



# **ORISSA ECONOMIC JOURNAL**

**VOLUME XV**

**1982**

**NUMBER TWO**

# ORISSA ECONOMICS ASSOCIATION

## MEMBERS OF THE EXECUTIVE BODY, 1982

*President :*

**Dr. G. S. Das,**  
Professor of Institutional Finance  
(R. B. I. Chair) Utkal University.

*Secretary :*

**Sri B. P. Dash**

*Vice-President :*

**Sri Benudhar Mishra,**  
Reader in Economics

*Asst. Secretary :*

**Sri Basanta Kumar Das**

### MEMBERS

- |  |  |
|--|--|
| Dr. Baidyanath Misra,<br>Vice-Chancellor,<br>Orissa University of<br>Agriculture & Technology. | Smt. Manorama Mohapatra,<br>Ravenshaw College  |
| Dr. Bibekananda Das,<br>Professor of Economics,<br>Berhampur University                        | Sri K. K. Sen,<br>M. P. C. College   |
| Dr. Sanatan Mohanty,<br>Bhadrak College  | Sri S. C. Mohapatra,<br>Jeypore College  |
| Dr. K. N. Buchi,<br>Chatrapur College  | Sri A. B. Sahu,<br>Anandapur College   |
| Dr. Gokulananda Das,<br>Bhubaneswar  | Sri Dayanidhi Pal,<br>Salipur College  |
| Sri K. N. Mohapatra,<br>Rourkela Evening College   | Prof. Dayanidhi Mohapatra,<br>Utkal University                                       |
| Sri G. N. Das,<br>Reader, Sambalpur University   | Prof. B. C. Parida,<br>College of Accountancy<br>and Management<br>Studies, Cuttack. |
| Sri B. B. Misra,<br>G. M. College  | Smt. Sandhyarani Mohanty<br>Dhenkanal Women's College                                |
| Dr. Manoranjan Das,<br>Khallikote College  | Sri G. B. Nath,<br>Deogarh College.  |

*All Communications be sent to :*

**B. P. DASH**

Secretary, Orissa Economics Association  
Mahatab Road, Cuttack-12

Membership Fee Rs. 15/- per annum.

Published by Dr. B. Misra, on behalf of Orissa Economics Association, and  
Printed by K. K. Misra, at Aruna Printing Works,  
Berhampur-760002.

# **ORISSA ECONOMIC JOURNAL**

---

**VOLUME XV**

**JULY. - DEC 1982**

**No.2**

---

*Editor :*

**Dr. Baidyanath Misra, M.A., A. M, Ph. D.**  
**VICE-CHANCELLOR, ORISSA UNIVERSITY**  
**OF AGRICULTURE & TECHNOLOGY,**  
**BHUBANESWAR**

**ORISSA ECONOMICS ASSOCIATION**  
**BHUBANESWAR**

# ORISSA ECONOMIC JOURNAL

1983

JULY - DEC 1983

VOLUME XV

Editor:  
Dr. Bhanu Prasad Mishra, M.A., B.L., Ph.D.  
Department of Economics, Orissa University  
of Agriculture & Technology  
Bhubaneswar

ORISSA ECONOMIC ASSOCIATION

BHUBANESWAR

## CONTENTS

1. Measuring Economic Efficiency in  
A "Trade-off" situation :  
A Quantitative Approach *Binayak Rath* 1
2. Road Transport and the Economy :  
A study of some policy issues  
with reference to Orissa. *Sanatan Mohanty* 17
3. Growth and Development of  
Road Transport in Orissa : *B. Bhuyan* 24
4. Role of Commercial Banks in Financing  
Road Transport Operators in Orissa. *S. N. Misra* 29
5. Benefits of Transport Finance  
in Ganjam District-  
A case study of O.S.F.C. Beneficiaries *Bhagabata Patro* 36
6. Road Transport and Egalitarianism *B. Dash* 39
7. Development of Inland water Transport Potentials:  
Its Nature & Significance in Orissa (Summary) *Binayak Rath* 43
8. Development of Road System in Orissa (Summary) *K. K. Sen* 45
9. Rural Roads : Their Role in Economic  
Development of Orissa (Summary) *S. Panigrahi*  
*R. P. Choudhury* 47
10. Road Transport-  
A key to Rural Development in Orissa (Summary) *N. P. Mohanty* 48

# CONTENTS

1. Maintaining Economic Efficiency in A. "Jack-off" situation A. Quantitative Approach	10
2. Road Transport and Economic A study of road transport systems with reference to China	17
3. Growth and Development of Road Transport in China	24
4. Role of Government in Road Road Transport Development in China	31
5. Road Transport and Economic in the District	38
6. Road Transport and Economic A case study of C.S.C. Roadways	45
7. Development of Road Transport Potential in the District (C.S.C. Roadways)	52
8. Development of Road Transport in China (Summary)	59
9. Road Transport: The Role of Economic Development in China (Summary)	66
10. Road Transport A key to Rural Development in China (Summary)	73

## **MEASURING ECONOMIC EFFICIENCY IN A "TRADE-OFF" SITUATION : A Quantitative Approach**

**Binayak Rath**

### **1. Introduction :**

In a planned economy like India, very often the pursuance of one of the planned objectives conflicts with the pursuance of other planned objectives or retards the furthering of another objective. For example, in most cases the objective of maximisation of output is likely to conflict with the maximisation of employment objective. Further, there may be conflicts of interests between the various State Governments and also between the different agencies of the Central as well as State Governments. Moreover, in micro-level planning of projects sometimes the competing uses of particular limited resource may give rise to "trade-off" situations. In order to overcome such conflicting situations, the Government is expected to adhere to some rational economic criteria; and to some extent, the social benefit-cost analysis would provide an analytical tool for reconciling such possible conflicts or "trade-off" situations.

But almost all the methods of project evaluation, developed in the recent years, have unanimously agreed that the intuitive value judgements of the policy-makers or planners are no suitable guides to such measurement problems. Instead these methods have advocated for quantitative analyses.

In this paper an attempt has been made to illustrate quantitative methods are always the best guides to overcome such "trade-off" or conflicting situations. In undertaking the exercise, I have adopted a case study approach. A typical "trade-off" problem from the Rengali Multi-purpose Project (hereafter, RMP), Orissa has been studied by me to prove the effectiveness of quantitative methods for the policy decisions of our planners and decision-makers.

### **2 The RMP :**

The Rengali Multi-purpose project (phase 1),<sup>1</sup> across the Brahmani, with the twin objectives of flood control and power generation is under



practising rainfed farming and also who are affected by droughts in every alternative years. Therefore, one may reasonably expect that the provision of canals would have changed the conditions of farming as well as the conditions of the rural poor.

**Prerequisites and Assumptions :**

To estimate the crop productions under conditions of irrigation, one has to collect the data on nature of soil, and classification, present and future cropping patterns, etc. in the command area of the project. Moreover the land should be ranked through consideration of physical and chemical attributes, topography, drainage and other relevant soil characteristics. Furthermore, an agro-economic survey should have been conducted at the time of designing any irrigation project. But, since all these exercises were not undertaken by the Rengali Project Authorities, I have to face a lot of difficulties in projecting the agricultural production and hence, the "net benefits" from irrigation.

However, to make a simplification I have proceeded with my calculations under the following assumptions :

**(1) Potential Utilisation :**

With regard to the irrigation potentials proposed to be created as well as with regard to the utilisation of the potential of the project I have followed a conservative estimate. First, I have reduced the cultivable command area (CCA) of 2,61,120 hectares to 2,60,000 hectares for the sake of conveniences in calculation. Secondly, I have assumed that 90% of the utilisation of the irrigation potential would occur during Kharif season, 40% during Rabi and 10% during summer season. Further, this utilisation pattern for Rabi and Summer season would increase over the years.

**(2) Cropping Patterns :**

In projecting the future cropping patterns in the command area of the project I have assumed that with introduction of irrigation, the shift from local paddy cultivation to HYV paddy cultivation during Kharif season would be significant; *i.e.* when 80% of the area in Kharif is under local paddy cultivation, it would be 10% local and 70% HYV paddy after canal irrigation. Secondly, during Rabi and Summer seasons, when there are hardly any cultivation in the command area, with reliability of irrigation supply it would be about 16% HYV paddy, 8% wheat, 5% pulses, 5% ground nut and 6% vegetables during Rabi and 8% HYV paddy and 2%



vegetables during summer season. This cropping pattern is more or less, based on the projected cropping pattern adopted by the World Bank<sup>4</sup> for the non-coastal areas of Orissa under "future with project" conditions. Furthermore, I have assumed that the cropping intensity would rise to 150% after construction of irrigation net work, and this would rise gradually upto 175% within 10 years of completion of the project.

### 3. Agricultural Development :

When water would be available for cultivation there would be considerable development in the command area. These developments would take place either under the present irrigation standards or under improved irrigation standards. The improved irrigation standard assumes the activities like land consolidation, on-farm development, intensive agricultural extension facilities, infrastructure facilities, etc. But for the purpose of our analysis, the present irrigation standards have been assumed. However, it has been assumed further that full agricultural development (100%) would take place after 10 years of completion of the project. With the present irrigation standards, the estimate of benefits have been made under the assumption that very first year of completion of the irrigation net work, there would be 40% of the agricultural development and it would increase gradually upto 100% after 10 years only.

### 4. The Net Benefits Generated :

The World Bank in its study has provided an economic crop budget<sup>5</sup> for the non-coastal regions under present rainfed and future irrigation conditions for different crops during Kharif and Rabi season. Taking into account the shadow prices of inputs and outputs they have arrived at the net benefit figures<sup>6</sup> per hectare for different crops. On the basis of their findings I have assumed that the difference in "net benefits" under "future with the project" and under the "present rainfed" conditions for each crop would be the additional net benefit attributable to irrigation during Kharif season. But under Rabi and summer season, as there would be no possibilities of cultivation without irrigation (hence, no net benefit generated), I have assumed that the entire net benefit per hectare would be the net benefit attributable to irrigation.

### The Estimates :

On the basis of the above assumptions I have estimated the total net benefits generated due to irrigation from the proposed Rengali Project. For detailed calculations see Annex II / Table 1. The additional benefits

from irrigation, on a conservative estimate, has been approximated to be about Rs. 2933.06 lakhs in the first year of the completion of the irrigation net-work and this would rise further with increased exploitation of the potentials and with increased extensive programmes of the Government in the command area in the form of SFDA, MF & AL, CADA, IRDP and etc. When this estimate is compared with the estimate of the project authorities (given in Annex II / Table 2), one can observe that there is a marginal difference between the two estimates.

Then assuming the constant O & M costs of Rs. 810.2 lakhs per annum (as given in the project report), the "net benefits" from the development of the irrigation potentials would amount to about Rs. 2122.8 lakhs in the year 1982 and the same would rise over the years till the attainment of full development in the command area of the project. Moreover, if improved irrigation standards would be introduced in the command area, then the additional net benefit figures would rise further over the years.

**(b) Net Benefits from Power Generation :**

The power aspect of the Rengali project, that has replaced irrigation, has envisaged an installed capacity of 100 MW at present and this would be raised to 200 MW ultimately. Since detailed information on 4 x 50 MW of ultimate installed capacity are not available in the project report, I have decided to concentrate on the present installed capacity. With present installed capacity of 100 MW, it is estimated that the net firm energy available would be 523 million KWH and the secondary energy generation would be 146 million KWH. Further, it is estimated that with the commissioning of the Koel-Karo project in Bihar the net firm energy available would be 631.8 M. KWH. and the secondary energy generation would be 60 M. KWH. In order to compute the net benefit from power generation the method of approximation is to calculate the additional gains accrued to the society from the net firm energy available for the use of the consumers.

In computing the net benefits from power the following methodology have been adopted :

First of all, the net firm energy assumed to be available from 1982 have been allocated between different sectors of the economy, those use power either for consumption purposes or for production purposes. The allocation for 1982 is based on the projected consumption pattern of the OSEB<sup>7</sup> for that year.

Secondly, it has been assumed that by 1985 the Koel-Karo project in Bihar would be commissioned; thus the net firm energy available would be 632m. KWH. This energy has been allocated between different sectors on the basis of our own projection of percentage of distribution from 1985 onwards. Our projection of the consumption-pattern is based on the past and projected consumption trends upto 1984 and also on the trend of developmental activities expected to be undertaken in the future years.

Then on the basis of the maximum potential tariff rates<sup>a</sup> for each set of consumers the gross benefit figures for different sectors have been estimated. By adding the gross benefit figures for these sectors the gross benefits from power generation have been arrived at. For detailed calculation see Annex II/Table 3 and 4.

But in an underdeveloped country like India where the market prices of commodities like irrigation and power are administered prices, these are generally expected to be under estimated. These prices are not equilibrium prices, which reflect the true value of the commodity. Hence, in order to find out the direct net benefit from these commodities one has to use a conversion factor. The World Bank<sup>2</sup> has computed a 60% conversion factor for non-traded commodities of Orissa irrigation projects. As electricity is considered as a non-traded commodity, we have used the same conversion factor for imputation of the benefits from power generation. By using this conversion factor of 60%, the gross value figures of power generation have been raised from Rs. 700.12 lakhs to Rs. 1166.85 lakhs in the initial years and then from Rs. 859.89 lakhs to Rs. 1433.15 lakhs from 1985 onwards. Furthermore, assuming a constant O & M costs (as given by the project authorities) the net benefit from power generation would be Rs. 877.53 lakhs per annum in the initial years and Rs. 1130.95 lakhs per annum from 1985 onwards.

## II. Economic Efficiency : Maximisation of Employment.

In this section I propose to discuss the relative efficiency of different uses of water on the basis of maximisation of employment in the economy in general and the region in particular. In a country like ours and more particularly in a backward region like Orissa, where these are disguised, seasonal and open unemployment<sup>10</sup> and where more of employment generation has been the accepted goal of planning, any particular use of water that would maximise employment potentials should be considered as more efficient from economic point of view. Hence, in



deciding a trade-off relation, the employment generation capacity of the system would provide a guiding index.

Let us now examine which of the two competitive uses of water, namely : irrigation and power generation would be more efficient from the angle of employment generations. The construction of irrigation net works as well as their operation and maintenance in the future years (as these are generally labour intensive) would create more of employment opportunities than power generation (both construction and maintenance-wise) because power generation is normally capital intensive. Furthermore the output of irrigation net work, *i.e.* water, would provide incentives for agricultural development in the command area of the project. As discussed earlier, due to creation of irrigation potentials there would be agricultural development and intensive land uses as a result of which the yield rates would increase. Moreover, the agricultural developments and the subsequent investment in agriculture (owing to higher income generations) would create more of employment opportunities in the secondary and tertiary sectors of the command area of the project. Following the World Bank standards<sup>11</sup> for the 10,000 hectares command area, it has been estimated that about 1,11,800 additional farm employments would be created in the area of the project after irrigation. In addition to these farm employments, since the project would offer scope for substantial rise in agricultural income, there would be additional income and employment generation in the non-farm sector.

On the other hand, a bulk of the output of power generation, *i.e.* firm energy, would go to the industrial sector (more than 88%). And as we know the capital-labour ratio in the industries are very high and also the industries which use more power are capital-intensive in character, the employment generation capacity of power would be very much limited. Even though in the past years there has been significant increase in consumption of electricity by the industrial sectors, their capacity to absorb unemployment has been limited because only 1% of the total labour force employed in Orissa are engaged in the factory sector. Thus, it can be boldly said that from the point of view of both direct and indirect employment generations, irrigation would be more efficient than power generation. Irrigation has a much more scope to absorb the growing unemployment in Orissa.

### III. Economic Efficiency : maximisation of regional redistribution.

As discussed earlier, the command areas of the project lie in one of the backward region's of Orissa. It is also found out in section (I) above

that irrigation would contribute more to the national income in general as well as to the income of the farmers in particular. In addition to this advantage, irrigation would create more of employment opportunities than power generation. And also since a bulk of power output would go to the industrial sector, which would be concentrated outside the region, the people of the region would not be benefited much from power generation.

Therefore, one may conclude that irrigation would be more efficient than power generation from the point of view of maximisation of regional redistribution because irrigation would directly benefit the region and would bring about considerable socio-economic changes in the command area. Recognizing this importance of irrigation development to mitigate regional imbalance, the Government of Orissa, from seventies, have been emphasizing on development of medium and minor irrigation projects in the backward areas of the State.

#### 6. The Inference :

From the above discussions it is clear that if the decision-makers would have adhered the norm of economic efficiency, then irrigation would have proved to be more efficient than power generation of view of maximisation of national income, employment generation and regional redistribution. Hence, the inference drawn from the present study is that the "trade-off" decision, implicitly adopted by the project authorities for the Rengali Multipurpose project, was not efficient from the point of view of a rational criterion. The decision-makers should have preferred irrigation rather than economic power generation in first phase development of the project.

ANNEXURE I/Table 1

#### RENGALI DAM PROJECT : SALIENT FEATURES

Location :	Rengali	Dist. Dhenkanal, Orissa
	Latitude	20° 77' 0" N
	Longitude	85° 02' 0" E
Hydrology :		
1)	Drainage area at the dam site	25,250 sq. km,
2)	Mean Annual rainfall in watershed	157 cms.
3)	Mean Annual Run-off at the dam site	1.49 Million ha. M.
4)	Design Flood at dam site :	
a)	1000 Yr. return period	27, 800 Cumecs
b)	Maximum probable flood	55, 540 Cumecs

**Reservoir :**

1) Storage capacity at M. W. L.	5.15 Lakh Ham.
2) Storage capacity at F. R. L.	4.40 Lakh Ham.
3) Maximum water level (M. W. L.)	125.40 M.
4) Maximum Reservoir level (M. R. L.)	123.75 M.
5) Dead Storage Level (D.S.L.)	109.75 M.
6) Dead Storage Capacity	0.988 Lakh Ham.
7) Water spread Area	406 sq. km.

**Dam :**

1) Type	Gravity massonary type
2) Length of the Dam (Overall)	1040. M.
3) Length of Spillway	464. M.
4) Length of power Dam	84 M.
5) T. B. L.	128.50 M.
6) Average Height	45 M.
7) Spillway Gates	24 Nos. Steel gates
8) Maximum Height of the Dam above foundation	65.5 M.
9) Deepest foundation level	60.00 M.

**Benefits :**

<b>(A) Flood Control :</b>	
1) Area protected from flood	2,600 sq. km.
2) Population benefited	10.8 Lakh
3) Average Annual direct benefit	Rs. 6.65 crores
<b>(B) Power &amp; Energy</b>	
1) Installed Capacity (Present)	2 × 50 M.W.
2) Installed Capacity (Ultimate)	4 × 50 M.W.
3) Firm power : Present	60 MW
Ultimate	91 MW
4) Annual Energy generation (firm) :	
Present	525.6 M. KWH
Ultimate	635.0 M.KW
5) Net firm energy available :	
Present	523.0 M. KWH
Ultimate	631.8 M. KWH

**Construction Cost :**

1) Dam and appartment works :	
a) Initial estimate	Rs. 41.92 crores
b) Revised estimate	Rs. 75.00 crores
2) Power production :	
a) Initial estimate	Rs. 16.00 crores
b) Revised estimate	Rs. 24.00 crores

**Allocated cost : (of initial estimate)**

i) Flood Control	Rs. 12.50 crores
ii) Irrigation (2nd phase development)	Rs. 10.10 crores
iii) Power	Rs. 35.32 crores

**Benefit - Cost Ratio (from flood control only)**

2.2

Source : "Reported of the Rengali Multi-Purpose Project, (stage I)" Irrigation and Power Department, Govt of Orissa . Bhubaneswar, 1972.



ANNEXURE II / Table 1  
**Rengali Dam Project : Present & Projected Cropping Patterns in the Command Area**  
 as well as the Total Net Benefit from Irrigation

Particulars	Present condition %age of Yield cropped (ton/ha) area	Future yield without the project (ton/ha)	Future with the project		Net value per hect. (in Rs.)	Total Net Benefit by irrigation (in lakh Rs.)		
			% of cropped area to be irri.	cropped area irrigated (in ha)				
1	2	3	4	5	6	7	8	9
Kharif Season								
Paddy (local)	80	1.1	1.3	10	26,000	2.3	410	106.60
Paddy (HYV)	—	—	1.7	70	1,82,000	2.8	298	542.36
Maize	4	0.7	0.9	2	5,200	1.4	113	5.87
Ragi	4	0.6	0.7	2	5,200	1.1	80	4.16
Pulses	3	0.4	0.5	1	2,600	0.7	109	2.83
Groundnut	5	0.6	0.7	3	7,800	1.3	355	27.69
Vegetables	3	4.0	5.0	2	5,200	7.0	180	9.36
Rabi Season								
Paddy (HYV)	—	—	—	16	41,600	3.3	1,665	692.64
Wheat	—	—	—	8	20,800	2.2	1,516	315.32
Pulses	—	—	—	5	13,000	0.8	1,112	144.56
Groundnut	—	—	—	5	13,000	1.4	1,401	182.13
Vegetables	—	—	—	6	15,600	8.0	1,807	281.89
Summer Season								
Paddy (HYV)	—	—	—	8	20,800	3.3	1,665	346.32
Vegetables	—	—	—	2	5,200	8.0	1,807	93.96
Year Round	1	30	40	2	5,200	75.0	3,411	177.37
Sugercane								
Net cultivable area		2,60,000					Rs.	2,933.06
Cropping intensity		100%		150%				

Source : Columns (2), (3), (4), (5), (7) and (8) are taken from the World Bank op. cit.

## ANNEXURE II / TABLE-2

**RENGALI DAM PROJECT**  
**BENEFIT-COST RATIO OF IRRIGATION**

**A. PRIMARY BENEFITS (Direct)**

I)	1. Value of total agr. produce before irrigation	Rs. 1,055.75 lakhs
	2. Cost of cultivation to the economy (1)	368.75 "
	3. Net produce before irrigation (1)–(2)	687.00 "
II)	1. Value of agr. production after irrigation	7,774.78 "
	2. Cost of cultivation to the economy (1)	4,164.62 "
	3. Net production after irrigation	3,610.16 "
III)	Net Benefit II (3)–I (3)	2,923.16 "

**B. ANNUAL COSTS**

	at 5%	at 10%
1) Interest on capital of Rs. 63,893 crores	Rs.319.465 lakhs	Rs.638.92 lakhs
2) Depreciation charges 2%	Rs.127.786 "	Rs.127.786 "
3) Administrative Expenses @ Rs.25/- per hectare of 2,74,150 hac.	Rs. 43.54 "	Rs. 43.54 "
	Rs.490.865 "	Rs.810.250 "
B – C Ratio :	$\frac{2923.16}{490.895} = 5.96$	$\frac{2923.16}{810.256} = 3.61$

Source : Statement No. 15 Rengali Dam Project Report", July 1972, I & P Dept., Govt. of Orissa, Bhubaneswar.

**Rengali Dam Project : Cost of Energy Generation, Net Firm Energy Available and  
their Allocation Between Different Sectors.**

Sl. No. (1)	Particulars (2)	1973 (3)	1974 (4)	1981 (5)	1982 (6)	1983 (7)	1984 (8)	1985 (9)	1986 (10)	1987 onwards (11)
A)	Costs (in lakh Rs.)		2400		289.32	289.32	289.32	302.22	302.22	302.22
B)	Net firm energy available (in lakh KWH)									
C)	Allocation of firm energy between different sectors	0	0		5230	5230	5230	6320	6320	6320
i)	(in lakh KWH)									
ii)	Domestic light and small power.				118.72 (2.27)*	118.72 (2.27)*	118.72 (2.27)*	189.60 (3.0)*	189.60 (3.0)*	189.60 (3.0)*
iii)	Commercial light and power				79.49 (1.52)	79.49 (1.52)	79.49 (1.52)	101.12 (1.6)	101.12 (1.6)	101.12 (1.6)
iv)	Public lighting				15.69 (0.30)	15.69 (0.30)	15.69 (0.30)	18.96 (0.3)	18.96 (0.3)	18.96 (0.3)
v)	Public water works and sewerage pumping				29.81 (0.57)	29.81 (0.57)	29.81 (0.57)	37.92 (0.6)	37.92 (0.6)	37.92 (0.6)
vi)	Irrigation and Dewatering				33.47 (0.64)	33.47 (0.64)	33.47 (0.64)	50.56 (0.8)	50.56 (0.8)	50.56 (0.8)
vii)	Industries :									
a)	LT				137.02 (2.62)	137.02 (2.62)	137.02 (2.62)	189.60 (3.0)	189.60 (3.0)	189.60 (3.0)
b)	HT (less than 1 MW)				343.61 (6.57)	343.61 (6.57)	343.61 (6.57)	442.40 (7.0)	442.40 (7.0)	442.40 (7.0)
c)	HT (1 MW and above)				4345.60 (63.09)	4345.60 (63.09)	4345.60 (63.09)	5131.84 (81.2)	5131.84 (81.2)	5131.84 (81.2)
viii)	Railway/Trainway track				100.41 (1.92)	100.41 (1.92)	100.41 (1.92)	126.40 (2.0)	126.40 (2.0)	126.40 (2.0)
	Bulk supply to non-industrial consumers				24.05 (0.46)	24.05 (0.46)	24.05 (0.46)	31.60 (0.5)	31.60 (0.5)	31.60 (0.5)

Source : The figures in (A) & (B) are taken from the project report.  
The figures within the brackets are the percentages of consumption by each sector. The percentages in column (6) are taken from the projected estimation of the OSEB for the year 1982-83 and the percentages in column (9) are our own assumption on the basis of the past trend.

ANNEXURE II / Table - 4  
Rengali Dam Project : Gross Annual Benefit from the net Firm Energy of the Power Project.

Sl.	Particulars	1982 to 84 (per year)	1985 onwards (per year)	Tariff rates (in paisa per unit)	Money value of the energy 1982-84 (in Lakh)	Money value 1985 onwards (in lakh Rs)
1	2	3	4	5	6	7
A)	Net firm energy available	5230	6320	—	—	—
B)	Allocation of firm energy between different sectors (in lakh KWH)					
i)	Domestic light & small power	118.72	189.60	31	36.80	58.77
ii)	Commercial light & small power	79.49	101.12	34	27.02	34.48
iii)	Public lighting	15.69	18.96	26	4.07	4.92
iv)	Public water works and sewerage pumping	29.81	37.92	11	3.27	4.17
v)	Irrigation & Dewatering	33.47	50.56	16	5.35	8.08
vi)	Industries					
	a) LT	137.02	189.60	18	24.66	34.12
	b) HT (less than 1 MW)	343.61	442.40	18	61.84	79.63
	c) HT (1 MW & above)	4345.60	5131.84	12	521.47	615.82
vii)	Railway/Traction supply	100.41	126.40	12	12.04	15.16
viii)	Bulk Supply to non-industrial consumers	24.05	31.60	15	3.60	4.74
C)	Gross value of power (in lakh)				700.12	859.89
D)	Gross value of power at 60% conversion factor (in lakh Rs.)				1166.85	1433.15

Source : 1) The tariff rates are taken from "The Orissa Gazette (extra ordinary)" Nov. 30 1974, OSEB Bhubaneswar.  
2) The conversion factor is being taken from the "India: Appraisal of the Irrigation Project" World Bank Aug. 1977.

## References :

1. Bergman Hellmuth; "Guide to Economic Evaluation of Irrigation Projects", OECD, 1973.
2. Campbell, T. H. and Sylvester, R.O. : "Water Resource Management and Public Policy", University of Washington Press, 1968.
3. Government of Orissa : "Report of Rengali Multi-Purpose Project", I & P Deptt. Bhubaneswar, 1972.
4. Government of Orissa : "Economic Survey of Orissa, 1976", BSE Bhubaneswar, 1977-78.
5. Hartman, L.M. & Seastone Don : "Water Transfers Economic Efficiency and Alternative Institution", John Hopkins, 1970.
6. James, L. D. & Lee R. R. : "Economic of Water Resource Planning". Mc-Graw Hill Inc., 1971.
7. Kneese, Allen V. : "Water Resources : Development and Use", Federal Reserve Bank of Kansas City, 1969.
8. Krutilla, John V. & Eckstein O. : "Multi-Purpose River Development" John Hopkins, 1958.
9. Rath, B. : "Water-use Decision criteria of a Multi-Purpose Project at the Stage of Project Planning", Proceedings of the National Workshop on "Conjunctive Use of Ground and Surface Water", WRDTC, University of Roorkee, April, 1979.
10. World Bank : "India : Appraisal of the Orissa Irrigation Project", August 24, 1977.

## Notes :

1. For the salient features of the project see Annex 1 / Table 1.
2. Rath, B. "Water Use Decision Criteria of a Multi-purpose Project at the Level of Project Planning", Proceedings of the "Workshop on Conjunctive Use of Surface and Ground Waters", WRDTC, University of Roorkee, Roorkee, 1979.
3. Note; All these blocks have been identified as backward areas of the State of Orissa.
4. World Bank, "India : Appraisal of the Orissa Irrigation Project," August, 1977.
5. Ibid.
6. World Bank, op. cit, Table No. 4, Annex 5, p. 147.
7. Orissa State Electricity Board (OSEB), "Growth of Energy sales and System Demand", submitted to the CEA, 1976-77.



So far as Orissa is concerned, most of the villages are not connected by all-weather roads. Most of the roads are merely cart tracks crossed by unbridged streams. The villages virtually remain isolated for about six months in the year. There are six sub-divisions, 18 tahasils, 95 blocks and 85 police stations, the headquarters of which do not have all-weather road links with the headquarters of the immediate supervising authority.<sup>3</sup>

It is no wonder therefore that the most notable objective of the five year plan for 1978-83 was the focus on rural development and the provision of basic needs for the poor in villages and towns. As a service function the transport plan was to reflect these priorities.<sup>4</sup> The revised sixth plan for 1980-85 also lays great emphasis on the extension of economic infrastructure like rural roads and rural electrification. The proposal to provide rural roads to 20,000 additional villages in course of the sixth plan is a part of the declared policy of the state for providing minimum needs to the people.<sup>5</sup>

#### **Contribution of Road transport to tax revenue :**

Contribution of road transport to tax revenue is substantial. According to Mr. B. N. Reporter, the President of the Indian Road Transport Development Association, tax-revenue from road transport actually exceeded Rs. 2000 crores in 1981, though the 20 year Road Development Plan for 1961-81 estimated it to be of the order of only Rs. 547.1 crores.<sup>6</sup> The Jha Committee has nationally computed that the tax incidence on the production and sale of a Telco truck ranged from 56.3% of the tax-exclusive customer price in Delhi, 62% in Calcutta, 63.6% in Madras and 65.8% in Bombay.<sup>7</sup> The Jha Committee has also estimated that the average annual taxes from vehicle operations would be around Rs. 36,000 per truck and Rs. 41,000 per bus. Considering the active commercial vehicle population to be around 300,000 trucks and 100,000 buses, the indirect tax revenue generated by their operations would be of the order of Rs. 1500 crores, *i.e.* more than 12% of the total tax revenues generated in the country.<sup>8</sup>

In Orissa two taxes are imposed on road transport, *e.g.* Motor Vehicles Tax levied on the basis of registration of vehicles, which existed before independence and Taxes on goods and Passengers levied in 1959-60. Table I reveals the contribution of the two kinds of taxes over the years. In 1978-79 the two taxes taken together contribution Rs. 871 lakhs, which amounted to about 9.3% of the total own tax revenue of Orissa. Compared to revenue from this source, public expenditure on transport and communications was only about Rs. 48 lakhs in 1979-80.



TABLE-1

## Tax revenue contribution of road transport in Orissa

(Rs. in Lakhs)

Year	Moter vehicles Tax	Percentage to total own tax revenue of Orissa	Other taxes and duties including taxes on goods and passengers levied from 1959-60	Percentage to total own tax revenue of Orissa
1947-48	3		—	
1950-51	11		—	
1955-56	40		—	
1960-61	82	9.6	17	2.0
1965-66	171	8.7	12	0.6
1970-71	293	8.8	86	2.6
1975-76	571	8.3	196	2.9
1976-77	555	6.9	219	2.7
(RE) 1977-78	582	6.1	241	2.5
(BE) 1978-79	611	6.5	260	2.8

Source— Fiscal Analysis Branch, Finance Deptt. Govt. of Orissa.

## Employment potential

Road construction and maintenance and the operation of road transport have relatively greater employment potential compared to other modes of transport. According to the National Transport Policy Committee, direct and indirect employment in person-years for rupees one lakh of investment would be 27.50 in road construction and maintenance, 16.95 in the operation of trucks, 9.26 in the operation of buses, as against 4.30 in railways, 20.00 coastal shipping vessels, 2.40 in other coastal shipping, 0.97 in air transport and 33.59 in the operation of inland water transport.<sup>9</sup> Though inland water transport and coastal shipping offer greater employment opportunities than other modes of transport, scope for their expansion is limited. Hence the expansion of road construction and extension of road transport services would not only improve communications, which are in bad shape, but also generate greater employment opportunities.

### **Socio economic costs of bad road**

Bad roads increase operational cost of transport. Such invisible costs include damage to tyres, more fuel consumption, greater cost on spare parts and greater incidence of accidents. According to an estimate such invisible costs incurred by vehicles on poor roads amounted to Rs. 750 crores per annum.<sup>10</sup> Such a national waste can be eliminated by improving roads.

### **Transport Planning**

Development and expansion of road transport would confer immense socio-economic benefits, both on the rural people as well as the urban people, if the same is properly planned for a spatial region. In our traditional planning for development there is emphasis on sectoral developments, e.g. agriculture, industry, transport etc. As the spatial unity is ignored in such planning, the same leads to unbalanced growth and spatial disparity. A policy for regional development planning integrates the sectoral and spatial dimensions for an integrated development of a region. A transport net-work properly planned with an orientation of space will lead to better exploitation of resources and proper use of inputs. It will not only lead to balanced economic development but also better social and cultural inter-course and unity.

### **Inadequacy of road transport in Orissa**

One of the important reasons for the historical backwardness of Orissa is its poor transport system. Railways touch only the peripheries of the State. Due to greater emphasis on irrigation, inland water transport has very limited scope. Hence road transport is vital for the State, not only for linking the forest and mineral rich interior districts with industrial towns and ports, but also for developing agriculture, small industries and forging socio-cultural unity among the people of different regions.

Orissa has only 61 Kms. surfaced road for one lakh of population as against the all-India average of 96 Kms. In terms of area, Orissa has 10Kms of surfaced road per 100 square Kms as against all-India average of 16 Kms.<sup>11</sup> Thus expansion of transport is vital for Orissa.

### **Need for Coordination :**

In view of the fact that there is inadequacy of communication system in the State, a coordinated road transport policy is necessary for proper utilisation of transport capacity. Among the different modes of

passenger transport, bus, mini bus, taxi cars, trekkers and auto-rickshaws are at present subject to control of transport authorities in the State. Trucks, auto-rickshaws, rickshaws and bullock carts are supposed to carry goods. But due to inadequacy of capacity and irregularity of operation of authorised passenger carriers, specially in rural routes, trucks, trekkers and auto-rickshaws also carry passengers. It is a pitiable sight to see people being carried on loaded goods trucks, though that is dangerous and illegal.

Government policy regarding the operation of trekkers and auto-rickshaws is not clear. These vehicles are seen carrying both goods and passengers openly, even in cities like Cuttack and Bhubaneswar. At the same time the authorities have been cautioning passengers not to use trekkers. The common man does not know whether trekkers and auto-rickshaws are authorised modes of passenger transport or not.

Government should have a declared transport policy earmarking areas and routes of operation for different modes of transport, so that there is no overlapping and unhealthy competition among them. Multi-model passenger transport system may be allowed only in big urban centres like Cuttack, Bhubaneswar and Rourkela to meet the varied transport needs. But on assessment of traffic potential of different routes is necessary before planning for an integrated road transport system for the State. In the absence of any machinery for traffic potential survey, transport system has been developing in an unplanned and unorganised manner.<sup>12</sup>

#### Private Vrs Public Ownership

Road transport is a service, which is allowed to be operated both by Government undertaking and private operators. But there is complete absence of any policy in this regard. Operation of both passenger and goods transport is a sphere which gives wide scope for self-employment of educated youth. In fact, many unemployed graduates are taking advantage of institutional loans for operating passenger and goods transport in the State. The system of issuing temporary route permits and the threats of nationalisation of routes are not only creating uncertainties for them, but also giving scope for corruption and bribery.

On the one hand the nationalised transport undertakings are incurring huge loss, and on the other hand there is proliferation of privatised buses, mini buses. The financial position of the Orissa State Road Transport Corporation and the Orissa State Commercial Transport Corporation can be seen in Tables 2 and 3 given below. The OSRTC incurred loss upto



1976-77. It was only estimated to earn some profit from 1977-78 onwards. Similarly the OSCTC also incurred loss all along with marginal profits in some years. Government should think seriously if it would be worthwhile to nationalise more bus routes. Private operators should be allowed to operate exclusively in some routes so long as they maintain the required efficiency of service.

TABLE—2

**Financial results of Orissa State Road Transport Corporation**

(Rupees in Lakhs)

	1974-75 Accounts	1975-76 Accounts	1976-77 Pre- Accounts	1977-78 latest estimate	1978-79 estimate	1979-80 estimate
Block capital at the end of the year.	826.69	852.19	1052.19	1148.81	1252.29	1218.67
Retained profits.	(-)57.96	(-)36.36	(-)8.99	(+)40.48	(+)49.20	(+)37.69

Source : Notes on Subsidiary Points' presented to the Seventh Finance Commission, Finance Deptt. Government of Orissa, 1977.

TABLE—3

**Financial results of Orissa State Commercial Transport Corporation**

(Rupees in Crores)

	1971-72 Actuals	1972-73 Actuals	1973-74 Actuals	1974-75 Actuals	1975-76 Actuals	1976-77 Depart- mental actual	1977-78 Estimate
Block capital at the end of the year	4.35	4.40	4.44	4.44	4.44	4.44	4.44
Retained profits	(-) 0.20	(-) 0.25	(-) 0.33	(+) 0.11	(+) 0.11	(-) 0.09	(+) 0.04

Source : Notes on Subsidiary Points' Presented to the Seventh Finance Commission, Finance Department, Government of Orissa, 1978.

**Summary and recommendation**

In conclusion it can be said that development of road transport has a key role to play for the development of our economy and breaking the isolation of the rural areas. Their direct and indirect contribution to tax

revenue is great. Compared to their contribution, less of funds are provided for road development and transport. They also generate great employment opportunities.

Orissa lags behind in road development compared to the all-India average. There does not seem to be any clear-cut policy regarding the development of road transport and proper co-ordination between different modes of transport. Uncertainties regarding nationalisation of bus routes and issue of route permits should be removed. In view of the fact that the transport undertakings in the public sector are incurring loss year after year, private operators should be allowed to operate in exclusive routes. That will also provide self-employment opportunities.

#### REFERENCES

1. Fredoon P. Antia—Towards a multi-model transport policy, Economic Times, Calcutta 15.8.1981.
2. Quoted by S S Mangraker in Road Transport, a Victim of neglect, Economic Times, Calcutta 14.12.1981.
3. Draft 6th Plan, Orissa, 1980-85, Planning and Coordination Deptt; Government of Orissa, 1980 P-228
4. Draft five year Plan, 1978-83, Government of India, Planning Commission Page-206
5. The Planning Minister, Sri S B Chouhan outlined the objective and targets of the 6th plan for 1980-85 while initiating the debate on the Draft plan in the Rajya Sabha on 9.9.1981.
6. B N Reporter, Road Transport, Economic Times, Calcutta 21.11.81
7. Report of the Indirect Taxation Enquiry Committee, Government of India, 1978 Page-623.
8. Ibid Page 604.
9. Quoted by F. P. Antia, Op. Cit.
10. B N Reporter, Op. Cit.
11. Draft 6th Plan, Orissa, 1980-85, Page-228,
12. Ibid, Page-236.

It is observed that total number of routes operated has increased from 154 in 1975-76 to 173 in 1979-80. In terms of index number there is growth to the extent of 12 over the period. But with regard to the total number of Buses operated the index number has gone down from 100 in 1975-76 to 98.68 in 1976-77 and to 87.21 in 1979-80. Some of the routes have been closed as they have become un-economic and some routes have been given to the private Buses for which there is decline in growth rate. There is an appreciable increase with regard to total number of Route kilometers. The route kilometers have increased from 18,240 to 21,152. In terms of index number there is an increase of 15.49 over the period. The growth is also evident from the income obtained over the five years. The index number of income has increased from 100 in 1975 to 117 in 1979-80.

The situation with regard to the Orissa State Transport Corporation is no way better than the Orissa Road Transport Corporation. The data analysed to focus on development and growth are presented in table No. 2

TABLE-No. 2

**Trend of Development of Orissa State Transport Corporation (1975-80)**  
index No. are in parenthesis

Sl. No.	Indicators	1975-76	1976-77	1977-78	1978-79	1979-80
1.	Total number of routes operated	294 (100)	323 (109.85)	337 (114.62)	341 (115.98)	401 (136.39)
2.	Total number of Buses operated	581 (100)	601 (103.44)	547 (94.14)	567 (97.59)	578 (98.27)
3.	Total number of Route Kms.	41,671 (100)	45,348 (108.82)	48,546 (116.49)	49,366 (118.46)	57,775 (138.64)
4.	Total income obtained in (lakhs rupees)	561.91 (100)	671.32 (119.47)	709.48 (126.25)	756.10 (134.55)	824.57 (146.74)

The indicators of growth and development are the same as with the Orissa Road Transport Corporation. The number of routes has increased from 294 to 401 and growth over the period of five years is 36.39. The index number with regard to number of buses operated has fallen from 100 to 98.27 over the period as private buses have been allowed to operate on some of its routes. Route kilometers have no doubt increased from index number 100 to 138.64 as the budget under the head increased. Total income obtained has increase from index number 100 to 146.74.



**Costs and Returns :**

Costs and return study indicates the efficiency of transport system. Data collected from the statistical branch have been analysed to find out the total income obtained, expenditure incurred annually and income per k. m. and expenditure per k.m. for both the organisations. The data have been placed in table below :-

TABLE No. - 3

**Costs and returns in the Orissa Road Transport Corporation (1975-80)**  
(In Lakh Rupees)

Sl. No.	Year	Income	Expenditure	Balance	(Income per k.m. (in Rupees)	Expenditure per km. (in Rupees)
1.	1975-76	304.25	308.24	- 3.99	1.75	1.77
2.	1976-77	336.74	333.71	- 3.03	1.86	1.84
3.	1977-78	322.46	338.83	-16.37	1.77	1.86
4.	1978-79	333.08	347.28	- 14.20	1.81	1.89
5.	1979-80	357.29	372.22	- 14.93	1.95	2.03

It is observed that total income varies from 304 lakhs of rupees to 357 lakh rupees per annum over the period. Similarly variation in expenditure from 303 lakh rupees to 372 lakh rupees per annum. Taking both income and expenditure it is found that generally the organisation is running under loss each year. It has sustained loss to the extent of 3.99 lakh rupees in 1975-76 to 4.93 lakh rupees in 1979-80. The loss stood at 16.37 lakh rupees in the year 1977-78. Analysis on income per km. indicates that income ranges from Rs. 1.75 to Rs. 1.95 per km., as against expenditure from Rs. 1.77 to Rs. 2.03 per km. Invariably expenditure figures have exceeded the income figures every year.

The picture is almost same with regard to Orissa State Transport Corporation. The data after being analysed are presented below :-

TABLE No 4

**Costs and Returns in the Orissa State Transport Corporation (1975-80)**  
(In lakh rupees)

Sl. No.	Year	Income	Expenditure	Balance	Income per km. (in Rupees)	Expenditure per (km. in Rupees)
1.	1975-76	561.91	598.27	-36.36	1.69	1.79
2.	1976-77	671.32	680.31	- 8.99	1.78	1.81
3.	1977-78	709.48	742.50	-33.02		1.86
4.	1978-79	756.10	755.51	- 0.59	1.83	1.83
5.	1979-80	824.57	907.27	- 82.70	1.82	2.00

### 1.3. Bank finances for transport development in Orissa :

Transport development depends upon various factors like adequate infrastructural facilities, availability of number of vehicles, number of road transport operators and supply of finance etc. Among these factors, inadequate supply of finance is one of the chief bottlenecks for the growth of transport in Orissa. It is in the light of these requirements that commercial banks, after nationalisation were called upon to provide adequate amount of finance to transport operators in the State. Table 1. 1, given indicates the performance of commercial banks in financing road transport operators in the State during the period 1970 to 1980.

It may be observed from the table that during 1970 to 1980, the percentage increase in the number of borrowal accounts and amount of outstanding advances to the road transport operators was 4878 percent and 2882 percent respectively. This shows that over the period the percentage increase in the number of borrowal accounts was higher than the percentage increase in the amount of outstanding advances to road transport operators. Consequently average amount of advance per borrowal account declined from 23 thousands in the year 1970 to 14 thousands in the year 1980. This indicates that a large number of small road transport operators have taken the advantage of bank finance since the nationalisation of banks. It is further reinforced by the fact that average annual rate of growth of borrowal accounts stood at 46 percent, the same for the amount of outstanding advances 38 percent during the period under review.

However, when the ratio of advances to road transport operators to the total bank advances in the State is concerned, the ratio was 6.7 percent in the year 1980 as against only 2.0 percent in the year 1970. The percentage variation was thus 4.7 percent over the period. This indicates that the percentage distribution of credit to road transport operators out of the total bank advance was grossly inadequate in the State.

Like-wise, when the ratio of advances to road transport operators out of the total priority sector advances in the State is concerned, the ratio declined from 15.6 percent in the year 1972 to 11.8 percent in the year 1979. This indicates that the percentage distribution of total priority sector advances to road transport operators in Orissa not only remained low but also declined between the year 1972 and 1979. The percentage decline over the period was 3.8 percent. This is shown in table 1.2.

TABLE-1 1

**Scheduled Commercial Bank's Advances to Road Transport Operators  
in Orissa : 1970 to 1980 (as on December last)**

					(Rs. in Lakhs)	
Year	Road Transport Operators				Total Bank advances	% of Col. 3 to Col. 4
	No. of Accounts	Amounts				
1	2		3		4	5
1970	215 (23)	—	50	—	2529	2.0
1971	408 (16)	+ 89	68	+36	2560	2.7
1972	616 (20)	+ 50	125	+84	2906	4.3
1973	1392 (14)	+125	201	+61	4048	5.0
1974	2391 (12)	+71	284	+41	5155	5.5
1975	2816 (17)	+18	484	+70	5999	8.1
1976	3773 (15)	+34	587	+21	8479	6.9
1977	4943 (15)	+31	763	+30	11562	6.6
1978	5825 (17)	+17	1011	+32	15356	6.6
1979	7417 (17)	+27	1272	+26	18793	6.8
1980	10695 (14)	+44	1491	+17	22350	6.7
Average annual growth rate between 1970 and 1980						
No. of accounts			46			
Amounts			Rs. 38 Lakhs			
% Variation between 1970 and 1980						4.7

Note : Figures in brackets indicate average amount of Advance per unit in thousand rupees.  
 Figures for 1980 relate to half yearly ending-June.  
 Source : RBI, Statistical Tables Relating to Banks in India (1970 to 1979 issues), Bombay.  
 RBI, Banking Statistics, Basic Statistical Return,  
 Summary Results (June, 1980), 1982 p. 32.



TABLE-1:2

**Scheduled Commercial banks advances to road transport operators out of the total priority sector advances in Orissa : 1972 to 1979 (as on December last)**

( Amount in lakhs of Rs. )

Year	Amount of Advances to Road Trans- port Operators	Total priority sector advances*	% of Col. 2 to Col. 3
1	2	3	4
1972	125	802	15.6
1973	201	1267	15.9
1974	284	1723	16.5
1975	484	2589	18.7
1976	587	3600	16.3
1977	763	5307	14.4
1978	1011	7633	13.2
1979	1272	10741	11.8

Source : RBI, Central Office, Bombay, Data memoiographed

\* Total priority sector advances include advances to agriculture, small-scale industries, Road Transport operators, Retail trade and small business, professional and self-employment and educational loans.

Besides, the distribution of bank advances to road transport operators as on June, 1980, on the basis of the distribution of population in different districts, according to 1981 census, reveals greater inequality in the distribution of advances to transport operators in different districts of the State. This is shown in Table 1.3.

It is revealed from the table 1.3 that percentage distribution of bank advances to road transport operators was higher than the percentage distribution of population to the total in the State in the districts like Cuttack, Puri, Sambalpur and Sundargarh. As compared to these districts, the ratio of distribution of advances to road transport operators to the total in the State was lower than the percentage distribution of population to the total in other districts of the State. This indicates highly inequitable distribution of bank advances to road transport operators in different districts of the State.

TABLE-1.3

**District-wise distribution of bank advances to Road Transport Operators in Orissa as on June, 1980**

(Rupees in lakhs)

Districts	Population (in lakh as per 1981 census	% to the total population in the State	Amount advanced	% to the total advance
1	2	3	4	5
Balasore	23	8.7	69	4.6
Balangir	15	5.7	77	5.2
Cuttack	46	17.5	541	36.3
Dhenkanal	16	6.0	31	2.0
Ganjam	27	10.3	133	8.9
Kalahandi	13	4.9	44	2.9
Keonjher	11	4.2	72	4.8
Koraput	25	9.5	32	2.1
Mayurbhanj	16	6.0	54	3.6
Boudh-Khondmals	7	2.7	6	0.4
Puri	29	11.0	169	11.3
Sambalpur	23	8.7	175	11.7
Sundargarh	13	4.2	89	6.0
Total	263	(100.0)	1491	100.0

NB:—Population figures and figures of outstanding advances are rounded up to nearest lakhs.

Source: 1) RBI, *Banking Statistics, Basic Statistical Returns, Summary Results* (June 1980), August, 1981, pp. 32 & 68.

2) Government of Orissa, Directorate of Census Operation, *Census of India 1981, Series—Orissa, Paper I of '88', Provisional Population Totals P. 34.*

**1.4 Problems encountered**

The inadequate percentage distribution of total bank advances to road transport operators and inequitable distribution of transport finances in different regions of the State clearly highlight certain important problems encountered by banks in supplying credit to transport operators.

Transport development primarily depends upon the availability of adequate infrastructural facilities. As the matter stands, infrastructural facilities in Orissa are grossly inadequate. The surfau road length in Orissa

the data. Lack of penal and follow up action by the officials of O.S.F.C. is an important reason for the failure of the scheme.

#### **Findings and Recommendations :**

Various conclusions follow from the analysis.

- i) Employment in transport sector does not seem to be profitable.
- ii) Transport loans should be given to owner-drivers for checking mis-management in the operation.
- iii) Some incentives in the shape of subsidy should be given to the transport sector.
- iv) Many transport operators are of the opinion that the repayment period for them is too short. There is substance in their view. This should be extended.
- v) Transport business seems to be more viable on a co-operative basis. Many individual operators are unable to procure necessary orders to generate sufficient income.



## ROAD TRANSPORT AND EGALITARIANISM

B. Dash

The purpose of this paper is to make an assessment of the extent of regional equality that has been attained as a consequence of the development of various means of transport in the different districts of Orissa. In this context, the districts are divided into two categories namely, tribal and non-tribal. Tribal districts are those having SC and ST population of 50% or above, of the total population. Looking this way, the tribal districts of Orissa are Koraput, Phulbani, Keonjhar, Mayurbhanj and Sundargarh. Since "transport is civilization" in the language of Kipling we have to find out the extent of equality that has been attained among the various districts of Orissa so that we can trace out the extent of truth inherent in Kipling's version. Although the etymological significance of the words 'civilization' and 'equality' are different that with the growth of civilization and the spread of knowledge and education, the extent of inhuman and degrading exploitation of man by man will be reduced is an established fact. Therefore, civilization will lead to equality either in the narrower sense or the wider sense. As a matter of fact, the greater the extent of the march of civilization towards modernization and rationalisation, the greater the spread affects of the concept of equality. So the purpose of this paper is just to find out this spread effect of transport in generating egalitarianism among the different regions of Orissa.

Looking at Table-1, one finds that the number of motor vehicles in Orissa between 1955-56 and 1976-77 have gone up by about  $5\frac{1}{2}$  times which is above the growth of per capita income. This speaks of inequality in the ownership of motor vehicle. But road transport as it stands in Orissa is a sign of egalitarianism. But motor vehicles are a sign of inequality. Whether we like it or not, we have to have both of them in Orissa for quite a pretty long time. In the language of the Nobel-laureate Henry Simon, we will have both vertical and horizontal inequality in motor transport.

We can illustrate this view point with facts provided by P.W.D (R&B) which shows that N.A.C. Municipal and Forest Roads are not as metalled as those of N.H. and E.H. If anybody has seen the towns of

TABLE— I

Different Types of Motor Vehicles on road in different districts of Orissa.

	1974-75	1975-76	1976-77
Balasore	2182	2279	2411
Bolangir	1877	1996	2187
Cuttack	18365	19546	21540
Dhenkanal	1888	2084	2409
Ganjam	4317	4672	5423
Kalahandi	1434	1535	1633
Keonjhar	3374	3594	3798
Koraput	2845	3322	3572
Mayurbhanj	1844	1901	2067
Phulbani	448	485	545
Puri	6118	6920	8215
Sambalpur	8536	9182	10054
Sundargarh	13362	14422	16055
Total	66590	71938	79909
In Cuttack, Puri, Sambalpur & Sundargarh	46381	50070	55864

TABLE-II

Total Transport Mileage			Total Transport Mileage for the Tribal Districts.	
	1974	1977	1974	1977
N.H.	1633-89	1682-37	566-94	596-65
S.H.	2244-78	2187-83	1135-36	1070-73
E.H.	80-60	80-60	18-00	22-00
M.D.R.	5100-32	5091-20	1614-78	1596-78
O.D.R.	2159-89	2325-25	372-11	395-64
C.V.R.	2249-45	6410-29	2761-20	2796-02
R.E.R.	12081-00	12014-00	4546-00	4486-00
NAC, MPL. G.P.	11225-71	11464-63	4002-46	3972-78
Total Mileage			Rural	
	40,770-64	41,247-17	Mileage	37,305-37 36,810-77
			Tribal	132,96-55 132,47-32
	1951	1961	1971	1981
Total Population	14645946	17548846	21944615	26272054
Total Population in the Tribal Dist	3952004	4781453	6085428	7203652

## DEVELOPMENT OF INLAND WATER TRANSPORT POTENTIALS : ITS NATURE & SIGNIFICANCE IN ORISSA

Binayak Rath

### SUMMARY

The history of Orissa (erstwhile Utkal) reveals that Orissa had a rich heritage in harnessing the inland water ways for expanding its trade and commerce activities in the far-eastern countries like Java, Sumatra and Bornio. As a remembrance of our past glory still we observe the worshipping of symbolic boats on the full-moon day of the Kartika (*i.e.* on Kartika Purnima.) However, a systematic effort to harness the water ways in Orissa starts from the 1850s when Sir Arthur Cotton and J. P. Beadls proposed the integrated scheme of irrigation, flood control and navigation development for the coastal Orissa region. On the advice of Sir Arthur Cotton the irrigation channels in the delta tract as well as the high level canal were completed in 1870s. But due to some flood control problems, the high level canal system beyond Jenapur was abandoned in the 1930s. Further, after independence although irrigation development in the delta has been given priority under the Five-Year Plans, the navigation aspect has been neglected. Instead, the irrigation development programmes have created some hurdles for the existing navigation potentials.

Keeping in mind the vast inland water potentials existing in the State, an attempt has been made in this paper to examine their nature and significances for the economic development of the State in general and the development of the weaker sections of our population in particular. We have examined the comparative cost advantages of the system as well as the benefit components of the system in terms of the broad national objectives of employment generation, income generation and their redistribution, merit want promotion and finally the attainment of self-sufficiency. On the basis of my personal observations of a particular area, which was dependent upon inland water transport facilities earlier and also on the basis of the study made by the National Transport Policy Committee of Government of India (May, 1980) I have developed my hypothesis that attempts should be made to harness the inland water potentials of the State.

Cuttack Puri, Balasore and Ganjam together possess 41 percent of the total surfaced roads of the state.

The road system of the state suffers from certain limitations. The percentage of surfaced roads is quite low. There are many places still unconnected by all-weather roads. Adequate investment has not been made for road construction. In the sixth plan there is an ambitious programme for the development of roads, but sufficient funds have not been allocated for the purpose.

For the development of the road system of the state, certain suggestions may be made.

1. The length of the National High Ways should substantially go up by including new routes.
2. The N. H. and other roads should be broadened and strengthened.
3. The percentage of surfaced and metalled roads should go up.
4. Transport and communication should be included in the core sector of plans and more funds be allocated to this sector.
5. A wise road policy must include proper road maintenance.
6. The rural roads should be qualitatively improved.
7. A separate Road Deptt. may be created in the state.
8. All the classes of roads should develop simultaneously to constitute a fully integrated road system.



## **RURAL ROADS : THEIR ROLE IN ECONOMIC DEVELOPMENT OF ORISSA**

**S. Panigrahi  
R. P. Choudhury**

### **SUMMARY**

#### **Introduction :**

Orissa is a state full of villages, small and large, and so its development primarily depends on the development of rural areas. Today around 55% of our villages languish in isolation and immobility. It is for the obvious reason that Orissa is involved in a variety of rural development programmes and it covers a wide variety of socio-economic programmes for upliftment of the rural poor. But without rural accessibility to the main centres of economic activity, it will not be possible to derive full benefits from such measures.

#### **Objectives of the study :**

In this paper an attempt has been made to study the basic infrastructural requirements of road transport for the economic development of Orissa. The study highlights the rural road development in Orissa particularly in different plans and the recommendations of the NTPC for rural road development.

Development of rural roads will generate employment opportunities by providing basic infrastructure for economic and social mobilisation. Road length in Orissa is very much below not only from the all India level but also from its neighbouring states. In different plan periods road development in Orissa has been mainly confined to the improvement of existing roads rather than the construction of additional roads. The National Transport Policy Committee suggested the integration of the rural road development programme with that of IRD programme.

#### **Conclusion :**

Despite implementation of many programmes aimed at rural road development during the past 34 years of independence, much remained to be done for improving rural economy and wiping out unemployment and poverty in Orissa. Poverty in Orissa is appalling and the way to eradicate it has been baffling. The degree of unsurfaced and undeveloped rural roads in Orissa as compared to the neighbouring states is the index of the gravity of problem.

---

## ROAD TRANSPORT-

### A KEY TO RURAL DEVELOPMENT IN ORISSA

N. P. Mohanty

#### SUMMARY

One of the factors arresting the rapid development of the rural and semi-urban areas in Orissa is the lack of adequate transport facilities. The State with abundant natural resources requires a wide net work of roads particularly in the interior regions of Orissa so that the existing natural resources can be exploited and utilised properly. In such context it is imperative that the village roads be connected with the main roads. This will eliminate the distance between rural and urban areas, facilitate inter sectoral resource flow and put a check on lopsided development.

## CONTRIBUTORS

- ★ Dr. Binayak Rath, HSS Dept. I. I. T. Kanpur
- ★ Dr. Sanatan Mohanty, Professor of Economics, G.M. Colleges, Sambalpur.
- ★ Dr. B. Bhuyan, Dept. of Agrl. Economics, OUAT, Bhubaneswar  
S. N. Misra, Research Officer, (R.B.I.) Utkal University, Bhubaneswar
- ★ Bhagabata Patro, Dept. of Economics, Berhampur University  
B. Dash, Reader, F.M. College, Balasore.
- ★ S. Panigrahy, Dept. of Economics  
and  
R. P. Choudhury, Dept. of Commerce, Khalilkote College, Berhampur
- ★ K. K. Sen, Dept. of Economics, Reader, Kalahandi College,
- ★ N. P. Mohanty, Research Officer, Deptt. of Analytical & Applied Economics, utkal University.

