a minimum of 25 households from each block for 25 percent sampling of each economic category. The total sample figure is settled at 103 Bhatua employee households.

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These households are interviewed for the year 1987-88 through pretested schedules. In all 131 members of these 103 households are engaged in Bhatua emplopment.

II

The Structure of the Sample Bhatua Employees

It is evident from the Table 1 that both the number of households and the number of Bhatua per family are the highest under the marginal farmer category. One reason for this might be that some progressive legislations by the Governments at the apex provided most of the labour families with a nominal area of land bringing them under the category of "households with less than 2·5 acres of land". Another reason why the number of Bhatua is the higher under marginal farmer category is psychological in nature. Landless labour finds himself more content with earnings sufficient for their survival and he seldom works to earn more than this minimum. The marginal farmer, it has been observed, having an access to a certain amount of assets involves himself in asset development activities even through most humiliating means of earning. Small farmer having achieved a comparatively high level of asset possession tries to avoid humiliating means of earnings for further asset development.

The most vulnarable among these labourers are scheduled castes (henceforth SCs) Bhatuas. Though majority of SC Bhatuas are marginal farmers, a significantly high percentage of the total landless labourers are also SC Bhatuas (Table 2). Table 2 further shows that the percentage of other caste

Table 1

STRUCTURE OF THE SAMPLE BHATUA EMPLOYEES.

Economic Category	Number of households	Number of employees	Bhatua per household
Land less labourers	25 (24·277)	30 (22·901)	1·200
Marginal farmers	69 (66·991)	90 (68·703)	1·305
Small farmers	9 (8·732)	11 (8·396)	1·223
Total	103 (100·00)	131 (100·00)	1·272

Notes : Figures in parentheses are percentages to the totals at last row.

Table 2

POSSESSION OF LAND BY EMPLOYEES OF VARIOUS ECONOMIC STATUS (NO. OF EMPLOYEES)

Caste / Economic status	Scheduled Castes	Scheduled Tribes	Other Castes	Total
Landless labourers	(46·667) 14 (46·667)*	(23·334) 7 (20·000)*	(30·000) 9 (13·637)*	(100·00) 30 (22·901)*
Marginal farmers	(17·778) 16 (53·334)*	(28·889) 26 (74·286)*	(53·334) 48 (72·728)*	(100·00) 90 (68·703)*
Small farmers		(18·182) 2 (5·715)*	(81·182) 9 (13·637)*	(100·00) 11 (8·397)*
Total	(22·901) 30 (100·00)*	(26·718) 35 (100·00)*	(50·382) 66 (100·00)*	(100·00) 131 (100·00)*

Notes : (i) Figures in parentheses are percentages to the totals in the last column.
(ii) Figures in parentheses with asterisks are percentages to the totals in the last row.

Bhatuas increases as the economic status increaseswhereas the percentage of scheduled castes Bhatuas gradually decreases. However, a significant majority (about 74 per cent) of scheduled tribe Bhatuas are ,marginal farmers.

Further, though the percentage of Bhatuas below 15 years of age is only about 21, their share with respect to economic status is increasing as the area of land in possession is decreasing (Table 3). This explains that the households with better sources of earnings are not engaging their members below 15 years of age for Bhatua employment.

The rate of illiteracy is significantly high at about 85 per cent. Of the 15 per cent literate Bhatuas only 5 per cent are landless labourers (Table 4). With an increase in economic status the percentage of literate Bhatus is also increasing.

III

Results and Discussions

1. Bhatua is a system of annual contract. Still it is not a system of contract labour because the contract is time bound and not work bound. About 67 per cent of Bhatuas has to do a wide range of activities, namely agricultural work, cattle rearing and various domestic works (Table 5).

About 21 per cent perform any two of the above three categories of work. The nature and the varieties of work performed by a Bhatua act as one of the determinants of annual wages, though not to a significant extent. More than 50 per cent of Bhatuas performing any single category of work are receiving below 500 rupees as wage per annum. With respect to other works such as trade, machine driving etc. the bargaining power is more, wage being never less than 1000 rupees.

Table 3

AGE COMPOSITION OF BHATUAS WITH RESPECT TO THEIR ECONOMIC STATUS

(Unit : No of Bhatuas)

Age group (yrs) Economic Status	1—15	16—60	Total
Landless labourers	(40·00) 12 (42·858)*	(60·00) 18 (17·474)*	(100·00) 30 (22·901)*
Marginal farmers	(17·778) 16 (57.143)*	(82·223) 74 (71·845)*	(100·00) 90 (68·708)*
Small farmers	—	(100·00) 11 (10·680)*	(100·00) 11 (8·397)*
Total	(21·374) 28 (100·00)*	(78·626) 103 (100·00)*	(100·00) 131 (100·00)*

Notes : (i) Figures in parentheses are percentages to the totals at last column.
(ii) Figures in parentheses with asterisks are percentages to the totals at last row.

However, it is observed in Table 6 that the economic status of the Bhatua rather than work burden is more effective in determining annual wages. The bargaining power of landless labourers weakens *sharply* as the annual wage moves above Rs. 1001, whereas that of marginal farmers weakens slowly. In case of small farmers it starts from Rs. 500-1000 group only. Further, the share of landless labourers in different wage groups shows a declining trend.

Table 4 :

LITERACY LEVEL OF BHATUA WITH RESPECT TO THEIR ECONOMIC STATUS

(Unit : No of Bhatuas)

Level of literacy / Economic status	Illiterate	Literate (below matric)	Total
Landless labourers	(96·667) 29 (26·127)*	(3·334) 1 (5·00)*	(100·00) 30 (22·901)*
Marginal farmers	(86·667) 78 (70·271)*	(13·334) 12 (60·00)*	(100·00) 90 (68·703)*
Small farmers	(36·364) 4 (3·604)*	(63·637) 7 (35·00)*	(100·00) 11 (8·397)*
Total	(84·733) 111 (100·00)*	(15·268) 20 (100·00)*	(100·00) 131 (100·00)*

Notes : (i) Figure in parentheses are percentages to totals at last column.
(ii) Figure in parcentheses with asterisk are percentages to to'a's at last row.

Table 5

WORK DISTRIBUTION OF BHATUAS WITH RESPECT TO THEIR WAGE STRUCTURE

Work category / Wage group (Rs.)	Agricultural work	Cattle rearing (A.W.)	Domestic work (C.R.)	A.W. + C.R.	A.W. + D.W.	C.R. + D.W.	A.W. + C.R.	Others (Trade etc.)	Total
Nil	—	(100.00) 2 (1.527)*	—	—	—	—	—	—	(100.00) 2 (1.527)*
1-500	(4.546) 1 (50.00)*	(18.182) 4 (50.00)*	(4.546) 1 (50.00)*	(4.546) 1 (14.286)*	—	(50.00) 11 (61.112)*	(18.182) 4 (4.556)*	—	(100.00) 22 (16.794)*
501-1000	—	(3.077) 2 (25.00)*	—	(3.077) 2 (28.572)*	(1.539) 1 (50.00)*	(10.770) 7 (38.889)*	(81,539) 53 (60.228)*	—	(100.00) 65 (41.619)*
1001-1500	—	—	—	—	(4.546) 1 (50.00)*	—	(81.819) 18 (20.455)*	(13.637) 3 (75.00)*	(100.00) 22 (16.794)*
1501-2000	(6.250) 1 (50.00)*			(25.00) 4 (57.143)*			(68.750) 11 (12.50)*		(100.00) 16 (12.214)*
2001-2500	—	—	(25.00) 1 (50.00)*				(50 00) 2 (2.273)*	(25.00) 1 (25.00)*	(100.00) 4 (3.054)*
Total	(1.527) 2 (100.00)*	(6.107) 8 (100.00)*	(1.527) 2 (100.00)*	(5.344) 7 (100.00)*	(1.527) 3 (100.00)*	(13.741) 18 (100.00)*	(67.176) 88 (100.00)*	(3.054) 4 (100.00)*	(100.00) 131 (100.00)*

Notes : (i) Figures in parentheses are percentages to totals at last column. (ii) Figures in parentheses with asterisk are percentages to totals at last row.

Table 6

WAGE STRUCTURE OF BHATUAS WITH RESPECT TO THEIR ECONOMIC STATUS

Unit : No. of Bhatuas

Economics status / Wage group (Rs.)	Landless labours	Marginal farmers	Small farmers	Total
Nil	(50.00) 1 (3.334)*	(50.00) 1 (1.112)*	—	(100.00) 2 (1.527)*
1-500	(40.909) 9 (30.000)*	(59.091) 13 (14.445)*		(100.00) 22 (16.794)*
501-1000	(27.693) 18 (60.000)*	(58.462) 38 (42.223)*	(13.847) 9 (81.819)*	(100.00) 65 (49.619)*
1001-1500	(4.546) 1 (3.334)*	(90.909) 20 (22.223)*	(4.546) 1 (9.091)*	(100.00) 22 (16.794)*
1501-2000	(6.250) 1 (3.334)*	(87.500) 14 (15.556)*	(6.250) 1 (9.091)*	(100.00) 16 (12.214)*
2001-2500	—	(100.00) 4 (4.445)*	—	(100.00) 4 (3.054)*
Total	(22.901) 30 (100.00)*	(68.703) 90 (100.00)*	(8,397) 11 (100.00)*	(100.00) 131 (100.00)*

Notes : (i) Figures in parentheses are percentages to totals at last column.
(ii) Figures in parentheses with asterisk are percentages to totals at last row.

From its starting point, "nil" wage group whereas the share of marginal farmers category shows and increasing tendency upto Rs. 1001-1500 wage group.

2. Bhatua is a form of human bondage since it is both unfree and involuntary labour. It is unfree because the labourer is not allowed to render labour eithor for his personal needs or to others in the village during the contract period. It is involuntary because the labourer is not allowed to change his employer within the contract period even if he wishes so and cash repayment of loan taken, if any, is not allowed. Further, the labourer seldom agitates against the inhuman conditions just because he signed the contract with his full consent. Still the practice of Bhatua continues in this area. About 33 percent of Bhatuas has entered the contract recently (Table 7). However, the percentage of new entry is lessenning with the households belonging to higher level economic strata.

About 80 per cent of Bhatuas who are engaged in the same employment even prior to the present agreement are the landed Bhatuas. A significant proportion of landed Bhatuas are, however, working with the same employer for not more than 2 years (Table 8). The share of Bhatuas working for only one year with present employer is increasing as the economic status increases. This explains a higher bargaining power of landed Bhatuas.

Table 7

NUMBER OF NEW ENTRY INTO THE SYSTEM WITH RESPECT TO THEIR ECONOMIC STATUS

Whether employed as Bhatua earlier Economic status	Yes	No	Total
Landless	(60·00) 18 (20·455)*	(40·00) 12 (27·906)*	(100·00) 30 (22·901)*
Marginal	(67·778) 61 (69·319)*	(32·228) 29 (67·442)*	(100·00) 90 (68·703)*
Small	(81·819) 9 (10·228)*	(18·182) 2 (4·652)*	(100·00) 11 (8·397)*
Total	(67.176) 88 (100.00)*	(32.825) 43 (100.00)*	(100.00) 131 (100.00)*

Notes : (i) Figures in parentheses are percentages to the totals at last column,
(ii) Figures in parentheses with asterisk are percentages to totals at last row.

Further, the high rate of landed Bhatuas engaged as Bhatuas prior to the present agreement doesn't mean that the period of Bhatua attachment is more with these households. Table 9 shows as much as about 45 percent of small farmer category are in Bhatua attachment for not more than 10 years, whereas this percentage is less with marginal farmer category and still less with landless labourers category. This also explains that Bhatua employment is not a source for asset development but a compensatory source for deficit economy.

Table 8

THE PERIOD OF CONTINUOUS SERVICE OF BHATUAS AT THE PERCENT EMPLOYER HOUSEHOLDS

(Unit : No. of Bhatuas)

Period / Economic status	1 year	2 years	3-8 years	Above 8 years	Total
Landless	(40.00) 12 (20.000)*	(26.667) 8 (30.770)*	(30.00) 9 (23.685)*	(3.334) 1 (14.286)*	(100.00) 30 (22.901)*
Marginal	(46.667) 42 (70.00)*	(17.778) 16 (61.539)*	(28.889) 26 (68.421)*	(6.667) 6 (85.715)*	(100.00) 90 (68.703)*
Small	(54.546) 6 (10.00)*	(18.182) 2 (7.693)*	(27.273) 3 (7.895)*	—	(100.00) 11 (8.397)*
Total	(45.802) 60 (100.00)*	(19.848) 26 (100.00)*	(29.008) 38 (100.00)*	(5.344) 7 (100.00)*	(100.00) 131 (100.00)*

Notes : (i) Figures in parentheses are percentages to totals at last column.
(ii) Figures in parentheses with asterisks are percentages to totals at last row.

However, a probable reason for more than 50 per cent households being in Bhatua attachment for more than 30 years and for a significant percentage of new entry to the system is lack of employment elsewhere.

Table 9

PERIOD OF BHATUA ATTACHMENT WITH RESPECT TO THEIR ECONOMIC CATEGORIES

(Unit : No. of Bhataus)

Period (years) / Economic Category	1—10	11—20	21—30	31—40	41—50	51—60	Not known	Total (economic category)
Landless	(13.334) 4 (14.286)*	—	(16.667) 5 (27.778)*	(46·667) 14 (37.838)*	—	(16.667) 5 (14.706)*	(6.667) 2 (22.223)*	(100.00) 30 (22.901)*
Marginal	(21.112) 19 (67.858)*	(4.445) 4 (100.00)*	(13.334) 12 (66.667)*	(24.445) 22 (59.460)*	(1.112) 1 (100.00)*	(30.00) 27 (79.412)*	(5.556) 5 (55.556)*	(100,00) 90 (68.703)*
Small	(45.455) 5 (17.858)*	—	(9.091) 1 (5.556)*	(9.091) 1 (2.703)*	—	(18.182) 2 (5.883)*	(18.182) 2 (22.223)*	(100.00) 11 (8.397)*
Total (period)	(21.374) 28 (100.00)*	(3.054) 4 (100.00)*	(13.741) 18 (100.00)*	(28.245) 37 (100.00)*	(0.764) 1 (100.00)*	(25.955) 34 (100.00)*	(6,871) 9 (100.00)*	(100.00) 131 (100.00)*

Notes : (i) Figures in parentheses are percentages to the totals at last column.

(ii) Figures in parentheses with asterisks are percentages to the totals at last row.

3. The wages received by Bhatuas confirm the bondage nature of Bhatua system. They receive an extremely low level of wage rate. Average man-unit being 636.661 man-days for these employees, the average wage per day is Rs. 4.92 of which Rs. 3.50 is accounted for the value of food and clothing they receive (Table 10).

A man-day in Bhatua employment being normally between 12 to 16 hours the man-unit calculated at 8 hours a day varies between 365 to 730 days (Table 11). The average man-unit of those Bhatuas, who perform any single category of work only, is less than the average man-unit of all tht 131 Bhatuas. Similarly the average man-unit of Bhatuas in higher wage groups shows a declining tendency with respect to overall average man-unit. This explains both work burden and bargaining power function as determinants of man-unit. However, the most important determinant of man-unit is the provision for shelter. Paradoxically, all the 43 per cent of Bhatuas who are provided shelter by the employers at their homes virtually work for 16 hours a day. Another interesting fact is that the Bhatuas who are provided with cultivable land by the employers seldom prefer staying at employers' houses (Table 12). The reason may be the comparative status attached to an high bargaining power. The Bhatuas who are provided with shelter and cultivable land constitute about 43 per cent and 8 per cent respectively of the total sample.

Table 10

WAGE STRUCTURE OF BHATUAS

(Unit : Rupees)

Particulars	Average overall rate per Bhatua	Average per day rate 636.671 average man-unit
Value of food and clothing	2222.14	3.50
Remuneration in hand cash/kind	906.49	1.42
Total wage	3128.63	4.92

Table 11

AVERAGE MAN-UNIT UNDER VARIOUS WAGE-WORK COMBINATIONS

Work category / Wage category	Agricultural work (A.W.)	Cattle Rearing (C.R.)	Domestic work (D.R.)	A.W. + C.R.	A.W. + D.W.	C.R. + D.W.	A.W.+ C.R.+ D.W.	Others (Trade etc.)	Total
Nil	—	593.125	—	—	—	—	—	—	593.125
1—500	547.500	627.344	547.500	547.500	—	597.273	730.00	—	620.086
501—1000	—	615.938	—	593.000	730.00	606.161	692.123	—	678.058
1001—1500	—	—	—	—	730.00	—	621.007	608.334	624.234
1501—2000	547.500	—	—	581.719	—	—	543.453	—	553.204
2001—2500	—	—	365.00	—	—	—	593.125	365.00	479.063
Total	547.500	615.938	465.250	580.090	730.00	600.730	658.452	547.501	636.661

Table 12

OTHER FACILITIES PROVIDED BY EMPLOYER

(Unit : No. of Bhatuas)

Whether shelter provided / Area of land provided (acres)	Yes	No	Total (area of land)
Nil	(45.455) 55 (98.215)*	(54.546) 66 (88.00)*	(100.00) 121 (92.367)*
0.01—0.25	(11.112) 1 (1.786)*	(88.889) 8 (10.657)*	(100.00) 9 (6.871)*
0.25—0.50	—	(100.00) 1 (1.334)*	(100.00) 1 (0.764)*
Total (shelter)	(42.748) 56 (100.00)*	(57.252) 75 (100.00)*	(100.00) 131 (100.00)*

Notes : (i) Figures in parentheses are percentages to totals at last column.
(ii) Figures in parentheses with asterisks are percentages to totals at last row.

Another significant feature of wages is that major portion of the wage is the value of food and clothing. Besides, 44 per cent of Bhatuas are paid their annual remuneration in form of kind giving scope for corrupt weighing. Table 13 shows the detailed wage structure of Bhatuas. The fact that about 64 per cent of Bhatuas are working in assurance of a whole day food and clothing endorses our initial definition of Bhatua system, i.e., pledging services in exchange of food and clothing. It is also clear from Table 13 that the Bhatuas belonging to higher wage group, most of whom are having cultivated land of their own (Table 6), are receiving much less food and clothing from their employers.

Table 14 explains a negative correlation between the shares two age groups with respect to annual remuneration. Bhatuas below 15 years of age are paid less remuneration than the others.

Besides low level of wage rate, no wage for holidays and "wage cut" measures for absence from work irrespective of its reasons are also the features characterising this system.

4. Borrowing loans from the employer is of secondary importance in this area. Only about 63 per cent of Bhatuas took loan from the employers before the commencement of the agreement (Table 15). Of this 63 per cent, about 52 per cent received less than Rs. 300 only. Loan raising power is much less with landless Bhatuas as about 84 per cent of them could receive less than Rs. 300/- only. Further, lending is constrained by the wage rates. Except for a single Bhatua none of the employees were given loans more than their annual remuneration (Table 16). This constraint is necessary because the mode of repayment is through labour and not cash and the loans are interest free. However, loans are taken for consumption and social expenditures only.

5. Though about 50 per cent Bhatuas are from neither scheduled castes nor scheduled tribes, we can safely call the system of Bhatua as a lower castes identity because about 95 per cent of the employers are from 'other castes' category and of which about 53 per cent are employing 'other castes' Bhatua (Table 17). The table also shows the caste-wise distribution of the employers.

This sort of status consideration can be observed on an economic plane also (Table 18). With an exception of a single case almost all the landed Bhatuas are working with employers having more land than themselves. The fact that more than 37 per cent employers is large farmers endorses the concept of land-lordism inherent in the phenomenon of human bondage.

Table 13

WAGE STRUCTURE OF BHATUAS (No. OF BHATUAS)

Value of food and clothing (Rs.) / Annual romuneration (Rs.) (1)	Nil (2)	1BF+C 550/- (3)	1M+C 1100/- (4)	1BF+1M+C 1500/- (5)	2M+C 2200/- (6)	1BF+2M+C 2600/- (7)	3M+C 3300/- (8)	Total (annual remuneration) (9)
I. Nil	—	—	—	—	(100.00) 2 (20.00)**	—	—	(100.00) 2 (1.527)**
II. Cash : 1-500	—	—	—	(66.667) 8 (23.530)*	(8.343) 1 (25.00)*	(16.667) 2 (9.524)*	(8.334) 1 (16.667)*	(100.00) 12 (16.667)*
501-1000	—	—	—	(52.174) 12 (35.295)*	(8.696) 2 (50.00)*	(30.435) 7 (33.334)*	(8.696) 2 (33.334)*	(100.00) 23 (31.945)*
1001-1500	(5.00) 1 (33.334)*	—	(5.00) 1 (100.00)*	(30.00) 6 (17.647)*	—	(45.00) 9 (42.858)*	(15.00) 3 (50.00)*	(100.000) 20 (27.778)*
1501-2000	(7.143) 1 (33.334)*	(14.286) 2 (66.667)*	—	(57.143) 8 (23.530)*	—	(21.429) 3 (14.286)*	—	(100.00) 14 (19.445)*
2001-2500	(33.334) 1 (33.334)*	(33.334) 1 (33.334)*	—	—	(33.334) 1 (25.00)*	—	—	(100.00) 3 (4.167)*
Sub-Total	(4.167) 3 (100.00)* (75.00)**	(4.167) 3 (100.00)* (50.00)**	(1.389) 1 (100.00)* (100.00)**	(47.223) 34 (100.00)* (100.00)**	(5.556) 4 (100.00)* (40.00)**	(29.167) 21 (100.00)* (39.623)**	(8.334) 6 (100.00)* (26.087)**	(100.00) 72 (100.00)* (54.962)**

contd.

Table 13 contd...

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
III. Kind	(10.00)				(30.00)	(10.00)	(50.00)	(100.00)
1-500	1	—	—	—	3	1	5	10
	(100.00)*				(75.00)*	(3.125)*	(29.412)*	(18.182)*
					(2.381)	(69.048)	(28.572)	(100·00)
501-1000	—	—	—	—	1	29	12	42
					(25.00)*	(90.625)*	(70.589)*	(76.364)*
						(100.00)		(100·00)
1001-1500	—	—	—	—	—	2	—	2
						(6.250)*		(3.637)*
1501-2000	—	—	—	—	—	—	—	—
		(100.00)						(100.00)
2001-2500	—	1	—	—	—	—	—	1
		(100.00)*						(1.819)*
Sub-Total	(1.819)	(1.819)			(7.273)	(58.182)	(30.909)	(100.00)
	1	1	—	—	4	32	17	55
	(100.00)*	(100.00)*			(100.00)*	(100.00)*	(100.00)*	(100.00)*
	(25.00)**	(16.667)**			(40.00)**	(60.378)**	(73.913)**	(41.985)**
IV. Cash+kind		(100,00)						(100,00)
1500-2000	—	2	—	—	—	—	—	2
		(33.334)**						(1.527)**
V. Grand Total	(3.050)	(4.581)	(0.764)	(25.955)	(7.634)	(40.458)	(17.558)	(100.00)
(value of food)	4	6	1	34	10	53	23	131
and clothing)	(100.00)**	(100.00)**	(100.00)**	(100.00)**	(100.00)**	(100.00)**	(100.00)**	(100.00)**

Notes: (i) Where B.=Break Fast (puffed rice), M=Meal and C=Cloths

(ii) Figures in parentheses are percentages to the totals at last column

(iii) Figures in parentheses with one star are percentages to the totals at the subtotal row of the respective section.

(iv) Figures in parentheses with two star, are percentages to the totals at last ro

Table 14

ANNUAL REMUNERATION OF BHATUAS WITH RESPECT TO THEIR AGE GROUP

(Unit : No. of Bhatuas)

Age group (Yrs) \ Wage group (Rs.)	Nil	1—500	501—1000	1001—1500	1501—2000	2001—2500	Total (age group)
1—15	(7.143) 2 (100.00)*	(50.00) 14 (63.637)*	(35.715) 10 (15.385)*	(7.143) 2 (9.091)*	—	—	(100 00) 28 (21.374)*
16—60	—	(7.767) 8 (36.364)*	(53.398) 55 (84.616)*	(19.418) 20 (90.909 *	(15·534) 16 (100.00)*	(3.884) 4 (100.00)*	(100.00) 103 (78.626)*
Total (wage group)	(16.794) 22 (100.00)*	(49.619) 65 (100.00)*	(16.794) 22 (100.00)*	(12.214) 16 (100.00)*	(3.054) 4 (100.00)*	(1.527) 2 (100.00)*	(100.00) 131 (100.00)*

Notes : (i) Figures in parentheses are percentages to the totels at last column.
(ii) Figures in parentheses with asterisks are percentages to the totals at last ro w

Table 15

LOAN TAKEN BY BHATUAS WITH RESPECT TO THEIR ECONOMIC STATUS

(Unit : NO. of Bhatuas)

Loan amount (Rs) / Economic Status	1—100	101—200	201—300	301-400	401-500	501-1000	1001-1500	Total No. of Bhatuas taken loan	Nil	Total
Landless	(36.843) 7 (33.750)*	(31.579) 6 (37.500)*	(15.790) 3 (27.273)*	—	(5.264) 1 (14.286)*	(5.264) 1 (3.704)*	(5.264) 1 (20.000)*	(100.00) 19 (22.892)* (63.334)**	11 (22.917)* (36.667)**	30 (22.901)* (100.00)**
Marginal	(12.50) 7 (43.750)*	(12.50) 7 (43.750)*	(12.50) 7 (63.637)*	(1.786) 1 (100.00)*	(10.715) 6 (85.715)*	(44.643) 25 (92.593)*	(5.358) 3 (60.00)*	(100.00) 56 (67.470)* (62.323)**	34 (70.834)* (37.778)**	90 (68.703)* (100.00)**
Small	(25.00) 2 (12.500)*	(37.50) 3 (18.750)*	(12.50) 1 (9.091)*	—	—	(12.50) 1 (3.704)*	(12.50) 1 (20.00)*	(100.00) 8 (9,637)* (72.728)**	3 (6.250)* (27.273)**	11 (8.397)* (100.00)**
Total (loan amount)	(19.278) 16 (100.00)*	(19.278) 16 (100.00)*	(13.253) 11 (100.00)*	(1.205) 1 (100.00)*	(8.434) 7 (100.00)*	(32.531) 27 (100.00)*	(6.024) 5 (100.00)*	(100.00) 83 (100.00)* (63.359)**	48 (100.00)* (36.642)**	131 (100.00)* (100.00)**

Notes: (i) Figures in parentheses are percentages to the totals at column "total no of Bhatuas taken loan."
(ii) Figures in parentheses with one asterisk are percentages to the totals at last row
(iii) Figures in parentheses with two asterisks are percentages to the totals at last column.

Table 16

LOAN TAKEN BY BHATUAS WITH RESPECT TO THEIR ANNUAL REMUNERATION

(NO. OF BHATUAS)

Loan amount (Rs.) / Wage group (Rs.)	1—100	101—200	201—300	301—400	401—500	501—1000	1001—1500	Total
Nil	(100.00) 1 (6.250)*	—	—	—	—	—	—	(100.00) 1 (1.205)*
1—500	(27.273) 3 (18.750)*	(63,637) 7 (43.750)*	(9.091) 1 (9.091)*	—	—	—	—	(100.00) 11 (13.253)*
501—1000	(26.830) 11 (68.750)*	(19.513) 8 (50.00)*	(17.074) 7 (63.637)*	(2.439) 1 (100.00)*	(9.756) 4 (57.145)*	(24.391) 10 (37.037)*	— —	(100.00) 41 (49.398)*
1001—1500	(5.883) 1 (6.250)*	—	(17.647) 3 (27.273)*	—	(11.765) 2 (28.672)*	(47.059) 8 (29,630)*	(17.647) 3 (60.00)*	(100.00) 17 (20.482)*
1501—2000	—	(7.693) 1 (6.250)*	—	—	(7.693) 1 (14.286)*	(29.231) 9 (33.334)*	(15.385) 2 (40.00)*	(100.00) 13 (15.663)*
2001—2500	—	—	—	—	—	—	—	—
Total	(19.278) 16 (100.00)*	(19.278) 16 (100.00)*	(13.253) 11 (100.00)*	(1.205) 1 (100.00)*	(8.434) 7 (100.00)*	(32.531) 27 (100.00)*	(6.024) 5 (100.00)*	(100.00) 83 (100.00)*

Notes : (i) Figures in parentheses are pereentages to totals at last column.

(ii) Figures in parentheses with asterisks are percentages to the totals at last row.

Table 17

CASTE STRUCTURE OF BHATUAS WITH RESPFCT TO THE CASTE OF THEIR EMPLOYERS

(No. OF BHATUAS)

Employer / Employee	SC	ST	OC	Total (employee)
SC	(3.334) 1 (25.00)*	(3.334) 1 (50.00)*	(93.334) 28 (22.40)*	(100.00) 30 (22.901)*
ST	(8.572) 3 (75.00)*	(2.858) 1 (50.00)*	(88.572) 31 (24.80)*	(100.00) 35 (26.718)*
OC			(100.00) 66 (52.80)*	(100.00) 66 (50.382)*
Total (employer)	(3·050) 4 (100.00)*	(1·527) 2 (100·00)*	(95.420) 125 (100.00)*	(100.00) 131 (100.00)*

Notes : (i) Figures in parentheses are percentages to totals at last column.
(ii) Figures in parentheses with asterisks are percentages to totals at last row.

Table 18

ECONOMIC STATUS OF BHATUAS WITH RESPECT TO THAT OF THEIR EMPLOYERS

(No. OF BHATUAS)

Employer / Employee	Landless	Marginal	Small	Medium	Large	Not known to the Bhatuas	Total
Landless	—	(3.334) 1 (100.00)*	(30.00) 9 (20.931)*	(16.667) 5 (19.667)*	(40.00) 12 (24.490)*	(10.00) 3 (42.858)*	(100.00) 30 (22.901)*
Marginal	(1.112) 1 (100.00)*	—	(35.556) 32 (74.419)*	(25.556) 23 (76.667)*	(35.556) 32 (65.307)*	(2.223) 2 (28.572)*	(100.00) 90 (68.703)*
Small	—	—	(18.182) 2 (4.652)*	(18.182) 2 (6.667)*	(45.455) 5 (10.204)*	(18.182) 2 (28.572)*	(100.00) 11 (8.397)*
Total (employer)	(0.764) 1 (100.00)*	(0.764) 1 (100.00)*	(32.825) 43 (100.00)*	(22.901) 30 (100.00)*	(37.405) 49 (100.00)*	(5.344) 7 (100.00)*	(100.00) 131 (100.00)*

Notes : (i) Figures in parentheses are percentages to totals at last colum.
(ii) Figures in parentheses with astrisks are percentages to totals at last row.

IV

Conclusion

1. Bhatua is a system of labour relations in which a labourer pledges his services for one year in exchange of food and clothing along with some petty annual remuneration and not in lieu of interest on loans.

2. Bhatua is not a system of contract labour because it is a time bound contract and not work bound.

3. Bhatua is a form of human bondage since it is both unfree and involuntary labour.

4. About 67 per cent of Bhatuas are required to render all the three broad categories of work, namely agricultural, cattle rearing and domestic.

5. The man-unit of an average Bhatua is 636.661 days and thus he gets only Rs. 4.92 per day of which Rs. 3.50 is the value of food and clothing he receives.

6. The direct reason for the incidence and perpetuation of this system is lack of employment and assurance of regular food and clothing from sources of income elsewhere.

7. Only about 63 percent Bhatuas borrowed loan from their employers. Loans are borrowed for social and consumption expenditures only. However, loans are interest free and the mode of repayment is labour and not cash.

8. About 85 percent Bhatuas are illiterate and almost all the 131 Bhatuas are unware of welfare legislations which may be a significant reason for the perpetuation of the system.

9. Only about 50 percent Bhatuas belong to 'other castes' category where as 95 percent employers come from this 'other castes' category of them 53 percent are employing only 'other castes' Bhatuas.

10. The fact that about 37 percent employers are large farmers strengthen the concept of land-lordism inherent in the phenomenon of human bondage.

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RURAL DEVELOPMENT, INCOME DISTRIBUTION AND DEMAND FOR ENERGY IN A RURAL ECONOMY IN SOUTH BENGAL

DEBESH CHAKRABORTY*, TUHIN DAS* & SWAPAN SETH**

Introduction

Rural development has been a main task of the Government of West Bengal especially during the last decade or so. It was initiated through development of agriculture and rural reconstructions activities. To improve the agricultural production irrigation was given emphasis. Many projects were taken into hand for expansion of irrigated area, both through minor and major irrigation schemes. Besides, irrigation increases the use and supply of fertiliser. Adequate supply of HYV seeds through State Seed Corporation also helped to increase agricultural output.

Apart from these, the State has achieved a significant progress in land reform which was definitely an important factor in uplifting rural people and to increasing agricultural production. In West Bengal like other states a number of projects were initiated for the betterment of the states of the poor farmers and landless labourers. The performance in creating additional employment in the rural sectors through IRDP, NREP, RELEGP, FFW programmes has been commendable. These various rural development programmes have led to the reduction of the proportion of population living below poverty level to some extent. In 1977-78 about 58.94%[1] of the State rural population was below the poverty line. Now, it is claimed that the figure has gone down. Vigorous efforts are being made to improve the lot of the rural people and to reduce the propotion of population lying below the poverty line.

As a result of the various development efforts resulting in favourable change in the income distribution pattern in the rural sector there is likely to be a change in the demand for goods and services. If the demand for and supply of the goods and services in the coming year are not properly taken care of, serious maladjustment in the rural sector might develop. Here some attempts are being made with a micro-study to examine the demand, supply and possible gap, if any, in the energy sector in the State.

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1. Government of India, Planning Commission, *Sixth Five Year Plan, 1980-85.*

In the rural areas it is expected that the pattern of energy demand is likely to undergo change in response to possible changes in the income distribution pattern resulting from various rural development programmes. In this paper we shall try to make an assessment of the demand and supply and short fall in the energy sector upto 2001 A.D. on the basis of a micro-study of a village, Kaikhali, located in the remote area of South Bengal.

The order of the paper is as follows :

In section 1 the survey and the findings for the Kaikhali village are reported. The section 2 will present the estimates of energy demand, supply and the shortfall for village and the section 3 will conclude the paper.

I

The Survey and its Findings

1.1. **Location :** The selected village, Kaikhali, is located in the Sundarbans of the South 24 Parganas district of West Bengal. Basically it is a part of an Island surrounded by rivers. It is connected with the main-land through water ways only. It is bounded by the Matla river in the east, the Nabipukur river in the south and the west and Gopalganj village in the north.

Its distance from the nearest mettaled road is 20 Kms ; Kaikhali village is subdivided into 9 clusters, viz., Kaikhali 1 to Kaikhali 8 and Bangheri.

1.2. **The Survey :** In order to build up a reasonably sound quantitative data-base, that will be useful in designing an integrated energy system for this village, a sample survey for 20% of the total household from each cluster was carried out.

The selection of 20% households from each cluster was made in such a way as to include equal numbers of households belonging to the following, somewhat arbitrarily defined, annual income groups[1]

Group A	Upto Rs. 6,000/-
Group B	Above Rs. 6,000/-

In the following sub-sections the findings of the survey are presented.

1. The 520 households of the village had been divided into two groups with respect to income. For demand forecasting mundane classificatio with the subsistance level as the dividing line was thought to be quite reasonable. We adopted an income of Rs. 6000/- p.a. as the subsistance for this purpose. Income per h usehold has been calculated considering agriculture (as main source of income) and other sources like pisciculture, animal keeping etc. calculating all these sources of income, we see that 69 out of 520 households fell in the income gro ip of Rs. 501/- and above p.m.

1.3. **Socio-economic Aspects :** Kaikhali is a village with all characteristics of backwardness. Its economy is based on agriculture. The total cultivable area is 581 acres of which 31% is cultivated twice in a year. The total forest area is 30 acres. About 81% of the population is illiterate, though there are two primary schools and one junior high school in the village. There is no market in the village.

1.4. **Population :** Total population of the village 3590. Almost all the working people depend for their livlihood mainly on agriculture. The other ocupations, namely the animal husbandry pisciculture and fishing, forest resource collection are only of supple mentary nature. Only a small number of the village people are partially and seasonally employed in these fields. In any event, the actual income from these sources are much less than that from agriculture.

Table 1 presents some useful information on the income-group wise composition of population.

Table 1

INCOME GROUPWISE OF POPULATION NUMBER OF MALES, FEMALES AND CHILDREN

Income Group	No. of Households	Average Family size	Adult		Children	Total
			Males	Females		
A (upto Rs. 6000)	451	6.80	1014	884	1169	3067
B (Above Rs. 6000)	69	7.58	191	186	146	523
Total	520	6.90	1205	1070	1315	3590

This Table shows that the average family size is large in the village. This is perhaps due to lack of adequate education and other facilities of family planning programmes for this village.

1.5. **The Economy :** The economy of Kaikhali is based on agriculture. The irrigation facilities are poor in the village. As a result, the villagers can raise only one crop. Again a small part of the total cultivable land is used for Rabi crops i.e. 183 acres. Use of fertilisers is also negligible (See table 3). Cropping pattern in the village is shown in Table 2. It shows that paddy is the main crop and

pulses and vegetables are not so significant. Productivity of all the crop is low. To change the villages economy it is necessary, therefore, to increase the agricultural facilities, possible through extension of irrigation system and other methods.

Table 2

CROPPING PATTERN

Income Group	Cultivable area per households (acre)	Paddy* Total area shown (acre)	Paddy* Yield per acre (kg)	Pulses* Total area shown (acre)	Pulses* Yield per acre (kg)	Vegetables Total area shown (acre)	Vegetables Yield per acre (kg)	Irrigated area** (acre)
A	0.70	291	720	52	256	62	214	3
B	4.30	296	586	47	345	22	539	10
Total	1.12	587	652	99	298	84	300	13

Notes: * No. irrigation needed in khariff season.
** Irrigated with pond water only. River water not suitable for the purpose owing to salinity.

1.6. **Irrigation :** Irrigation facilities are inadequate. There are no tubewells and canals and no scope of river lift irrigation system in the village.

However, a negligible area of land is irrigated from pond water in the winter and spring season only for Rabi crops (Table 2).

1.7. **Fertiliser use :** The method of cultivation in Kaikhali is of traditional type. Adoption of new technique is very limited which is reflected by the use of low dose of chemical fertiliser and this seriously affects the agricultural productivity. Causes behind this low yield are lack of ability of the farmers to purchase chemical fertilisers and absence of proper drainage system for the excess water in the field during the rainy season on the one hand and scarcity of irrigation water in winter and summer, on the other. In the table 3 the level of use of fertiliser in the village for principal crop, paddy, is shown.

Here we see that use of fertilisers is too much low in the village and it is lower among group B compared to group A. It is also noticed that use of organic manure is almost negligible, perhaps because coal is not available in this locality and kerosene is scarce. The villagers use the entire animal residues for cooking, and hence the organic manures are not available for fertilisation of land.

Table 3

USE OF FERTILISER

Income group	Chemical Fertilisers						Organic mustard cake		Total nutrient** Use/acre kg
	Urea		Suphala		Others*				
	kg.	Value Rs.	kg.	Value Rs.	kg.	Value Rs.	kg.	Value Rs.	
A	309	772.50	155	465.00	62	124.00	0	0	0.90
B	243	607.50	40	120.00	0	0	81	182.25	0.42
Total	552	1380.00	195	585.00	62	124.00	81	182.25	0.65

* Calcium Amonium Nitrate, Super Phosphate etc.

** Include Nitrogen, Phosphate and Potash.

1.8. **Energy use :** The only commercial energy source that is used for the domestic purpose is kerosene. It is used largely for lighting. Cow-dung, stalk of paddy and other crops, twigs, branches and leaves of the trees are the main sources of energy for cooking purposes. Fire-wood is collected from thn Sundarban forest. In Table 4 we show the domestic consumption of energy. However, the amounts of each fuel consumed were not available separately, as some of these components are used together. Such non-commercial fuels are, of course, used for other purposes as well. For example, crop stalks are used for making roof. They are also used as fodder for cattle.

Table 4

DOMESTIC CONSUMPTION OF ENERGY PER HOUSEHOLD PER DAY

Income Group	Kerosene for lighting		Dung cakes, crop residues, fuel wood for cooking		Human energy for domestic water supply
	Use hours	Quantity (lit)	Use hours	Quantity (kg.)	Man hours
A	3.14	0.13	3.07	16.38	1.50
B	3.75	0.27	3.53	26.28	2.32

Table 5

ENERGY CONSUMPTION IN AGRICULTURAL OPERATIONS PER HOUSEHOLD IN KHARIFF CROP. SEASON.

	From tilling to harvesting					Post harvest time		
	Human		Bullock-pair		Pumpset and power tiller	Human		Husking machines
Group	No. of man days	Hours /day	No. of bullock pair days	Hours /day	Oil required (lit)	No. of man man Days	hours /day	Oil required (lit)
A	38·57	8	6·65	8	0·25	33·88	4	3·16
B	273·44	8	50·82	8	37·16	152·54	4	31·33

In agriculture consumption of commercial energy is also negligible. Table 5 shows that human muscle power and animals are the major sources of energy for agricultural operations. The husking machines may be treated as cottage industry. These are nothing but ordinary pumpsets of which the pump has been detached and suitable hauler is fitted. Oil requirement per household by income groups is given in the last column of the Table 5.

1·9. **Transport :** For transportation of agricultural inputs and outputs and other goods, the villagers use manual boats for short distance journey and motor-boats to cover long distance.

Energy consumption data for transportation were not available. However, data on the quantity of goods transported were available. This is shown in Table 6.

Table 6

TRANSPORTATION OF GOODS PER HOUSEHOLD P. A.

Income Group	By boats (kg km)	Boat hrs. per day	By Vehicles (kg km)	Vehicle hours per day
A	735·9x12	5·0	48·28x16	1·5
B	1575·0x12	5·0	93·00x16	1·5

1·10. **Availability of Resources :** After having indicated the broad pattern of consumption of energy we proceed to present some data on the availability of the principal sources of energy consumed. We, however, consider animal residues and crop residues which are the main fuel for domestic use in the village. Moreover, in the calculation of the quantity of animal dung in Table 6 we consider the animals such as buffaloes, cows and bullocks only.

Table 7

LIVE-STOCK AND AVAILABILITY OF DUNG PER HOUSEHOLD

Income Group	Average number of animals			Dung available per day (kg)
	Cows	Bullocks	Buffaloes	
A	0·62	0·65	0	2·65
B	2·04	2·80	0·39	12·00

It was observed during the survey that the dung collected per animal varies from 1 kg to 4 kgs.

Needless to say that animal residues are not only fuel for cooking in the rural areas. Other sources like, crop residues, fire wood and twigs and leaves are used almost everywhere in various proportions according to the availabilities and also purchasability. For the village under study the survey permits an approximate estimate of availaibility of agricultural residues per household.

Table 8

AVERAGE AVAILABILITY OF CROP RESIDUES PER HOUSEHOLD P. A. (IN KG)

Income Group	Kher	Nara	Husk	Others
A	536·83	368·22	142·07	33·19
B	1960·00	283·42	231·88	115·43

It is here observed that use of the crop residues is significant in the village. The Table 8 also shows that total consumption of this fuel is much higher by the higher income group who are also big farm owners. Bigger farms obviously generate more crop residues. The other important fuel used in this village is fire wood that is available from the Sundarban forest. A part of collected firewood is generally sold out and rest of it is used by the low income families for their own use. From the survey it is found that people belonging to income group B use relatively more firewood than the income group A. The firewood is of higher calorific value and higher prices than the dry twigs and leaves etc. We see from the Table 9 that the income group A use twigs, leaves etc more than the income group B.

Table 9

AVERAGE AVAILABILITY OF FIREWOOD ETC. PER HOUSEHOLD P. A.

Income Group	Fire wood (kg)	Twig leaves etc. (kg)
A	232	460
B	313	340

II

Energy Demand And Short-Fall

2·1. **Need for energy planning :** From the above discussion it could be stated that the village Kaikhali is a remote and typical by backward village. It is evident that the economy of this village is based on agriculture and supplemented by fish farming. The economic condition of the most of the villagers is not good, they live in thatched houses. Conventional electricity connection is not made yet and possibility of which is nil in near future. Availability of medical facilities is practically nil and drinking water is available in limited quantity. The latter is, among other things, mainly responsible for the poor health condition of the cattle.

The survey reveals that an important source of energy, coal, is not used in the village owing to low level of income, high price of coal and difficulties of availaibility. Even use of kerosene, the only fuel for lighting is much low perhaps due to these reasons. Therefore, people of the village is highly dependent on non-commercial fuels like agricultural and animal residues with firewood and twigs leaves etc. for cooking. These non-commercial fuels for cooking are used in traditional land-digged type chullas efficiency of which lies between 6% to 8%.

Now we have an idea about the village energy situation that the energy consumption level is low and dominated by conventional non-commercial sources which are produced locally. It is also a fact that the supply of firewood may be reduced in the near future because of fast deforestation. If it happens and population increases, the total supply of energy must be lower than the total demand for it in the village. Therefore, it is essential to take step for energy planning.

Purpose of such planning should be to match the supply of energy with its demand. This could be done mainly in two ways :

(i) by increasing the supply and,

(ii) by increasing the efficiency of the chullas, lamps and whatsoever.

Further supply of energy sources may be increased in two ways :

(a) by developing the present conventional sources and,

(b) by introducing new, that is non-conventional energy system, such as, solar photovoltaic, biogas and wind mills etc.

As we see the non-conventional system of energy has not been installed in Kaikhali village so far. Fortunately, the relevant data on renewable energy sources show that this area is very suitable for windmill as it is in the cyclonic area of South Bengal and the clear sky and

bright sunlight is also helpful for solar photovoltaic system. These systems may be helpful to supplement the energy total supply in the village.

2·2. **Present energy demand :** Need-oriented energy planning for future depends on correct assessment of energy demand at present and realistic projection of demand in future. The survey results show that energy consumption in domestic sector accounts for a large part of total demand while the other sectors such as transport, cottage industry etc account for a small part of it.

The source wise total energy consumption by income groups and per capita total energy consumption per year is given in Table 10. The sector wise percapita energy consumption is presented in Table 10. The total per capita energy requirement at present is 511.30 kg CE per year. This is some what lower than the national average of 550 kg CE and is almost half of the value of 1000 kgCE recommended for living above the poverty line.

For projection of future energy demand, we have to consider population growth and rate of economic growth of this area which ss expected during the future plan periods.

2.3 **Population** : Population growth is an important parameter in projecting future energy demand. The total population in Kaikhali was 3590 in 1985. The population of the village grew at the rate of 2.07% per year during 1971-81. This rate is expected to fall in future in view of advancement in the family planning programme, health and medical care. While making the assumption about the growth rate of population for Kaikhali village upto 2001 AD, the All India pattern of future growth rate as assumed by the Planning Commission in the Seventh Five-Year Plan document is also considered. Annual growth rate of population is assumed to be 1.83% in 1985-1991, 1.68% in 1991-1996 and 1.5% in 1996-2001. Actually, the growth of population is expected to decline with increasing income level. However, it was felt that the assumption of a uniform growth rate was taken for each period to keep the projections on safe side.

2.4. **Demand Forecasting :** Based on the study of present energy consumption, we are to estimate the future energy requirement in the village. Keeping in view the estimated economic growth in the village it is assumed that the demand for energy in the household sector will rise at 2.25% for group A, 2.00% for group B, and in the agricultural sector it will be 8.5% and 6.0% per annum for A and B groups respectively. Regarding the transport sector the demand for energy is estimated to grow at 6% for all people. In the case of cottage industry, commerce and others it is expected to be 5% per annum for both the groups.

Table 10.

SOURCE-WISE PER CAPITA ENERGY CONSUMPTION BY GROUP P. A.

Group	Unit	Agricultural residues	Dung cakes	Firewood	Twig leaves	Kerosene oil	Diesel oil	Total
A	Kg/lit	124	113	232	460	8·23	1.6	—
	Th Kcal	272.80	371.77	1034.72	1012.00	69.05	13.39	2773.73
B	Kg/lit	10	154	313	340	10.20	5.0	—
	Th Kcal	264.00	506.66	1395.98	748.00	85.37	41.85	3041.86

Table 11

ENERGY DEMAND IN DIFFERENT SECTORS IN 1985 AND DURING 1991-2001.

(Projected) in Th. Kcal.

		Domestic	Agriculture	Transport	Cottage	Commerce	Others	Total
1985	A	7448761.56	47477.16	26161.51	21376.99	3312.39	60757.27	7607846.35
	B	1691789.94	8006.04	4461.19	2645.41	564.84	10360.63	1718917.95
	Total	9140551.50	55573.20	30622.70	25022.30	3877.20	71117.90	9326764.80
	Per Capita	2546.26	15.48	8.53	6.97	1.08	19.81	2597.98
1991	A	7108608.65	56257.85	30986.67	24912.79	3690.72	68022.02	7291478.70
	B	5234071.32	31542.15	17373.33	13407.21	2069.28	38137.98	5336601.27
	Total	12342679.97	87800.00	48360.00	37820.00	5760.00	106160.00	12628079.97
	Per Capita	3085	31.95	12.09	9.33	1.44	26.54	3157.01
1996	A	4315583.65	40898.48	22524.81	16576.70	2549.19	47166.98	4445299.81
	B	11882527.80	86758.30	47782.35	35164.50	5407.60	109066.30	12157697.40
	Total	16198111.45	127647.28	70307.16	51741.20	7956.84	147223.28	16602997.21
	Per Capita	3725.51	29.36	16.17	11.90	1.83	33.86	3818.53
2001	A	1297695.00	14733.75	8115.00	5696.25	8775.00	16200.00	1343370.50
	B	19124762.88	169268.31	93225.12	65438.52	10080.72	186105.80	19648874.16
	Total	20422457.88	183995.07	101340.12	71135.79	10958.22	202305.60	20992191.66
	Per Capita	4360.97	39.29	21.64	15.19	2.34	43.20	4482.53

Besides the above assumptions in growth rate of energy consumption some additional assumptions have been made. Due to economic advancement of the area and various poverty eradication programmes a part of population is expected to shift to higher income group B from lower income Group A. It is assumed that that rate of such shift will be 25% from Group A to B in each period considered. The estimated demand created by this pattern of growth for the Kaikhali village for the above three specified stages of time are presented in Table XII.

2.5 **Future Energy Supply :** In order to plan for supply of energy in future it is essential to estimate the possible available sources of energy especially non-commercial energy sources in an interior area like Kaikhali village. Present supply and demand for energy in the village is known to us. To predict the future supply of the same, a few assumptions have been made. These are as follows :

(i) In 1991, besides agricultural residues, dung cakes, twigs and leaves supply of fire wood will remain unchanged.

(ii) In 1996 fire wood supply will be 75% of the level of 1985 from local sources, in 2J01 it will be 50%.

(iii) Supply of oil in transport sector will match the demand from the market in each period.

Table 12

PRESENT AND PROJECTED ENERGY DEMAND AND SUPPLY P. A. AND SHORT-FALL IN KAIKHALI (IN MILLION KCAL)

Year	Total Demand	Total supply	Shortfall	Gap as % of total demand
1985	9327	9327	0	—
1991	12628	9189	3439	27.23
1996	16603	9017	7586	46.69
2001	20992	8752	12240	58.30

There remains a short-fall in Table XIII to the extent of 27.23%, 45.69% and 58.30% in 1991, 1996 and 2001 AD respectively. A frame for Action Plan has to be formulated to suggest possible measures for making these deficits up.

III

Conclusion

From the micro study it has been observed that various developmental activities to be taken up in the rural areas with a view to bringing desirable change in the pattern of income distribution may create a gap in the energy needs and possible supply at the end of this century in Kaikhali village. Fortunately, this region has advantages of richness in wind power, solar radiation, tidal energy, vast forestry of the Sundarban. Therefore, there is ample scope of integration of the new renewable energy technology with the conventional one. Other villages may not be so fortunate. This type of integrated planning is considered indispensable in view of the progress in new technologies, expected changes in the income distribution, demand for and supply of goods and services.

APPROPRIATENESS OF AGRICULTURAL TECHNOLOGY IN SOME ASIAN COUNTRIES

PARTHA BASU*

Introduction

Despite the predominance of agriculture, it is in this vital sector that many developing countries are very much lagging behind as compared to developed nations.

In most of the Asian countries including India, productivity is very low not only of labour, but also of land, which is a scarce resource in Asia. This implies that agricultural technology in these countries is inefficient and therefore inappropriate. It may be pointed out that appropriateness of technology is not something completely independent of economic efficiency. At the same time, it does not mean efficiency alone. Rather it embraces a reasonable degree of efficiency together with socio-economic relevance.

In this sense, the agricultural technology of only a few Asian countries like Japan, People's Republic of China and the Republic of Korea may be regarded as appropriate, because despite low productivity of labour, their agriculture exhibits very high yield rate per hectare of land, which is comparable to, and sometimes even exceeds, the corresponding figures for the developed countries of the West.

Crop-wise analysis of productivity of land, of course, abstracts from the influence of cropping-intensity. But this is also on the high side for the above mentioned Asian economies in particular. It may be further noted that these countries are making efficient use of not only land, but also fertilizers.

In the case of agricultural labour of Japan and the Republic of Korea average gross productivity (AGP) is low, but the average net value product (ANVP) is high, since these countries can substantially economize on other factors—especially on land. This is why despite low AGP of farm labour, average earnings per agricultural wage-earner in Japan are comparable with those of developed countries. Agricultural wage rate in the Republic of Korea, though relatively low as compared to Japan, is much higher than those in other developing countries.

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To sum up the whole discussion, agricultural technology is generally inappropriate in Asian countries, with a few exceptions like Japan, People's Republic of China, the Republic of Korea, etc. These exceptional countries in Asia, where agricultural technology is relatively appropriate, differ among themselves in political and economic systems. But they share the common chara cteristic of rapid industrialization.

One of the major reasons of the success of these countries (China, Japan and the Republic of Korea) in both agriculture and industry is the high standard of discipline of their workers, which may be ascribed to their belief in Marxism in the case of China to their faith in Shintoism, which teaches that the Emperror is the son of God, in the case of Japan and a strong patriotic fervour in the case of the Republic of Korea. A second reason is the high rate of literacy in all these countries. And the last, but not the least, is thorough-going agrarian reforms in these countries. In China it took the form of collectivization and cooperativization of agriculture. Its counterpart in the Republic of Korea and Japan was the extensive land reforms imposed by the American occupation authorities apprehensive of a communist revolution on the line of China.

So a country which is industrially advanced is likely to be more progressive in its agriculture too and its agricultural technology is likely to be more appropriate.

1. Objective

The objective of this paper is to compare the experiences of some Asian countries in respect of appropriateness or otherwise of technology in agriculture.

2. Appropriate Technology

The 'appropriate technology', it may be noted, is not necessarily identical with 'high technology' or the most capital-intensive technology that can produce a specified output at the lowest total cost of production (and therefore, the lowest average cost subject to an output constraint) in an advanced country. In the first place cost is not a unique concept. For the same technological option cost function may differ from country to country and from time to time depending on the relative prices and the quality of resources. Secondly, money cost may not always reflect the true long-run economic cost. This is especially so, when the production process involves the use of some scarce resources like oil, natural gas, coal etc. It is these non-resproducible resources that keep the wheels of modern industries moving, but their stocks are fast dwindling day by day. So minimisation of money cost is not always enough. To ensure economic efficiency, it may be necessary to satisfy some additional constraint in respect of energy consumption to keep the economic cost sufficiently low and safe-

guard the long-run interests of the economy. This is especiaily applicable for the selection of optimum techonology in economies with limited reserves of such precious resources and without adequate access to the non-conventional and renewable sources of eneegy.

Again, it may not always be possible to be guided by narrow economic considerations alone. Choice of techonology may also be partly guided by various non-economic considerations. For example, in labour surplus ecoro-mies like India, China, Pakistan, Bangladesh, etc. which are still lagging behind in the competition for economic development, there is the social responsibility of providing employment to the teeming millions and thereby to bring down the percentage of people below the poverty line. In a modern economy it is imperative to keep enviromental pollution under control to preserve the health of the animal and vegetable kingdoms and to maintain the ecological balance. Like the problem of recycling of energy, this factor also assumes larger and larger significance, as the economy develops more and more.

After all, technology is also to be applied not in vacum, but in human society. So the aspect of relevance is as important as the consideration of of economic efficiency. It is not merely a question of learning what others have already done, but it is a question of doing something now (Basu, 1990).

Therefore, appropriate technology is a dynamic concept, rather than a static one. It would differ from one economy to another, and even for the same economy from time to time. It may be defined as that technology which would minimize the cost of production of a commodity at a specified space and time subject to an output constraint and other socio-economic constraints if any. As has been already pointed out, the socio-economic constraints may relate to employment, environmental pollution, energy content just to mention a few by way of illustration. Alternatively, one may think of, say, maximizing employment (or output) subject to constraints in respect of cost of output (or employment) etc. However, micro-economic theory suggests that they convey the same basic idea that 'appropriate technology' is to be developed on the basis of twin consideration of money cost and other socio-economic factors. It is in this sense that this oft-quoted and much misunderstood phrase is to be interpreted in the present analysis. This concept will be used to compare and contrast resource utilization in agriculture in developing and developed countries with special reference to Asia.

3, Land Productivity

Despite the predominance of agriculture, it is in this vital sector that many developing countries are very much lagging behind as compared to developed nations, Table 1 provides data for both types of economies in

respect of per hectare yield rates of some important crops for the year 1984. The table clearly shows that with the exception of China and the Republic of Korea, for all the crops studied, the developing countries of Asia are far behind the developed nations of both the East and the West. For example, in the case of rice, the most important crop for Asia, Japan and the Republic of Korea have the highest yield rates, which are more than four times the yield rate in India, at least thrice as high as those in Thailand, Bangladesh and Pakistan and more than double the productivity of Burma. Similarly, the yield rates of wheat in the U. K. and maize in the U.S.A. are more than four to five times the respective rates of productivity in India and Pakistan. It may be noted that such other crops as cotton (lint) and ground nut have the same story to tell.

4. Labour Productivity

So far, efficiency in the field of agriculture has been judged crop-wise by productivity per unit area under the crop. In this respect, the performance of even the developed coutries of Asia has been heterogeneous. However, the picture becomes much more homogeneous if one uses the criterion of output-employment ratio or the average gross productivity (AGP) of labour for the agricultural sector as a whole. This ratio has been estimated for a number of countries for 1975, 1981 and 1983 on the basis of the data collected from the UN publications and presented in Table 2. Sectoral output or the numerator of these ratios has been computed from GDP at current producers prices in national currencies and its composition by kind of economic activity. Then it has been converted into US dollar at the official exchange rate. Employment figure in the denomenator, it may be noted, includes not only paid employees, but also self-employed persons. The figure generally covers the persons aged 15 years and above.

Table 2 reveals that the output-employment ratio or the AGP of agricultural labour measured in thousands of US dollar at current prices, despite some within-group variations, is much lower in all the years in all the Asian countries including the Republic of Korea with a very high productivity of land and even Japan, which can claim equally high yield rates per hectare and which has surpassed all capitalist countries except the USA in her technological advance. For example in 1983 while this ratio is 0·49 for Pakistan, it is as high as 19·21 for USA, the corresponding figures for Korea and Japan being 2·43 and 6·54 respectively. The productivity of labour is also low in agriculture, though not in industry, in China, for which comparable data are not available. This is obvious from the fact that in China, where the share of industry in the national income has gone up to 42·2 per cent in 1982, agriculture and forestry have

continued to employ 71·6 per cent of the labour force in the same year (Statistical Yearbook of China 1983).

5. Labour-Intensive Technique

The above data are indicative of the highly labour-intensive technique applied to agriculture by all the Asian countries, irrespective of their political system and the level of industrialization. Such technique is, of course, quite relevant for the socio-economic conditions of the Asian countries, burdened by an initially unfavourable man-land ratio becoming worse and worse in view of the population explosion that characterizes the delayed 'Asian Drama' of economic development.

Unfortunately in most of these countries including India, productivity is very low not only of labour, but also of land, which is a scarce resource in Asia. This implies that agricultural technology in these countries is inefficient and therefore inappropriate. As pointed out earlier, appropriateness of technology is not something completely independent of economic efficiency. At the same time, it does not mean efficiency alone. Rather it embraces a reasonable degree of efficiency together with socio-economic relevance.

In this sense, the agricultural technology of only a few Asian countries like Japan, China and the Republic of Korea may be regarded as appropriate, because despite low productivity of labour, their agriculture exhibits very high yield rate per hectare of land, which is comparable to, and sometimes even exceeds the corresponding figures for the developed countries of the west. Since it is land, and not labour, which is the limiting factor in these economies, per hectare yield rate is much more important than productivity per man.

6. Impact of Cropping Intensity and Fertilizer use

Crop-wise analysis of productivity of land, of course abstracts from the influence of cropping-intensity. But this is also on the high side for the above mentioned Asian economies in particular. Especially in the case of Japan, this is obvious from the fact that in 1983 the value-added in agriculture per hectare of arable land and land under permanent crops is many time higher in Japan (US $ 7,234) than what it is in the USA ($ 345) or even in the UK (US $ 1,242), the sources of basic data being FAO Production Yearbook, 1983 and Statistical Yearbook 1983-84.

It may be mentioned in this connection that Japan is making efficient use of not only land, but also fertilizers, contrary to popular belief. Estimates made by the present author (basic data collected from Indian Agriculture in Brief, 1986) indicate that the value-added in agriculture per kg. of fertilizers in 1983 stood at US $ 18.6 for Japan, $7.5 for the USA

and US $ 8.9 for the UK. China and the Republic of Korea, it may be noted, are also making efficient use of both land and fertilizers.

7. Agricultural Wages

In the case of agricultural labour of Japan and the Republic of Korea AGP is low, but the average net value product (ANVP) is high, since these countries can substantially economize on other factors — especially on land. This is why despite low AGP of farm labour, average earnings per agricultural wage earner in Japan are comparable with those of developed countries.

Agricultural wage rate in the Republic of Korea, though relatively low as compared to Japan, is much higher than those in other developing countries of Asia (Table 3). It may be noted in this connection that while wage rate generally specifies the minimum rate for adults working normal hours, average earnings per wage-earner generally include, among other things, overtime pay, incentive pay, etc.

8. Countries with Appropriate Agricultural Technology : Common Features

To sum up the whole discussion, agricultural technology is generally inappropriate in Asian countries, with a few exceptions like Japan, China, the Republic of Korea, etc. These exceptional countries in Asia, where agricultural technology is relatively appropriate differ among themselves in political and economic systems. But they share the common characteristic of rapid industrialization. Among the capitalist countries, the value of Japan's industrial production today is second only to that of the USA. In certain years, the annual rate of industrial growth even exceeded 15 per cent which has no parallel in the capitalist world. So far as China is concerned, it experienced a trend rate of industrial growth of more than 10 per cent per annum since the Communist Revolution in 1949 with the result that the share of industry in her national income went up to 42.2 per cent in 1982, as pointed out earlier, the corresponding percentages for Japan and the Republic of Korea in 1983 being 34 and 31 respectively. South Korea also succeeded in bringing about a major shift in the population balance towards industrial employment which even China is yet to achieve (Bagchi, 1987), of course even now the South Korean economy is heavily dependent on foreign technology and particularly the Japanese technology, which is applied almost without any modification or improvement, as is the case with most of the other eastern and southeastern countries of Asia. However, among them the Republic of Korea has the distinction of having the highest rate of absorption and of being the only exporter, though very minor, of technology to Japan.

So far as average gross productivity (AGP) of industrial labour is concerned, it is higher in Japan compared to not only other Asian countries, but also the UK. In the case of South Korean industry also labour productivity, though much less than what it is in Japan, is substantially higher than the corresponding figures for the other developing countries in Asia (Table 4). The method of deriving the output figure and the concept of employment have been already explained in the text. The output and employment structures of the Chinese economy, mentioned in the text above, also suggest high AGP of industrial labour in China.

Coming to specific industries, Japan learn the modern LD process (technology for steel making) from Austria after the Second World War. But today she is one of the most efficient steel producing countries in the world. In fact, Japanese steel industry is the most energy efficient among the capitalist countries of the world, including Austria (Proceedings of the National Seminar on Specific Energy Consumption in the Iron and Steel Industry, 1982).

One of the major reasons of the success of these countries (China, Japan and the Republic of Korea) in both agriculture and industry is the high standard of discipline of their workers, which may be ascribed to their belief in Marxism in the case of China, to their faith in Shintoism. which teaches that the Emperror is the son of God, in the case of Japan and a strong patriotic fervour in the case of the Republic of Korea. But in all the cases it was motivated by something greater than the sheer spirit of self-interest. A second reason is the high rate of literacy in all these countries. And the last. but not the least, is thorough-going agrarian reforms in these countries. In China it took the form of collectivization and coopertivization of agriculture. Its counterpart in the Republic of Korea and Japan was the extensive land reforms imposed by the American Occupation Authorities apprehensive of a communist revolution on the line of China.

9. Conclusion

So a country which is industrially advanced is likely to be more progressive in its agriculture too and its agricultural technology is likely to be more appropriate.

Table 1

YIELD RATE OF SOME MAJOR CROPS, 1984

(Kg per hectare)

	Crop / Country	Rice	Wheat	Maize	Groundnut	Cotton (lint)
DEVELOPING	Bangladesh	2,048	2,281	—	—	—
	Burma	3,098	—	—	1,029	—
	China	5,271	2,975	3,846	2,007	457[3]
	India	1,417[1]	1,870[2]	1,456[1]	898[1]	196[1]
	Korea,	6,475	—	—	2,532	—
	Republic of					
	Pakistan	2,507	1,510	1,375	—	419
	Thailand	1,979	—	—	989	..
DEVELOPED	Japan	6.414	—	—	1,787	—
	UK	—	7,715	—	—	—
	USA	5,520	2,608	6,692	3,270	684
	USSR	3,634	1,488	3,317	—	869[3]
	Yugoslovea	—	3,300	4,773	—	—

Notes : (i) '—' means not an important crop.
(ii) '..' means not available.
(iii) Superior numbers have the following meanings :
1. Data relate to 1984-85. 2. Data relate to 1983-84.
3. Data relate to 1978.

Sources : (i) *FAO Production Yearbook* (1984), United Nations.
(ii) *Indian Agriculture in Brief*, 21st ed. (1986), Directorate of Economic and Statistics, Ministry of Agriculture, Government of India, pp. 376-377.

Table 2

OUTPUT-EMPLOYMENT RATIO IN AGRICULTURE

In thousands of US $ per year per person

	Year / Country	1975	1981	1983
DEVELOPING	Korea, Republic of	0.94	2.22	2.43
	Pakistan	0.35	0.62	0.49
	Philippines	0.58	1.28	0.59
	Thailand	0.34	0.49	0.52*
DEVELOPED	Australia	13.89	20.42	16.36
	Japan	3.77	7.94	6.54
	UK	6.33	15.35	13.85
	USA	13.20	24.95	19.21

Note : * Figure relates to 1982.

Data Sources : (i) *Statistical Yearbook* (1983-84), United Nations, pp. 95-104, 122-39.

(ii) *Yearbook of Labour Statistics* (1986), International Labour Office, pp. 307-74.

(iii) *Monthly Bulletin of Statistics* (July 1987), United Nations, pp. 202-5.

Table 3

WAGES IN AGRICULTURE

In US $ per month per wage-earner

	Country	Type of data*	Wage code**	Sex	Year 1981	1983	1985
DEVELOPING	India	RT	II	M	18	20	27
				F	...	...	...
	Korea, Republic of	RT	I	M	316	328	327
				F	235	247	234
	Pakistan	EG	I	M	59	56	...
				F	...	...	...
	Philippines	RT	I	M	43	31	37
				F	...	...	...
	Burma	EG	I	M	37	35	...
				F	...	...	...
DEVELOPED	Australia	EG	I	B	781	893	802
	Japan	EG	I	M	729	736	895
				F	561	566	686
	UK	EG	II	M	807	737	...
				F	593	558	...

Notes ; *RT means the average wage rate.
EG means the average earnings per wage-earner.
**I denotes total wages paid entirely in cash.
II stands for money part of the wages only.
(i) M = Male ; F = Female ; B = Both
(ii) '...' means not available

Data sources : (i) *Yearbook of Labour Statistics* (1986), International Labour office, pp. 697-706, 777-783.
(ii) *Monthly Bulletin of Statistics* (July 1987), United Nations, pp. 202-5.

Table 4

OUTPUT-EMPLOYMENT RATIO IN INDUSTRY

In thousands of US $ per year per person

	Year / Country	1975	1981	1983
DEVELOPING	Korea, Republic of	2.57	7.06	6.81
	Pakistan	0.78	1.81	1.60
	Philippines	2.52	9.20	3.71
	Thailand	2.16	4.42	4.30*
DEVELOPED	Australia	17.81	32.58	34.61
	Japan	11.45	27.65	27.10
	UK	7.96	20.94	21.04
	U8A	20.88	34.99	41.07

Note : *Figure relates to 1982.

Data sources : As per Table 2.

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AN UNDERSTANDING OF RURAL INDUSTRIALISATION IN INDIA

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Two distinct views appears to be emerging regarding rural industrialisation in the Third World. Some holds[1] the opinion that LDCS would have to follow the 'European Trajectory' to modernisatation via capital intensification of industry. Of course, some of them feel that there may not be a step by step replication of such trajectory. Combination of outside help, such as, technical assistance (credit) and self-help (internal capital formation) is a necessity for such trajectory to replicate.

However, Hymer and Resnick[2] hold a different view. They observe a pattern of continuous shrinkage of the z-goods sector in Philippines, Burma and Thailand. Extinction of this sector (rural industries sector) is, according to them, logically inevitable because it turns out to be inferior as a consequent to the development of agriculture sector. This is know as "Hymer-Resnick Experience". However, those who support the "East Asian Experience" hold a different viewpoint which is almost similar to those who find that European trajectory is replicable if outside and self help are combined properly. According to the "East Asian Experience"[3] growth potential of the rural industries in East Asia is considerably large. It is observed that non-farm income of the farm households reached 80% of total income in Japan and 63% in Taiwan by 1980. A recent study[4] on rural industries in respect of two districts of West Bengal also shows that more than 70% of income of the farm household is contributed by the rural industrial activities. Hence, instead of expiring, rural indus- tries are surviving and are considered to be an important cog in the rural and national economies. However, can rural industrialisation in the context of increasing dualism be a viable proposition ? Does the existing form of production in which rural industries are found to be operating is capable of dilluting dualism so that rural industries can grow ? The present paper makes an attempt to examine these issues and understand rural industrialisation in India.

Opportunities missed :

As one could see opportunity to set the forces of industrialisation in motion from within was missed at two different historical junctures.

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Historically speaking,[5] during the pre-colonial era industries flourished at the regional and sub-regional levels but certainly were not organised. Mode of production was pre-capitalist, putting out system of which used to be lever of surplus generation. The tendency of merchant capital to be converted into industrial capital was imminent. However, before such conversion took place and before the manufacturing process was organised British Capitalism stepped and planted the forces of industrialisation in Indian soil. This is how the indigeneous potential for capitalist development and historical routes of the transformation of rural and mercantile capital into industrial capital were effectively blocked.

Opportumity was lost in the second time on the eve of the second five year plan when the policy of Import Substitution was, by and large, given due importance as a means to industrialisation and growth of the economy. The spirit underlying import substitution is beyond any dispute. However, the cost which capital intensive process of import substitution was pursued does not appear to be comparable with the long run benefits. Hence, such can be said to have undermined the indigeneous growth potential of the labour intensive small comodity production system (SCP). In other words, if concrete steps would have been visualised for the growth of SCP perhaps the forces that would have originated from such industrialisation process could have circumvented the predatory forces of borrowed capitalism. Although special attention was paid to boost up SCP in the plan formulations by means of subsidy, sectoral protection but such intervention did not appear to have yielded anything noteworthy. SCP turned out to be marginal. Industrial dualism widened.

Dualism :

Dualism is sharp in India.[6] Due recognition should have been given to this and accordingly ways and means should have been worked out to minimise it. Dualism in a country like China has been given due recognition and the policy of rural industrialisation is treated as a basic element in the strategy of development.[7] Perhaps owing to increasing dualism contri- bution of SCP towards value added has been falling sharply whereas contribution of the factory sector is rising. This is shown in Table 1.

What is evident from Table 1 is that non-factory sector contrfbuted value added to the tune of 42·2 per cent during 1960-61. However, its contribution had fallen down to 33·5 per cent during 1983-84, whereas contribution made by the factory sector is as much as 67 per cent. It is implied, therefore, that decreasing share of non-factory establishment in net value added is shared by large number of workers working in

Table 1

PERCENTAGE SHARE OF NON-FACTORY ESTABLISHMENT (Household) and (Non-Factory and Non-Household) IN NET VALUE ADDED BY MANUFACTURING INDUSTRY

Year	Percentage share
1960-61	42·2
1970-71	37·2
1980-81	37·1
1983-84	33·5

Source : Basic statistics relating to the Indian Economy, Vol. 1. All India, August 1986, Centre for Monitoring Indian Economy, Bombay.

the non-factory establishment.[8] This leads to aggravate dualism further in the industrial sector. In order to counteract this tendency non-factory establishments has to be geared up to generate more value added. This may be possible only when the form of production in which rural industries are operating undergo a change.

Form of Production :

Forms of production undergoes continuous transformation especially through its contact with capitalism. As a consequent to the changing form of production true pre-capitalist practices especially within the traditional sector distorts.[9] It is, however, observed[10] that pre-capitalis form of production is not predominant for all types of household industries. One should recognise the process of change that is taking place in India in respect of the rural household industries. Such process of change might lead to counteract dualism in the industrial sector.

Three different forms of production are found to be existing in respect of rural household industries.[11] For instance, firstly, entrepreneurs of what is called 'first generation' appear to have somewhat successfully accomplished the establishement of capitalist form of production. Market forces, by and large, determine the terms of enchange both in the forward and backward direction. Secondly a large number of house-hold industries appear to be operating in the pre-capitalist form of production putting out system of which is still detrimental to the persistence of the rural household industries and thirdly another group of industries which was operating purely in the pre-capitalist form of production but owing to the intervention of the exogeneous factors such as (a) inproved technology ; (b) institutional finance and (c) new marketing outlet tends to be in the process of transition from pre-capitalist to capitalist form of production.

What seems to be emerging from the above discussion is that if adequate intervention on the part of the government either by means of facilitating the process of improved technology adoptation, or by providing assured marketing outlet or supplying credit at a concessional rate takes place, then they will certainly help SCP to fight out the predatory forces of pre-capitalist form of production. Consequently they will be capable of generating growth potential by themselves. In terms of 'East Asian Experience' this type of industries can broadly be called 'dynamic industries.'[12] However, comparatively speaking more dynamic industries are those which are established by the first generation entrepreneurs. In view of increasing dualism in the industrial sector what is important is to delineate the dynamic rural industries, be it traditional or non-traditional, which have the potential to be part of the overall process of industrialisation of the country and grow on its own. The problem of delineation of the dynamic rural industries from the "distress adoptation variety" is an important policy issue.[13] Delineated dynamic industries may fight out pre-capitalist forces of production and dillute dualism.

Conclusions :

Apart from delineating dynamic rural industries from the 'distress adoptation' variety new product lines have to be identified. New product lines have to emerge based on the law of increasing requirements.[14] Expansion of the home market is intrinsically connected with the law of increasing requirements which sets in operation with the increasing social division of labour. Greater the emergence of new product lines in the rural area higher the social division of labour is and hence, higher the employment potential. Sub-contracting System[15] is the one that also could be adopted to bring the new product lines in the rural areas. Proliferation of SCP along with the increasing emergence of new product lines is conditioned by the expansion of the market. Market for SCP products can expand in three ways namely ; (1) demand generated by the market forces in the given situation ; (2) narrowing down[16] the skewed pattern of land distribution and (3) sectroal protection to SCP with new product lines for few years to come. The first one certainly leads to an increase in the frequency of exchange of products manufactured by SCP. Of course, frequency of exchange of products or velocity of circulation of money across the different income groups would increase not only due to better access to land resources which was otherwise not there earlier, but also due to sectoral protection which helps reducing the range of substitution. Once the process sets in motion, predatory forces of pre-capitalist form of production will be discouraged to nullify the forces leading to the change of form of production to capitalist one. In such a situation capital accumulation or the process of reinvestment may not be steady in the

SCP immediately but certainly one cannot rule out the possibility of growth and hence, the ability to dillute dualism to a considerable extent.

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BOOK REVIEW

Economic Problems of Modern India : Problems of Development by G. R. Madan (Ed.) ; Allied Publishers Ltd., New Delhi, 1989 : pp. xii+424. Rs. 225·00.

The book under review, an edited volume brought out in memory of Dr. Radhakamal Mukherjee, a noted economist, in his centenary year, contains as many as twenty four articles, classified into five Parts, namely (i) background, (ii) agriculture and rural development, (iii) economic and social infra-structure, (iv) industrial policy and urban development and (v) foreign aid and budget performance. Most of the articles trace out the historical development of primary and tertiary sectors in the post-independence period in India. Some of these areas have been discussed in the other books on Indian economics also. This book, however, is just something more than a duplication of what have already been written or discussed in these areas. Going through this book one can get a good insight into some of the major problems that face us at present. However, an edited volume brought out in memory of Dr. Radhakamal Mukherjee might have contained some original research works.

Part I of the book that gives a background to the Indian economic problems starts with an article by Gurnar Myrdal. It is an extract from the address delivered in the Central Hall of Parliament, New Delhi on 22 April, 1958 at the instance of the then Prime Minister Jawharlal Nehru. It covers several basic issues pertaining to India's planning and development. The issues raised about 30 years ago have not still lost their relevance to the present-day economic problems of the country. The issue of regional co-operation among the less developed countries in the region should receive serious attention of the planners as well as administrators particularly in order to step up exports of both the traditional goods and the manufactured industrial goods. However, the concept of regional economic co-operation that has remained a concept as yet may be put into effect if there is some amount of understanding among the countries like India, Pakistan, Bangladesh and ceylon. Development compulsion and political will and determination may go together that have, however, been found taking in the countries. Another important factor emphasized by Myrdal is the labour productivity. Labour productivity can be increased by making labour scarce and expensive. It is possible through employment generation. He recommends the creation of employment opportunities outside industry—in the maintenance activities, in the service sector.

Other articles in Part I deal with the subjects like geographical characteristics of India, population, social institutions and such other subjects and their impact on socio-economic development of the country.

The article by the editor himself on 'social institutions and economic development' stresses the important of political, economic, religious and various social institutions like educational system, caste system, joint family system, village communities, health services and population, social welfare and voluntary organizations and leadership and then analyses the impact of these factors on the Indian economic development.

Part II entitled 'agriculture and rural development' contains articles on (i) prospect of self-sufficiency in foodgrains, (ii) essentials for further push to the Green Revolution, (iii) economy of dairy farming, (iv) tenurial features and agricultural performance, (v) land reforms : ceiling and redistribution, (vi) irrigation : physical and economic aspects ; (vii) Co-operation in India : recent trends, (viii) agriculture and rural poverty, (ix) agricultural labour and (x) role of social work in rural development. The articles (ii)—(iv) are based on field survey in U. P. and, therefore, reveal some of the problems and prospects that the farmers of UP normally face in the implementation of various development measures.

Part III entitled 'economic and social infra-structure' contains article on energy, transport, education and health and medical care. Education and health have never been accorded the due emphasis in the planning for economic development of our country. These two articles describe the progress of education and health and medical care during the plan periods and highlight the deficiency in the approach to the development of these two important vehicles of social and economic development in an underdeveloped country like India.

Part IV deals with 'industrial policy and urban development'. The first article in this Part describes the Industrial Policy Resolutions adopted in India since independence. The second article on urban development gives a detailed descriptions of the patterns of urban settlement in some parts of India, the development of slum areas within and in the periphery of the megapolises and the various government measures to tackle the problems of slum clearence and re-settlement.

The final Part of the book, i.e., Part V, concentrates on foreign aid and budget performance. The article on 'changing patterns of foreign aid' focuses on sources of aid, distribution of aid and debt-servicing problems. The last two articles on (i) the dilemma before administration budget and (ii) performance budgeting are of a different taste. These articles constitute a departure from the general trend of discussion in the book having direct bearing on economic and social development of the country. However, the first article in this Part discusses some important deficiencies in the sphere of planning of public expenditure,

budget procedure, budget structure, budget execution and budget accounting. The last article is on performance budgeting that is defined as a system of presenting public expenditure in terms of functions, programmes and performance units with the purpose of highlighting governmental output and cost. It describes the present state of performance budgeting in India.

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