15. Similarly, net output for power will also increase in a striking way by 1960-61. In 1960-61, the installed capacity in Orissa will be 280,000 kW. This would mean utilization of 840 million kWh of electricity at the rate of 3,000 kWh per kW of installed capacity. (Utilization factor in Orissa is likely to be high in view of power intensive steel plants and heavy industries being set up in the State.) The net output of electricity industry, in 1960-61, at the rate of 4 nP per kWh will, therefore, be Rs. 3·36 crores.

Small Scale and Cottage Industries (excluding Construction)

16. The general method of estimating net output of this sector for 1950-51 is to multiply the number of persons engaged in small scale and cottage industries in Orissa, by the estimate of net output per worker. The figures of workers in all manufacturing industries (excluding construction) are obtained from 1951 Census, and estimate of factory workers is deducted from these figures to get the working force engaged in this sector. Estimate of factory workers is made by correcting the daily average number of workers to account for non-reporting factories, and by adding 16 per cent to account for "other workers" and 12 per cent for absenteeism. Both self-supporting persons and earning dependents are included in the working force. On this basis the working force for this sector is estimated at 385,000. The NIC estimate for net output per worker in small enterprises comes to Rs. 800 (see *National Income Committee Report*, 1954, p. 108). In Orissa, the net output of factory workers is observed to be about 30 per cent less than the all-India average. Applying this reduction to all-India estimate of net output per worker in small enterprises, the probable estimate for Orissa for this category of workers in 1950-51 comes to $800 \times 0{\cdot}7 =$ Rs. 560 per worker, and aggregate net output for small scale and cottage industries comes to $385{,}000 \times 560 =$ Rs. 21·56 crores. As bulk of these incomes is used for consumption purposes, and the cost of living index in Orissa registered a fall of about 7 per cent, from 116 in 1950-51 to about 108 in 1956-57, at 1956-57 prices the net output of small scale and cottage industries comes to $21{\cdot}56 \times 0{\cdot}93 =$ Rs. 20·05 crores. Between 1950-51 and 1956-57 small scale and cottage industries do not appear to have experienced any significant growth. These are, therefore, assumed to have expanded at the rate of population growth in Orissa, i.e., by 1·8 per cent per annum or about 11 per cent during the six-year period.[1] On this basis net output for this sector in 1956-57 is estimated at $20{\cdot}05 \times 1{\cdot}11 =$ Rs. 22·256 crores.

17. For 1960-61 estimates also small scale and cottage industries are assumed to grow at the rate of population growth (i.e., by 2 per cent per year or 8 per cent over the four-year period 1957-58 to 1960-61). On this basis income from this sector in 1960-61 would be Rs. $22{\cdot}256 \times 1{\cdot}08 = 24{\cdot}036$ crores. Some addition to this estimate may be expected from net output likely to be created by the planned outlay of Rs. 1·55 crores during 1957-58 to 1960-61. Of this figure fixed capital may be about Rs. 95 lakhs, and this may create a net output of Rs. 47 lakhs or so on the basis of a capital-output ratio of 2 : 1. Aggregate income from small scale and cottage industries for 1960-61 may, therefore, be estimated at $24{\cdot}036 + 0{\cdot}47 =$ Rs. 24·506 crores.

Construction (all types)

18. In 1951, according to Census, some 49,000 workers were engaged in all kinds of construc-

[1] On the basis of the 1961 Census figures, it is estimated that the State's population increased at the average rate of 1·8 per cent per annum during 1951–56 and at 2 per cent per annum during 1957–61.

tion in Orissa. Net output per worker is taken at Rs. 560 on the basis of all-India average for small enterprises (Rs. 800) less 30 per cent to allow for lower wage level in Orissa. The estimate of net output of construction sector for 1950-51 thus comes to 49,000×560=Rs. 2·74 crores. Since the cost of living index in Orissa was lower in 1956-57 by about 7 per cent, the estimate at 1956-57 prices comes to 2·47×0·93=Rs. 2·55 crores. For 1956-57 net output of construction is assumed to have increased at the rate of population growth, i.e., by about 11 per cent. The estimate on this basis comes to Rs. 2·55×1·11=Rs. 2·83 crores. In addition to this, in 1956-57, Rs. 1·98 crores of net product is estimated to have been created by construction activities of new large and heavy industries. The estimate is given in Table I of this Appendix. Moreover, out of the Second Plan expenditure of Rs. 10·87 crores during 1956-57, Rs. 8·56 crores were for construction. At one-third of this expenditure, the net output of Plan construction in 1956-57 comes to Rs. 2·85 crores. Total construction income for 1956-57 is thus estimated at Rs. 2·83 crores + Rs. 1·98 crores + Rs. 2·85 crores = Rs. 7·66 crores. The income from construction for 1960-61 was estimated as follows: Of the total investment in Orissa during 1957-58 to 1960-61 amounting to Rs. 341·18 crores, construction expenditure is estimated at Rs. 143·44 crores (42 per cent). At the rate of one-third of construction expenditure total net output due to construction over the four-year period comes to Rs. 47·81 crores. On the assumption that the construction expenditure is evenly distributed over these years the net income from construction in 1960-61 is Rs. 11·95 crores.

Transport and Communications

19. According to 1951 Census, there were 36,000 workers engaged in all forms of transport and communications in Orissa.[1] The *NIC Report, 1954* (p. 108), gives net output per worker in major transport at Rs. 1,600, and other forms of transport at Rs. 1,034. An average of Rs. 1,300 per worker is, therefore, assumed for Orissa. On this basis income from transport, etc., in 1950-51 is estimated at Rs. 4·68 crores (36,000×Rs. 1,300). At 1956-57 prices, using the Cost of Living Index as deflator, this figure would come to 4·68×0·93=Rs. 4·37 crores. During 1950-51 to 1956-57, the net output of all sectors (including construction) increased from Rs. 195·61 crores to Rs. 209·96 crores, i.e., by about 7·3 per cent. Transport output is assumed to have increased at the same rate. Thus for 1956-57, net output of transport sector comes to 4·37×1·073= Rs. 4·69 crores.

20. Between 1956-57 and 1960-61, the output of production sectors is expected to go up from Rs. 209·96 crores to Rs. 258·89 crores, i.e., by about 23·3 per cent. During these years income

[1] Number of workers in Transport and Communications, 1951:

Categories	*No. of Workers*
1. Transport and Communications unclassified	1,226
2. Transport by Road	11,898
3. Transport by Water	3,433
4. Transport by Air	52
5. Transport by Railway	13,374
6. Storage	1,468
7. Postal Services	4,046
8. Telegraphs	126
9. Telephone	261
10. Wireless	270
TOTAL	*36,254*

from transport and communications is also assumed to go up at the same rate. On this basis income from transport sector is estimated at 4·69 × 1·233 = Rs. 5·78 crores.

Trade and Commerce

21. According to 1951 Census, there were 237,000 persons engaged in trade and commerce in Orissa. Net output per worker in this sector is estimated at Rs. 1,500, on the basis of *NIC Report, 1954* (pp. 82 and 108). The estimate for 1950-51 thus comes to Rs. 35·55 crores. Applying 7 per cent fall in the cost of living index between 1950-51 and 1956-57, at 1956-57 prices this figure would come to Rs. 33·06 crores. Estimate for 1956-57 is obtained by applying 7·3 per cent increase in net output of production sectors during 1950-51 to 1956-57 to the estimate of income from trade and commerce for 1950-51. Estimate for 1956-57 on this basis comes to Rs. 35·47 crores. Again applying 23·3 per cent increase in output of production sectors from 1956-57 to 1960-61, the estimate of net output of trade and commerce for 1960-61 comes to Rs. 43·74 crores.

Other Services

22. According to 1951 Census, 733,650 persons[1] were engaged in other services (professions, Government service, domestic services, etc.). Net output per worker is taken, on an average at Rs. 608 on the basis of Rs. 600 for professions and liberal arts, Rs. 1,100 for Government servants and Rs. 400 for domestic servants. On this basis estimate for this sector comes to Rs. 44·676 crores. Allowing for price fall of 7 per cent between 1950-51 and 1956-57, estimate for 1950-51 in terms of 1956-57 prices comes to Rs. 41·549 crores. For 1956-57 net income of this sector is assumed to have increased at the rate of population growth, i.e., by 11 per cent during 1950-51 to 1956-57. Again, income from other services is assumed to have increased by 8 per cent during 1956-57 to 1960-61. On this basis estimate for 1956-57 comes to 41·5 × 1·1 = Rs. 46·12 crores, and for 1960-61, 47·78 × 1·08 = 49·81 crores.

House Property

23. According to 1951 Census, the number of houses in Orissa was 0·12 million in urban areas and 2·89 million in rural areas. According to *NIC Report (1954)*, the average net rental income from rural housing in 1950-51 was estimated at Rs. 36 per house. The estimate for urban income from house property comes to Rs. 209·4 per house. These averages are assumed to hold good for Orissa also. On this basis rural income from house property comes to Rs. 10·4 crores. The urban income is estimated at Rs. 2·51 crores and therefore, total income from this sector is estimated at Rs. 12·91 crores, for 1950-51. Applying 7 per cent fall in cost of living index in Orissa between 1950-51 and 1956-57 to this estimate, income from house property for the year 1950-51, in terms of 1956-57 prices, comes to Rs. 12·91 × 0·93 = Rs. 12·0 crores.

24. This income is assumed to have increased at the rate of population growth rate during 1950-51 to 1956-57 (i.e., by 11·0 per cent over the period). On this basis the estimate of house property income for 1956-57 in the same year's prices comes to Rs. 13·32 crores (12 × 1·11 = 13·32).

[1] This figure excludes beggars, prisoners, inmates of jails, etc.

25. The estimate for 1960-61 is made by applying the estimated population growth rate of 2 per cent per year during the period 1957-58 to 1960-61. The total increase over the 4 years from 1956-57 to 1960-61 would thus be 8 per cent and the income from house property in 1960-61, on this basis, comes to Rs. 14·39 crores (13·32 × 1·08 = 14·39).

TABLE I

ESTIMATE OF NET OUTPUT DUE TO INDUSTRIAL CONSTRUCTION AND PRODUCTION (1956-57 AND 1960-61)

(Relates to major industries licensed during Second Plan)

Industry	*Capacity per Annum* (tons)	*Investment (fixed)* (Rs. crores)	*Net Product of Construction (at one-third of cost)* (Rs. crores)		*Net Product of Industry* (Rs. crores)	
			1956-57	*1960-61*	*1956-57*	*1960-61*
1. Steel Plant (Rourkela)	1,000,000	145·50[a]	1·425 (9·5%)[b]	1·500 (10%)[b]	..	6·25
2. Aluminium Plant (Hirakud)	20,000	15·00	0·100 (10%)	0·100 (10%)	..	1·95
3. Ferro-Manganese Plant (Joda)	30,000	1·75	0·053 (50%)	..	..	1·35
4. Ferro-Manganese Plant (Raigada)	12,000	0·70	0·020 (40%)	..	..	0·54
5. Cement	725,000 (total)	2·80	..	0·120 (50%)	0·66	1·46
6. Refractory (Orissa Cement)	88,000	2·00	0·120 (50%)	..	..	0·97
7. Refractories (Belpahar)	60,000	3·60	0·232 (60%)	..	..	0·66
8. Refractories (Orissa Industries)	46,000	1·10	..	..	0·51	0·51
9. Paper (Expansion)	14,000 (additional)	3·00	0·020 (50%)	..	..	0·84
10. Paper (New)	12,000	3·50	..	..	..	0·42
11. Paper (Straw Product Ltd.)	18,000	5·50	..	0·140 (20%)	..	..
12. Sugar (Expansion)	30,000 (cane)	1·40	..	..	..	0·15
13. Sugar (Aska Coop. Industry)	120,000 (cane)	1·35	..	0·090 (50%)	..	0·30
14. Low Shaft Furnace (Pig Iron)	30,000	0·50	0·010 (30%)	..	..	0·38
15. Kaling Tube (Expansion)	40,000	0·60	..	0·020 (30%)	..	1·00
16. Larsen & Toubro (Machinery)	6,000	2·50	..	0·080 (50%)	..	..
17. Steel Structural	20,000	2·00	..	0·070 (50%)	..	..
18. Fertilizers	340,000 (Nitro Chalk)	..	..	0·850 (30%)	..	..
		217·80	1·980	2·970	1·17	16·78

[a] Rs. 4·5 crores is estimated to have been invested in construction expenditure in Rourkela Steel Plant in 1955-56.
[b] Figures in bracket indicate the percentage of the total construction expenditure which is estimated to have been increased in the year in question and from which the estimate of net output is derived at the rate of two-thirds of the expenditure.

Appendix 3

Estimate of Investment in Orissa[1]

(1950-51 to 1956-57 and 1957-58 to 1960-61)

Agriculture

Total State Plan expenditure in the First Plan on agricultural development was Rs. 2·7 crores and the investment component of it is estimated to be Rs. 81 lakhs at 30 per cent of the outlay. Expenditure on irrigation projects of the State Government was Rs. 2·6 crores, all of which is investment. Investment component of Rs. 2·7 crores spent on Community Development in the First Plan is estimated to be Rs. 1·14 crores. Hirakud Stage I, a central multipurpose project, absorbed an expenditure of Rs. 45 crores, and investment on irrigation development is estimated at 61 per cent of total expenditure,[2] to be Rs. 27·45 crores. Actual investment expenditure incurred under above heads in 1956-57 was Agricultural Development Rs. 85 lakhs, Community Development Rs. 61 lakhs[3], State Irrigation projects Rs. 51 lakhs, and Hirakud Stage I spill-over 61 per cent of Rs. 6·98 crores, i.e., Rs. 4·25 crores. According to NSS 3rd round data, about Rs. 1·4 per year were invested in agriculture per person in rural areas in East India during 1950-51. On this basis the total investment by farmers in six years is estimated at Rs. 11·76 crores (1·4×14×6). Investment in Agricultural Sector during 1950-51 to 1956-57 would therefore come to:

(Rs. crores)

	1950-51 to 1955-56	*1956-57*	*1950-51 to 1956-57*
Agricultural and Allied Development	0·81	0·85	1·66
Community Development	1·14	0·61	1·75
State Irrigation Projects	2·60	0·51	3·11
Hirakud Stage I	27·45	4·25	31·70
Personal Investment by Farmers	9·80	1·96	11·76
TOTAL	*41·80*	*8·18*	*49·98*

[1] Sources used are:
First and Second Five Year Plans of Orissa;
First and Second Five Year Plans (All-India);
Planning Commission Notes. Re: Preliminary Study of Economic Development of Orissa (mimeographed);
National Sample Survey Report No. 3, Third Round (August–November, 1951);
Planning Commission: Govt. of India;
State Development Plans: Review of Progress, 1958;
Planning Commission: *Review of First Five Year Plan*, May 1957.

[2] See the method of allocation discussed in para 10 of this Chapter.

[3] Calculated on the basis of ratio (0·473) of investment to total outlay during the First Five Year Plan on Community Project Schemes.

2. During the Second Plan anticipated expenditure on development in the Agricultural sector (i.e., cultivation, livestock, forests and fisheries) is estimated by the Planning Commission at Rs. 9·9 crores. Investment component of this outlay at 30 per cent would be Rs. 2·97 crores. Of this, investment of the order of Rs. 85 lakhs took place in 1956-57. Hence the estimates for 1957-58 to 1960-61 would be Rs. 2·12 crores. Anticipated expenditure on Community Development during the Second Plan is placed at Rs. 5·985 crores. Out of this amount Rs. 1·29 crores was actual expenditure in 1956-57. Rs. 4·695 crores may therefore be attributed to the period 1957-58 to 1960-61. At least 40 per cent (during the First Plan period it was 47·3 per cent) of this amount would go into asset creation (i.e., irrigation, roads, wells, school buildings, etc.). Investment component of this outlay would therefore be Rs. 1·88 crores during 1957-58 to 1960-61. (An equal amount may be expected to go into investment by way of people's participation.) This amount (i.e., Rs. 1·88 crores) may be attributed to the period 1957-58 to 1960-61. Anticipated expenditure on State Irrigation projects in the Second Plan is estimated at Rs. 11 crores, of which Rs. 51 lakhs was the actual expenditure in 1956-57, leaving the balance of Rs. 10·49 crores for the period 1957-58 to 1960-61. The whole of this amount is taken as investment.

3. In the Second Plan anticipated expenditure on Hirakud Stage I spill-over and Stage II is estimated at Rs. 25·1 crores. Deducting the actual expenditure of Rs. 7·84 crores during 1956-57, the estimate of outlay for 1957-58 to 1960-61 comes to Rs. 17·26 crores. Taking 61 per cent of this as investment on irrigation, the estimate of investment during the latter period under this head comes to Rs. 10·53 crores.

4. From the NSS 3rd round data it would appear that in 1950-51, in the rural areas of East India, about Rs. 1·4 per head per year were invested in land improvement, agricultural implements and other improvements excluding housing. Rural population of 14 million is therefore estimated to have invested Rs. 1·96 crores a year in agriculture. On the assumption that this amount normally gets invested in agriculture annually through the farmers' personal efforts and resources, private investment in agriculture during 1950-51 to 1956-57 is estimated at Rs. 11·76 crores (as mentioned earlier) and Rs. 7·84 crores during 1957-58 to 1960-61.

5. On the above basis estimates of investment in Agricultural sector during 1957-58 to 1960-61 would be as follows:

	(Rs. crores)
Agricultural Development	2·12
Community Development : State Plan	1·88
State Irrigation Projects	10·49
Hirakud Stage I (spill-over) and Stage II	10·53
Personal Investment by Farmers	7·84
TOTAL	*32·86*

6. On the above basis the breakdown of public and private investment in Agricultural sector during the two periods would be:

(Rs. crores)

	Public Sector				
Periods	*Centre*	*State*	*Total*	*Private Sector*	*Grand Total*
1950-51 to 1956-57	31·70[a]	6·52	38·22	11·76	49·98
1957-58 to 1960-61	..	25·02	25·02	7·84	32·86

[a] Hirakud expenditure is taken as Central investment in the First Plan and State investment in the Second Plan.

Mining

7. Direct estimates of investment in mining are not feasible. Hence a capital-output ratio of 3 : 1 is applied to increments in net output of mining sector during 1950-51 to 1956-57 and 1957-58 to 1960-61. Incremental capital-output ratio for India's mining industry is estimated at 4 : 1 by the M.I.T. India Project.[1] For Orissa, in view of the large output of iron ore and manganese for which open cast mining is practised, a lower ratio (3 : 1) has been adopted. Increments of net output of mining industry during the two periods were Rs. 1·88 crores and Rs. 2·58 crores respectively, giving estimates of additional investment at Rs. 5·64 crores in 1950-51 to 1956-57 and Rs. 7·74 crores in 1957-58 to 1960-61. There was little of public investment in the First Plan, but during the Second Plan Orissa Mining Corporation came into being with a total capital of Rs. 50 lakhs in which the State Government has invested Rs. 25 lakhs and the Central Government another Rs. 25 lakhs. Investment in mining industry during the two periods is therefore estimated as follows:

(Rs. lakhs)

	Public Sector				
Period	*Centre*	*State*	*Total*	*Private Sector*	*Grand Total*
1950-51 to 1956-57	..	..	..	564	564
1957-58 to 1960-61	25	25	50	724	774

Factory Industries

8. Between 1950-51 and 1956-57 the following new investment in major industries is estimated to have taken place:

(Rs. lakhs)

	Private Sector	*State Government*	*Total*
1. Orissa Textiles	1,10	40	1,50
2. Orissa Cement	60	90	1,50
3. Orient Paper Mill	5,00	..	5,00
4. Two Sugar Mills	1,50	..	1,50
5. Kalinga Tubes Ltd.	40	10	50
6. Caustic Soda Plant	20	..	20
TOTAL	8,80	1,40	10,20
Net increase in fixed capital according to CMI (1950-1956)	1,60	..	1,60
GRAND TOTAL	*10,40*	*1,40*	*11,80*

9. In addition, an investment of Rs. 4·5 crores is deemed to have taken place in 1956-57 as construction outlay on Rourkela Steel Plant, bringing the total investment during this period to Rs. 16·3 crores. During 1957-58 to 1960-61, the investment in major new industries is very large. As estimated in Table I of Appendix 2, this investment comes to Rs. 217·8 crores. Of this amount, Rs. 145·5 crores is Central Government investment in the Rourkela Steel Plant,

[1] Benjamin Higgins: *Economic Development, 1959* (Norton N.Y., U.S.A.), p. 646.

and the balance largely comes from the private sector. In the Second Plan, State Government provided a sum of Rs. 115·5 lakhs for assistance to new industries, of which Rs. 32 lakhs are expected to have been used in 1956-57. The balance of Rs. 83·5 lakhs would, therefore, be available during 1957-58 to 1960-61. The investment position in regard to major factory industries would, therefore, be as follows:

(Rs. crores)

Period	Public Sector			Private Sector	Grand Total
	Centre	State	Total		
1950-51 to 1956-57	4·50	1·40	5·90	10·40	16·30
1957-58 to 1960-61	145·5	0·84	146·34	71·46	217·80

Power

10. Investment estimates for both the periods (i.e., 1950-51 to 1956-57 and 1957-58 to 1960-61) are made by applying a capital-output ratio of 10 : 1 to the estimate of incremental net output in power section during these periods. The source for the estimate of the ratio is the same as stated in para 7 above. The ratio appears to be reasonable as under Indian conditions. The average investment per kW of installed capacity would be between Rs. 1,200–1,500 and the net output per kW at 4 nP per kWh and 3,000 kWh utilization per kW would come to Rs. 120, giving an average ratio of a little more than 10 : 1. Incremental net output in the two periods would be Rs. 4 lakhs and Rs. 3·30 crores respectively (see table and notes on State Income) and the investment estimates for power sector would be Rs. 40 lakhs and Rs. 33 crores respectively. Total cost of Hirakud Stage I is estimated at Rs. 85·7 crores. Out of this amount Rs. 33·40 crores should be allocated to investments in power development and Rs. 52·30 crores to irrigation development (i.e., 39 per cent to power and 61 per cent to irrigation).

Small Scale and Cottage Industries

11. A capital-output ratio of 2 : 1 is used for both the periods 1950-51 to 1956-57 and 1957-58 to 1960-61. The source is the same as given in para 7 above. Increments in net output as estimated in the note on State Income are Rs. 2·19 crores for 1950-51 to 1956-57 and Rs. 2·27 crores for 1957-58 to 1960-61. On the basis of capital-output ratio of 2 : 1, investment for first period is estimated at Rs. 4·38 crores and for second period, at Rs. 4·54 crores. Investment component of State Plan outlay on small scale and cottage industries in the First Plan was Rs. 63 lakhs and the actual expenditure of a capital nature in 1956-57 was Rs. 11 lakhs and thus giving a total of Rs. 74 lakhs as State Government's investment for 1950-51 to 1956-57.

12. Investment component of Second Plan expenditure during 1957-58 to 1960-61 is estimated at Rs. 95 lakhs, thus giving a figure of Rs. 3·59 crores (Rs. 4·54 crores *minus* Rs. 0·95 crores) as private investment in this sector in the period. The position is summarized in the table below:

INVESTMENT ON SMALL SCALE AND COTTAGE INDUSTRIES

(Rs. lakhs)

Period	Public Sector			Private Sector	Grand Total
	Centre	State	Total		
1950-51 to 1956-57	..	74	74	364	438
1957-58 to 1960-61	..	95	95	359	454

House Property

13. A capital-output ratio of 17 : 1 is applied to increments of income from house property in each of the periods. The ratio is based on the assumption that average net rental of a house is 6 per cent of the original value of the property. Increment of income in the first period is estimated at Rs. 1·32 crores and in the second period at Rs. 1·07 crores. On the basis of a ratio of 17 : 1 the investments in the two periods are placed at Rs. 22·42 crores and Rs. 18·19 crores respectively. Out of this, State Government investment in housing including expenditure on new capital during the first period is estimated at Rs. 49 lakhs and during the second period at Rs. 2·74 crores.

Transport and Communications

14. Increments of income for 1950-51 to 1956-57 and 1957-58 to 1960-61 are estimated at Rs. 32 lakhs and Rs. 109 lakhs respectively. Investment is estimated by applying a capital-output ratio of 5 : 1. This ratio is taken from source given in para 7 above. On this basis the estimates for the two periods come to Rs. 1·60 crores and Rs. 5·45 crores respectively. These figures relate to investment in transport vehicles, rolling stock, etc. Out of this, about Rs. 15 lakhs were invested in nationalized transport sector in 1956-57 and Rs. 70 lakhs is the estimated investment in this sector during 1957-58 to 1960-61. In addition to this Rs. 2·7 crores were invested in roads in the First Plan and Rs. 1·35 crores in 1956-57. Estimated investment in roads during 1957-58 to 1960-61 would be Rs. 3·18 crores. A rough break-down between Centre, State and private sector would be as follows:

(Rs. crores)

Period	*Public Sector*			*Private Sector*	*Total*
	Centre	*State*	*Total*		
1950-51 to 1956-57			4·20	1·45	5·65
1957-58 to 1960-61			3·88	4·75	8·63
TOTAL			*8·08*	*6·20*	*14·28*

Education

15. Total expenditure in the First Plan was Rs. 1·5 crores and in 1956-57, Rs. 75 lakhs. Estimates for 1957-58 to 1960-61 is placed at Rs. 4·55 crores. About 25 per cent of these figures would represent investment component, mostly construction expenditure. Thus investment estimates for the two periods would be:

1950-51 to 1956-57	Rs. 56 lakhs
1957-58 to 1960-61	Rs. 116 lakhs

The entire amount would be in the State sector.

Health and Rural Water Supply

16. Expenditure in the First Plan was Rs. 1·5 crores and in 1956-57, Rs. 25 lakhs. Estimate for 1957-58 to 1960-61 is Rs. 3·25 crores. About 65 per cent of this is investment component,

because of inclusion of rural water supply schemes. Investment under Health Schemes would, therefore, be:

1950-51 to 1956-57	Rs. 1·14 crores
1957-58 to 1960-61	Rs. 2·14 crores

The whole amount would be in the State sector.

Welfare of Backward Classes

17. Expenditure in the First Plan was Rs. 1·5 crores, and in 1956-57, Rs. 55 lakhs. Estimates for 1957-58 to 1960-61 is Rs. 2·75 crores. Investment component is 33 per cent. Thus investment estimates for the two periods are:

1950-51 to 1956-57	Rs. 68 lakhs
1957-58 to 1960-61	Rs. 98 lakhs

The entire investment is in the State sector.

Trade and Commerce

17. A capital coefficient of 0·05 is applied to increment of income in two periods. The source given in para 7 cites USA coefficient at 0·1 or less. For Orissa the ratio would be low owing to backwardness of the State economy; 0·05 is therefore taken as the coefficient. On this basis the investment estimates come to Rs. 22 lakhs for 1950-51 to 1956-57 and Rs. 41 lakhs for 1957-58 to 1960-61. (Income increments for the two periods are estimated at Rs. 2·41 crores and Rs. 8·27 crores respectively.) The bulk of this investment would be in construction of shops and godowns, etc.

18. The aggregate investment estimates and their breakdown between Centre, State and private sectors would be as given in Table 9.

Appendix 4

A Note on Agricultural Statistics in Orissa

Agricultural statistics in Orissa are defective both in their coverage and reliability. In 1955-56 the reporting area covered only about 80 per cent of the total geographical area. This percentage was as low as 24 per cent for Koraput and 47 per cent for Ganjam district.

2. Statistics in Orissa are supposed to be compiled by a field-to-field enumeration at the primary level. But there are large areas—specially the former princely States which have not been cadastrally surveyed. This affects the reliability of the statistics, as in the absence of a village map showing boundaries of each field, it is not possible to record statistics correctly.

3. The method of collecting statistics is not uniform all over the State. In Koraput and Ganjam districts the primary collecting agency is the *Karnam*; in Cuttack, Balasore and Puri districts, it is the *Chakla Kanungo*, and in Sambalpur it is the *Pauwali*. It is suggested that the primary reporting agency in Orissa should be set up in the entire State on the same lines as in other States, and provision should be made for their training.

4. Recently crop cutting experiments have been made in Orissa which show that the average yield of rice is much higher than what was reported according to eye-estimates. Crop cutting experiments should be carried out for all the crops in order to estimate the average yields.

5. There is very little information available at present on the economic aspects of agriculture such as cost of production, the economics of irrigation, and the regional distribution of commercial crops. Such information can be collected by the Department of Agriculture, in which an economic and statistical section may be created.

Appendix 5

A Note on the Programme for Extending Irrigation Facilities

An attempt is made here to illustrate the significance of some other factors that are relevant to a programme for extending irrigation facilities. The general approach is to take the volume of water made available by a specific project as given, and then to consider various alternative ways of utilizing it, with a view to discovering the most desirable pattern of utilization from the economic standpoint. Moreover, given the cost of a number of irrigation projects, the result of optimum utilization of each of these can be compared to choose the most productive scheme.

2. The estimates of irrigation potential in the State do not clearly distinguish between the irrigation potential determined on technical grounds and that determined by economic considerations. A given irrigation project can technically irrigate a certain maximum acreage determined by the water available and physiography. This technically determined maximum sets a limit to the economical irrigation potential. Given the volume of water made available by a project, the area irrigated will vary with the crops grown, which decides the intensity with which irrigation water is utilized. The economically desirable cropping pattern is the one which yields the maximum increase in output. With this cropping pattern, the available water can be spread over a certain area, which cannot be larger than the technically determined maximum irrigable area, but which might very well be smaller.

3. The desirable cropping pattern can be determined only by comparing the 'productivity' of various alternative patterns that can be adopted, given the water made available, and the maximum area that can be technically irrigated by the irrigation projects. The estimates of the irrigation department given in the text use an arbitrarily selected cropping pattern for determining the irrigation potential. If the cropping pattern is varied the estimates of irrigation potential will also change.

4. The data used are from the "Irrigation Potential of Orissa" (Major and Medium Projects) by the State Irrigation Department. The data available do not allow the consideration of all the factors relevant to the problem. The analysis is, therefore, carried out under very restrictive assumptions and is mainly illustrative rather than conclusive in content. Some of the limitations become obvious in the assumptions, and others are listed later.

5. The procedure is, briefly, to determine the water requirements of some crops in the conditions prevailing in Orissa, and, selecting a few sample cropping patterns, to calculate the increase in agricultural production that follows from the utilization of the given volume of water made available by an irrigation project.

6. According to the irrigation department figures one acre of rice requires 59·6 acre inches of water as compared to 120 acre inches required by sugarcane and 9 acre inches by cash and light rabi crops.[1]

[1] These are not specified in the Irrigation Department report but may be taken to be oilseeds, pulses, and millets and other cereals.

7. These requirements may be met by rainfall or by irrigation. In Orissa, about 85 per cent of the rain falls between June and October. For the calculation (Table I) it is assumed that all the rainfall is concentrated during these months, the rain during the rest of the year being supposed to be not significant enough to affect water requirements. Of the rainfall during the monsoon season only 75 per cent is assumed to be "useful" to the crop. Thus if the annual rainfall is 65 inches, the rainfall from June to October is 60 inches, then "useful"rainfall is 45 inches. The difference between water requirement of a crop and the "useful" rainfall during the period is the amount of water required by irrigation. This amount is raised by 25 per cent, to allow for wastage and seepage, to arrive at the total requirements of irrigation water for the crop.

8. The deltas for each crop (*see* Table I) indicate the acre feet of irrigation water required by one acre of crop calculated as indicated above. The deltas for cash and light rabi crops, and for rabi rice are the same for all river basins because it has been assumed that all the useful rainfall is from June to October so that all the water requirement of the crop has to be met by irrigation.

9. The net area that can be irrigated with a given amount of water will vary according to the cropping pattern adopted and the proportion of irrigated land that is double cropped.

10. In Table I, four cropping patterns are distinguished on the basis of crops grown and the proportion of double cropped area. Pattern I involves the calculation of kharif rice and of cash crops and light crops in the rabi season and a gross irrigated area 40 per cent higher than the net irrigated area. Pattern II combines kharif rice with rabi rice, the proportion of rabi to kharif being again 40 per cent. In Pattern III the ratio of rabi to kharif is still 40 per cent, the kharif crop is rice but one-fourth of the irrigated rabi area is under rice and the rest under cash and light crops (like pulses, millets and oilseeds). Pattern IV combines kharif rice with rabi rice, but the irrigated area in the kharif season is the same as that in Pattern I, the rabi irrigated area being 6 per cent instead of 40 per cent of the kharif area.

11. In calculating production with Patterns I and II the yield per acre is initially taken as the average of the yields during 1951-56—515 lbs. an acre for rice and 400 lbs. per acre for light rabi. Subsequently, a differential between yields per acre of irrigated and non-irrigated rice is introduced. Non-irrigated yields of rice are assumed to be equal to the average yield during 1951-56 while the yield of irrigated rice is assumed to be 19 tons per acre higher.[1] This implies that yields of irrigated rice are about 83 per cent higher than the average yield during 1951-56. No increase in the yield per acre of light rabi crops over 1951-56 average is assumed due to lack of data.

12. All the calculations are made separately for each of the eight river basins. For comparing the alternative cropping pattern the aggregate area and production figures calculated are given below in Table II.

13. Since the total irrigated area varies, the production figures as they stand cannot be used to compare the alternative patterns of utilizing a given amount of irrigation water, unless we assume that no agricultural production whatever is possible on non-irrigated land. But this assumption cannot be made for Orissa where the rainfall is high enough for a kharif crop of rice to be grown without irrigation. Before comparing the productivity of the various patterns, therefore, the total production on the area irrigated must be reduced by the production on the

[1] This is the additional production of foodgrains per acre in Orissa flowing from irrigation as estimated by the Planning Commission.

TABLE I

THE INTER-RELATION BETWEEN WATER REQUIREMENTS, CROPPING PATTERNS AND IRRIGATED AREA IN ORISSA

River Basin	*Proposed Utilization of Water* (Million acre feet)	*"Useful" Rainfall* (inches)	*Delta for Kharif Rice* (feet)	*Delta for Rabi Rice* (feet)	*Delta for Cash Crops and Light Rabi* (feet)	*Net Area Irrigated Cropping Pattern I* (Thousand acres)	*Net Area Irrigated Pattern II* (Thousand tons)	*Pattern I, Total Production from Irrigated Area Yields per Acre Unchanged* (Thousand acres)	*Pattern II Total Production from Irrigated Area only Yields per Acre Unchanged Rice* (Thousand tons)	*Total Production Pattern I increased Productivity estimated Rice*	*Total Production Pattern II Increased Productivity of Irrigated Rice*	*Net Area Irrigated Pattern III* (Thousand acres)	*Total Production from Irrigated Land: Rice+ Light Rabi* (Thousand tons)	*Net Area Irrigated Pattern IV* (Thousand acres)	*Total Production from Irrigated Area—Pattern IV Kharif Rice+Rabi Rice* (Thousand tons)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
								Rice Cash and Light Rabi							
1. Subarnrekha	2·344	35·3	2·50	6·2	·94	810	470	184 + 57	150	3·37	2·75	700	322	+ 810	337 + 21·2
2. Burhabalang	0·587	38·86	2·16	6·2	·94	230	126	52 + 16	40	·95	·73	190	87	+ 230	95 + 6·0
3. Baitarni	1·3789	34·17	2·65	6·2	·94	450	270	101 + 32	86	1·85	1·57	390	179	+ 450	185 + 12·5
4. Brahmani	3·8589	37·78	2·27	6·2	·94	1450	810	330 + 103	259	6·05	4·74	1210	556	+1450	605 + 38·0
5. Mahanadi	3·0591	36·76	2·38	6·2	·94	1110	630	253 + 79	201	4·63	3·68	930	428	+1110	463 + 27·9
6. Rushikulya	0·0179	30·54	3·08	6·2	·94	5	3	1 + 0·3	1	0·18	·018	4	2	+ 5	1·8 + 0·16
7. Vamsadhara	0·3084	31·50	2·92	6·2	·94	90	57	20 + 6	1·8	·37	·33	80	37	+ 90	37 + 3·1
8. Godavari	1·7667	32·93	2·76	6·2	·94	560	340	128 + 50	108	2·35	1·98	480	221	+ 560	235 + 18·8
TOTAL	13·300					4705	2706	1069 + 334	863	19·6 light rabi	+15·5	3984	1842 212	+4705	1965 +124·0

NOTES:

2. This is the amount of water proposed to be utilized by 51 major and medium projects distributed among the river basins, according to report of the Irrigation Department.

3. This is 75 per cent of the rainfall in the monsoon months, June to October in the river basins. Since over 80 per cent of the annual rainfall is concentrated in the monsoon months this assumption was made.

4, 5 and 6. The Delta calculations are made on the figures of water requirements given by the Irrigation Department 59·6" for rice 9" for light rabi. The calculations assume that all the useful rainfall is concentrated in the monsoon months, so that rabi crop must depend solely on irrigation water. An addition of 25 per cent is made to the water requirement to allow for wastage, seepage, etc.

7. Cropping pattern I implies that gross irrigated area is 40 per cent larger than net irrigated area, i.e., double cropping of 40 per cent, and that kharif rice and light rabi crops are grown.

8. Pattern II has the same percentage of double cropping, the kharif crop is rice and the rabi crop is also rice.

9 and 10. The production is calculated on the assumption of 1951–56 yields per acre. Rice yield=510 lbs. per acre. The average yield of pulses during these years was 276 lbs. per acre, of oilseeds 4 lbs. and of millets and other cereals 49 lbs. per acre. The average yield of light rabi crops has been taken as 400 lbs. per acre.

11 and 12. Allowance is made for increased yields: production of rice is supposed to increase by 0·19 tons per acre with irrigation (Planning Commission, yardstick for additional production of foodgrains for Orissa).

13 and 14. Pattern III has 40 per cent double cropping, but kharif rice is combined with rice and light rabi crops. The 40 per cent of the net irrigated area that is double cropped, is devoted to rice and light rabi in the ratio 1 : 3.

15 and 16. Pattern IV has the same area under kharif rice under irrigation as pattern I, but the rest of the available water is used for rabi rice. The net irrigated area is the same as pattern I, but the irrigated area under rabi is only 6 per cent of the net irrigated area. The yield per acre of irrigated rice is still assumed to be 0·19 ton higher than the 1951–56 average yield.

SOURCE: Data for Columns 2, 3, 4, 6, from the Report on Irrigation Potential, Department of Irrigation, Orissa.

same area without irrigation. Assuming that all the land irrigated in the different patterns would be able to grow a kharif crop of rice without irrigation, the gross increment in agricultural output due to irrigation can be determined. (Table III)

14. The value of the increase in agricultural production is estimated by using 1954-55 prices. The price of light rabi crops is taken to be the weighted average of the 1954-55 prices of ragi, maize, gram, rape and mustard, linseed and groundnuts, the weights being the area under these crops. The average works out at Rs. 11·8 per maund. The harvest price of rice in 1954-55 was Rs. 11·1 per maund. The conclusion is that of all the alternatives considered, Cropping Pattern I, growing kharif rice with light rabi crops, leads to the greatest increase in the value of agricultural production from the utilization of the irrigation water made available. The pattern recommended in the report is similar to this.

15. The limitations of the analysis and ways of allowing for them are indicated. No attention has been paid in the calculations to the problem of the maximum area that can be irrigated. A limit may be set by technical considerations. For instance, it may be technically possible, in the example that is being considered, to irrigate a maximum area of only 4 million acres. The calculations can be modified to allow for this technical constraint on net irrigated area. The net irrigated area under Pattern I and IV declines to 4 million acres, while the other two patterns are unaffected. The decline in the kharif irrigated area means an increase in the rabi cropped area to utilize all the available water. The aggregate figures of area and production are therefore modified for the patterns that are affected (Table IV). With the introduction of the maximum technical limit to irrigated area Pattern I still gives the largest increase in agricultural production, but it implies an impossibly high double cropped area. Pattern III may be in this case the most productive of the practicable patterns.[1]

16. Another limitation of the analysis is that it assumes that the available water can be used with perfect freedom at any time of the year. But since some of the irrigation projects will be merely diversion schemes, and because the storage capacity of the reservoirs is limited, it may be necessary to utilize water according to certain time pattern. This introduces another constraint on the alternative cropping patterns that can be selected. But this factor can also be allowed for in our calculations provided the time distribution of the total available pattern is known. For example, the storage capacity of the reservoirs may be limited so that it may be necessary to utilize at least 50 per cent of the total water made available in the kharif season. In Patterns I, III and IV (as modified in Table IV), over 70 per cent of the annual available water is used for the kharif crop, while in Pattern II the proportion is 50 per cent. Thus if the condition on the seasonal utilization of water is that at least 50 per cent be used up in the rainy season, no modification is necessary in Table IV.

17. A third limitation is related to the unsuitability of the gross productivity criterion for choosing between various alternatives, because it ignores costs. The capital costs involved in irrigation will vary with the net area irrigated and the pattern of cropping selected. A pattern involving large irrigated area means more channels and canals and higher capital cost than one involving a smaller irrigated area. It will also, probably, mean a larger loss of water due to seepage, evaporation and wastage. A pattern of cropping that uses a higher proportion of the available water in the kharif season may imply that less storage capacity is required in the projects

[1] No attempt is made here to choose the best way of utilizing the available water. Only the considerations relevant to such a choice are being indicated.

supplying the water, and this may mean lower capital cost. The first two of these considerations are in favour of Pattern II and the third in favour of the other three. They will modify the relative attractiveness of the various alternatives. Since no data are available it is not attempted to introduce cost considerations into our exercise but, in principle, it is possible to do so.

TABLE II

	Pattern I	*Pattern II*	*Pattern III*	*Pattern IV*
1. Net Area Irrigated (million acres)	4·705	2·706	3·984	4·705
2. Gross Area Irrigated (million acres)	6·587	3·788	5·578	5·002
3. Production on Irrigated Land (tons)				
Rice	1,960,000	1,550,000	1,832,000	2,084,000
Light Rabi	336,000	Nil	212,000	Nil

TABLE III

GROSS PRODUCTIVITY

	Pattern I	*Pattern II*	*Pattern III*	*Pattern IV*
1. Net Area Irrigated (million acres)	4·705	2·706	3·984	4·705
2. Production on this area without Irrigation: Kharif Rice: (thousand tons)	1069	617	908	1069
3. Production with Irrigation (thousand tons)				
Rice	1960	1550	1832	2084
Light Rabi	336	Nil	212	Nil
4. Increment of Output with Irrigation (3–2) (thousand tons)				
Rice	891	933	924	1015
Light Rabi	336	..	212	..
5. Value of Increased Output at 1954-55 Prices (Rs. lakhs)	3781	2826	3482	3075

TABLE IV

MODIFIED AGGREGATE AREA AND PRODUCTION

	Pattern I	*Pattern II*	*Pattern III*	*Pattern IV*
1. Net Irrigated Area (million acres)	4	2·706	3·984	4
2. Gross Irrigated Area (million acres)	7·7	3·788	5·578	4·56
3. Proportion Double Cropped (percentage)	92	40	40	14
4. Production on Irrigated Land (thousand tons)				
Rice	1670	1550	1832	191
Light Rabi	659	..	212	..
5. Production on Net Irrigated Area Assuming no Irrigation Kharif Rice (thousand tons)	912	617	908	912
6. Increase of Output with Irrigation (4–5) (thousand tons)				
Rice	760	923	924	
Light Rabi	659	..	212	1000
7. Value of Increased Output at 1954-55 Prices (Rs. lakhs)	44,24	28,26	34,82	30,30

Appendix 6

List of Suggested Small Scale Industries for Orissa (1961-71)

Description of Industry	*Number of Units*	*Capacity* (output per shift per unit)	*Number of men per shift* (per unit)	*Block capital* (Rs. lakhs per unit)	*Location and District*
(1)	(2)	(3)	(4)	(5)	(6)
A. Forest Based					
1. Timber Works (Sawing, Seaming, Chemical Treatment)	5	12 tons	40	3	(1) Bhanjnagar (Ganjam) (2) Kantabanji (Bolangir) (3) Balliguda (Phulbani) (4) Angul (Dhenkanal) (5) Rayagada (Koraput)
2. Manufacture of Doors and Windows (Sizing Log to Finishing Including Flush Doors)	2	8 tons	48	4	(1) Titlagarh (Bolangir) (2) Jharsuguda (Sambalpur)
3. Manufacture of Cable Drum, Automobile Body Building and Manufacture of Ambar Charkha and Reels	1	8 tons	48	4	Sambalpur
4. Plywood Manufacturing, Wood Wool Manufacturing and Slate Frames, and Pattern Making	2	10 tons	45	3·50	(1) Bada Barbil (Keonjhar) (2) Jajpur Rd. (Keonjhar)
5. Railway Wagon components and Sleepers	1	10 tons	48	4·50	Jharsuguda (Sambalpur)
6. Boat Building	1	5 tons	40	3·50	Chandbuli (Balasore)
7. Wood Distillation	2	15 tons	45	4·50	(1) Navjangpur (2) Dhenkanal
8. Sabai Grass Processing (Pulp, Rope, etc.)	1	10 tons	40	4	Nayagarh (Puri)
9. Tanning Extracts (Barks, Myrobalan Making Units, etc.)	1	50 lbs.	15	2	Bisaam-Cuttack (Koraput)
10. Wax Products (Collection, Curing and Tabulating of Sisal, Hemp and Bees Wax)	1	50 lbs.	25	2·50	Jharsuguda (Sambalpur)

Description of Industry	*Number of Units*	*Capacity* (output per shipt per unit)	*Number of men per shift* (per unit)	*Block capital* (Rs. lakhs) (per unit)	*Location and District*
11. Acoustic and Insulation Boards, 100 Blocks and Blocks (for Air-conditionings etc.)	1	40	40	3·50	Barbil (Keonjhar)
B. MINERAL BASED					
1. Slate and Pencil Manufacturing Unit	1	20 gross slate 100 boxes	25	2	Titlagarh (Bolangir)
2. Graphite Asbestos Products	1	1 ton	45	3·5	,,
3. Bleaching Powder	1		48	4·5	Bisra (Sundargarh)
4. Ceramic Mouldings (Electrical Accessories)	1	5 tons	45	2·50	Rajgangpur (Mayurbhanj)
5. Sanitary Accessories	1	5 tons	45	3	Jaipur Rd. (Keonjhar)
6. Crockery Manufacture	1	3 tons	35	2·50	Rajgangpur (Mayurbhanj)
7. Stone-wares and Curies	1	5 tons	45	1·50	Karanjia and Baripada (Mayurbhanj)
C. CHEMICAL BASED					
1. Pharmaceutical Preparations (Syrups, Elixirs, Common Tablets and Extracts) (No Injectibles)	1	500 lbs.	40	3·5	Berhampore (Ganjam)
2. Pharmaceutical (Base Preparations from *Muxvonica, Serpentina Rowolfia,* Turmeric and others.	1	100 lbs.	30	2·5	Balasore
3. Colours and Chemicals (Especially Dry Colours, Distempers, Sindoor, Powder, etc.) (Side-line Inks and Glue)	1	3 tons	25	3	,,
4. Toilet Products (Face Powder, Talc Powder, Sindoors, Pastes, Jollys, Oils and Soap, Tooth-Paste and Allied Items)	1	1 ton in all	30	4	Cuttack or Jagatpur (Cuttack)
5. Distillation of Industrial Alcohol	2	200 gallons	45	4	(1) Aska (Ganjam) (2) Asthrang (Puri)
D. AGRICULTURE BASED					
1. Tomato Canning including Seed Treatment (Seasonal) can be combined with Fruit Pulping Unit (Manufacture of Sauce, Ketchup, Base Jelly and Crystal Jelly)	1	500 lbs.	30	2·5	Titlagarh (Bolangir)
2. Straw Pulp/Board Manufacture (Manufacture of Straw Pulp in Laps in the Form of Board)	2	5 tons of pulp or 2 tons lap, 2 tons board	45	4	Bhadrak (Balasore)

Description of Industry	Number of Units	Capacity (output per shipt per unit)	Number of men per shift (per unit)	Block capital (Rs. lakhs) (per unit	Location and District
3. Cashewnut Curing. (Fruit Ssorting to Packing including Treatment of Kernel, Shell and Oil Recovery)	2	2 tons of kernel, 1 ton of shell 5 gallons of Oil	40	3	(1) Basta (Balasore) (2) Chatrapur (Ganjam)
4. Manufacture of Confectionery (from Gur and Khandsari)	1	2 tons	40	3	Aska (Ganjam)
5. Bone Mill (for Manufacture of Crushed/Powdered Bone and Manure) (There will be a Glue Manufacture Unit with it)	2	10 tons	45	3	(1) Bhadrak (Balasore) (2) Navrangpur (Koraput)
6. Leather Curing Unit (for Treatment of Raw-hide, Preservation and Tanning),	3	2 tons	35	2	(1) Berhampur (Ganjam) (2) Bhadrak (Balasore) (3) Navrangpur (Koraput)

Appendix 7

Phasing of the Establishment of Suggested Small Industries in Orissa (1961-71)

1. The main criteria used for phasing the small industry development programme are based on the following questions:

(*i*) Is there an immediate demand for the product ? When is there likely to be demand ?

(*ii*) Are the resources, both skills and raw materials, available at present in Orissa? Will they be available at a later date ?

(*iii*) Will the plant induce investment or give rise to feeder and ancillary and other industries ?

(*iv*) Is the plant a feeder, ancillary or service plant ? If so, when will its products or services be required ?

(*v*) Will the plant provide relief to a decaying industry, or relieve a depressed area?

2. Plants with immediate demand, readily available resources, plants necessary for the growth of other industries, plants with the widest impact on the State income and plants necessary to relieve depressed areas were given priorities. No statistical system of priority allocation was used. The number of criteria and their magnitudes helped to decide when the various plants should be constructed for maximum benefit to both the entrepreneur and the State.

3. It will be noticed that a larger number of small plants are suggested for the early years of the decade 1960-70. The consolidation and expansion of new plants may be undertaken in later years. The programme should be reviewed every two years.

PHASING OF SUGGESTED SMALL INDUSTRIES IN ORISSA
(1961-71)

Description of the Industry	*Phase I (1960-64)*	*Phase II (1964-70)*
1. Forest Base		
1. Timber works: saw mill units with carpentry and kiln seasoning	2	3
2. Manufacture of doors and windows	1	1
3. Manufacture of cable drum, automobile body building and other accessories	1	0
4. Railway wagon components, sleepers	1	0
5. Plywood manufacturing, slate frames pattern making, wood wool plant	1	2
6. Boat building	1	0
7. Wood distillation plants	1	1
8. Sabai grass processing—rope pulp, etc.	1	0
9. Tanning extracts	1	0
10. Wax products	0	1
11. Acoustic and insulation boards & blocks	0	1
Total	10	9

PHASING OF SUGGESTED SMALL INDUSTRIES IN ORISSA (1961–71)—Contd.

Description of the Industry	*Phase I*	*Phase II*	
2. MARINE BASE			
1. Deep sea fishing	1	0	
2. Fish canning and fish product processing	0	1	(2)
TOTAL	1	1	
3. MINERAL BASE			
1. Slate pencil manufacturing unit	0	1	
2. Graphite and asbestos products	0	1	
3. Manufacture of bleaching powder	1	0	
4. Ceramic mouldings—electrical accessories	1	0	
5. Sanitary accessories	0	1	
6. Crockery manufacturing	0	1	
7. Stonewares and curios	1	1	(8)
TOTAL	3	5	
4. AGRICULTURAL AND ANIMAL BASE INDUSTRIES			
1. Tomato canning including seed treatment	1	0	
2. Straw pulp/board manufacture	1	1	
3. Cashew-nut curing (from sorty to packing)	1	1	
4. Manufacture of confectionery	1	0	
5. Bone mills—manufacture of crushed bone manure	1	1	
6. Leather curing unit (preserving, tanning)	2	1	(11)
TOTAL	7	4	
5. CHEMICAL BASE			
1. Pharmaceutical preparations (syrups, elixir)	1	0	
2. Pharmaceutical unit—extracting essences, tinclines, etc.	1	0	
3. Manufacturing chemicals, colours, distempers	1	0	
4. Manufacture of toilet products	0	1	
5. Distillation of industrial alcohol	1	1	(6)
TOTAL	4	2	

PHASING OF SUGGESTED SMALL INDUSTRIES IN ORISSA (1961–71)—Contd.

Description of Industry	*Phase I*	*Phase II*	
6. METAL BASE			
1. Ferrous foundry-cum-M/C shop manufacture of cane crushers, pumps crushers	0	1	
2. Manufacture of building construction hardware	0	1	
3. Sheet metal fabrication—Drums, buckets	1	0	
4. Wire nails, screws, bolts and nuts	0	1	
5. Household articles, agricultural implements	1	0	
6. Furniture for offices and hospitals	0	2	
7. Structural steel shop—contract jobs for buildings, ship repair, bridge work, etc.	0	1	
8. Engineering tools—scales, calipers, etc.	0	1	
9. General engineering and jobbing—mechanical feeder industry to all English firms	1	2	
10. General engineering electrical works	1	1	
11. Malleable steel foundry—manufacture of cement pipes and accessories	0	1	
12. Cycle parts manufacture	1	0	
13. Non-ferrous die castings—bell metal brass	2	1	
14. Brass rolling Mills	2	1	
15. Bell metal and non-ferrous sheet metal factory	1	0	
16.[a] (*a*) Household interests of cutlery (*b*) Hospital appliances (*c*) Curios and specialities (*d*) Electrical fittings, etc., screws and bolts (*e*) Job work plant (machine part of specialities) (*f*) Stationery requisites including pins, clips (*g*) Locks and building materials (*h*) Pelromese lamps, bed room lamps (*i*) Cycle parts, commercial wares (*j*) Water and gas pipe fittings	10 Plants		
TOTAL			(40)
7. GENERAL			
1. Flour milling (including separating sooji and maida)	1	1	
2. Bakery-cum-biscuit plant	0	1	
3. Hosiery mill—manufacturing of banians, socks	0	1	
4. Readymade garments, building	2	3	
5. Photo-litho printing and offset (ind. die stamping and calendar manufacture)	1	1	
6. Spectacles frame manufacture and glass grinding	0	2	
7. Sports goods	2	1	
8. Printing accessories	0	1	
TOTAL	6	11	(17)

[a] These plants may be constructed as soon as the sheet metal factory goes into operation.

Appendix 8

Principal Rail Projects and Open Line Works in Orissa during Second Five Year Plan

Projects	*Progress as on 31.3.1959*
NEW CONSTRUCTION	
(*i*) Naomundi–Banaspani Branch (17·9 miles, Rs. 229·54 lakhs)	91·5 per cent completed and opened to goods traffic in April, 1958.
(*ii*) Bondamunda-Dumaro line (42 miles, Rs. 799·69 lakhs)	59·0 per cent completed: 15 miles of track linked. In Progress.
(*iii*) Extension of Barabil branch to Panposh–Gorge (5·8 miles, Rs. 113·13 lakhs)	78 per cent completed: expected to be completed before the monsoon.
(*iv*) Bondamunda–Nawagaon–Purnapani line (17 miles)	Survey completed: work in field to start after monsoons in 1959.
(*v*) Construction of Sambalpur–Titlagarh	Survey completed: work in field to start after monsoons in 1959.
DOUBLING	
(*i*) Manoharpur—Rourkela Section (25·2 miles, Rs. 187·54 lakhs)	Throwforward from First Plan, 99 per cent completed, signalling work in progress.
(*ii*) Rajkharswan—Barajamda Section (60·6 miles, Rs. 2,106·75 lakhs)	Throwforward from First Plan, 88 per cent completed; opened in stages during May-December 1958.
(*iii*) Rourkela—Durg Section (285·8 miles, Rs. 2,106·75 lakhs)	Signalling works in progress. 78 per cent completed; 250 miles in Section opened slow line.
LIME CAPACITY WORKS	
(*i*) Strengthening work, Rourkela–Birmitrapur Branch	Work completed; new Keolbridge opened to traffic, December 1958.
(*ii*) Increasing line capacity throughout East Coast Section; provision of 13 crossing stations and additional reception lines at 22 stations	8 crossing stations and 10 reception lines completed.

(*iii*) Increasing line capacity at Nerguadi–Khurda Road section by provision of a block hut between Retang and Khurda Road with remodelling of Bhubaneshwar and Cuttack yards and minor yard facilities at Khurda Road, and improved signalling arrangements (Rs. 8·51 lakhs)	In progress.
(*iv*) New marshalling yard at Bonda-munda near Rourkela (Rs. 392 lakhs)	Exchange yard for the steel plant nearly completed, rest in progress.
(*v*) Raipur–Vizianagaram Section 3 crossing stations (Rs. 11·95 lakhs) 7 additional reception lines (Rs. 24·77 lakhs)	Three crossing stations and 6 additional reception lines completed.
Signalling Improvements	
Replacement of 50 token instruments by tokenless block working at Cuttack–Hakshannath Road Section, East Coast (Rs. 928 lakhs)	
Bridge Rehabilitation Works	
Jharsuguda–Sambalpur regirdering of 11 bridges	Kharagpur, Nagpur and Kharagpur–Waltair Sections completed.
Loco Sheds	
Loco Shed at Dangaoposi (Part of Rajkharswan–Barajamda doubling)	
Electrification	
Electrification, Tatanagar–Rourkela Section	

Source: South Eastern Railway, Second Plan Progress up to 31.3.1959.

Appendix 9

Note on the Method of Estimating Requirement and Supply of Technical Personnel for the Period 1961-71

On the basis of industry-wise breakdown of the working force by categories of occupations given in the *Occupational Pattern in Manufacturing Industries, 1956* published by the Planning Commission, managerial and supervisory staff for industries recommended in this report for the decade 1961–71 has been estimated at 12,878, of which 10,977 are in metal-based, metallurgical and chemical (including forest-based) industries and 1,881 in agriculture-based industries.

2. On the same basis 38 per cent of the managerial and supervisory staff in the metallurgical, metal-based and chemical industries and 21 per cent in the agricultural-based industries are taken to consist of engineers and overseers. The same ratios are used for mining also and the requirement for engineers and overseers comes to 2,035 and the total for mining and manufacturing industries to 6,609.

3. For the requirement in the development programmes of the Government (including replacements) it is assumed, on the basis of the study made for Madras in the Techno-Economic Survey, that it will be roughly 50 per cent of the requirement in industry. This will give a figure of 2,287

4. For replacement requirements in industry, the employment in 1961 is taken at 80,000 of which the annual replacement will be 3 per cent or 2,400. Annual replacement, assuming the same ratio of engineers to total employment as in the suggested new industries, comes to 118. Employment in mining in 1961 is estimated to be 82,000. Assuming the same ratio of engineers to total employment in the suggested new mining units taking 3 per cent of 1961 mining employment to represent replacement needs, the replacement demand in mining comes to 32. Thus the total annual requirement of engineers and overseers including replacement comes to 1,040.

Supply

5. The annual capacity of the existing engineering college is expected to be 180 by 1961. In addition, the capacity of diploma colleges is expected to be 540 annually. Allowing for a 15 per cent wastage, the annual supply of both engineers and diploma holders comes to 612.

Craftsmen

6. The new industries suggested by the NCAER will require 29,309 skilled workers for the period 1961–71. This is also on the basis of industry-wise breakdown of the working force by categories of occupation given in the *Occupational Pattern in Manufacturing Industries, 1956* published by the Planning Commission.

7. Using the same ratios, the requirement in mining is estimated at 61,305.

8. The public sector requirement including replacement, again on the basis of a study in the Techno-Economic Survey of Madras State, is estimated to be 6·5 per cent of the requirements of new industries suggested. This gives a figure of 1,905. Thus the total additional requirement for craftsmen works out at 92,249 for the period 1961–71.

Replacements

9. Assuming the same ratio of skilled workers to total industrial employment in the new industries suggested—32·2 per cent—and on the basis of a 3 per cent replacement need, the replacement demand for skilled workers in industry comes to 778 per year. Similarly, in mining the replacement works out to 959, making the total annual requirement of skilled workers 10,962.

Supply

10. By 1961, the industrial schools will train 1,129 candidates. Allowing for a 15 per cent wastage, the annual availability will be roughly 960. 200 persons are expected to receive training annually in coal mining and 100 persons through the tribal welfare department. This makes the total availability 1,260.

11. Assuming that in-plant training facilities provide training for an equal number of persons as those trained in the institutes, the total annual supply of skilled workers can be estimated to be about 2,260.

Appendix 10

Estimates of Outlays for Major Health Schemes During 1961-71

Malaria Eradication

The estimate of the cost of this programme for the Third Plan has been made by applying the per capita expenditure on population covered during the First and Second Plans, to the population to be covered in the Third Plan. Estimated expenditure was Rs. 40 lakhs and population covered 6 million. Balance of population to be covered was about 11 million. The expenditure in the Third Plan was therefore estimated at $\frac{4}{6} \times 110 = \frac{220}{3} =$ Rs. 73 lakhs.

2. However, in view of the fact that the State Government now claim to have covered the entire population under this programme, a provision of Rs. 50 lakhs or Rs. 5 lakhs a year is made for intensification of the programme and for fixed investment in equipment and trucks, etc.

Supply of Quinine

3. Estimate of the cost of supplying tablets is very rough. It is based on the premise that annually about 2 to 2·5 million people would need quinine for prophylactic or curative purposes, at the rate of 10 tablets per person a year; at a price of 3 nP per tablet, the total cost would be Rs. 6 to 7·5 lakhs, and that about half of them would need free supply. The cost to the Government may therefore be Rs. 3 to 4 lakhs per year. Total cost over ten-year period, 1961–71, would be about Rs. 40 lakhs.

Anti-Filaria Programme

4. The allocation in Third Plan is taken at 50 per cent more than that in the Second Plan. This gives a figure of Rs. 30 lakhs for the Third Plan. The same figure is adopted for the Fourth Plan.

Urban Water Supply

5. Rs. 1·75 crores were provided for these works in the Second Plan to cover an urban population of 600,000. This gives a per capita figure of Rs. 29. A round figure of Rs. 30 is adopted for the future works to be done during 1961–71.

Urban Drainage and Sewage

6. In the Second Plan the cost of the scheme for Cuttack, a city of 100,000 population was estimated to be Rs. 1·20 crores. On this basis the per capita cost comes to Rs. 120. For the

future, per capita cost is assumed to be 20 per cent more, i.e., Rs. 144, and urban population for which provision is to be made by 1971 is estimated at one million.

Rural Water Supply

7. Provision under the Second Plan (Rs. 47·5 lakhs) is expected to increase by 50 per cent for the Third Plan, and the Third Plan provision to increase again by 50 per cent, for the Fourth Plan. On this basis Third Plan provisions would be Rs. 70 lakhs and Fourth Plan estimate, Rs. 105 lakhs.

Mobile Health Units

8. According to the First Plan provision the average cost per unit comes to Rs. 20,000. This presumably is the current expenditure per unit for five years. Hence another sum of Rs. 20,000 per unit has been added to include the cost of a vehicle for each new unit. 26 units in the Third and Fourth Plans would thus require Rs. 5·20 lakhs for vehicles and Rs. 5,000 a year per unit for current expenditure. The current expenditure for the first 13 units over 10 years would be Rs. 6·50 lakhs and for the next 13 units over 5 years of Fourth Plan, Rs. 3·25 lakhs. The total cost over 10 years under this programme would be about Rs. 15 lakhs.

T. B. Control

9. The Second Plan allocation of Rs. 40 lakhs is expected to be increased by 50 per cent for the Third Plan, and the Third Plan figure again by 50 per cent for the Fourth Plan. This gives estimates of Rs. 60 lakhs and 90 lakhs for Third and Fourth Plans.

Leprosy Control

10. Same basis as above is applied to the allocation of Rs. 48·4 lakhs provided in the Second Plan. Thus for the Third Plan the estimate is about Rs. 70 lakhs and for the Fourth Plan Rs. 105 lakhs.

Distribution of Vitamin Tablets, etc.

11. School-going population in 1956-57 was 800,000. This may easily exceed the million mark during 1961–71. If only 2 vitamin tablets are to be supplied to each student for at least 200 days in a year, and each tablet costs, say, 2 nP, then the cost per year per student would be Rs. 8 and the total would be Rs. 80 lakhs a year. This cost is not included in the State Plans for reasons, stated in the report. However, an expenditure of Rs. 5 lakhs is suggested in the Third Plan for experimental purposes and about Rs. 10 lakhs in the Fourth Plan for a more intensive effort in this field.

Hospitals and Dispensaries

12. According to the Second Plan norms, there should be one hospital bed per 1,000 of population. On this basis Orissa would need some 21,000 beds by 1971 when its population reaches a level of 21 million. By 1961, the number of beds in Orissa, in hospitals, dispensaries

and primary health units would be about 4,000 and the shortfall by 1971, would therefore be of the order of 17,000. Again if 1,000 primary health units suggested in the report are established by 1971, they should provide 10,000 additional beds. The shortage to be met by hospitals and dispensaries may therefore be about 7,000 beds. In view of the need to conserve resources in Orissa for other high priority health schemes, the objective during 1961-71 may be kept at 3,500 additional beds in hospitals and dispensaries. Even this order of development would require an allocation of Rs. 5 crores, at the rate of Rs. 14,300 per bed,[1] as the cost of new hospitals and dispensaries.

Maternity and Child Welfare, Family Planning, etc.

13. In the Second Plan allocation for these programmes was about Rs. 15 lakhs. This amount may be doubled for the Third Plan and for the Fourth Plan, the Third Plan figures increased by 50 per cent. This would mean a provision of Rs. 30 lakhs for the Third Plan and Rs. 45 lakhs for the Fourth Plan, thus adding up to a total figure of Rs. 75 lakhs for the period 1961–71.

[1] Based upon Second All-India Plan data.

Appendix II

Methods and Basis of projections of the State Government's Receipts and Expenditure (on Revenue Account) in 1961-71

Tax Revenues

Receipts from individual taxes have been projected at rates indicated below. The base for the projections is the revised estimate for 1960-61. No credit is taken for the yield from additional taxation except in the case of land revenue. In this case, the yield is taken gradually to increase by 50 per cent by the end of 1965-66 as result of revision of settlements. The yield of agricultural income tax is assumed to be negligible after 1966 on the basis that land reforms may be completed by that date. As the road and water transport tax is levied at present only in respect of a few commodities, it is difficult to relate it to any other known rate of increase; hence no increase in yield is taken into account. The amount involved is not significant.

Non-Tax Revenues

2. *Revenues from forests*: Intensive development of existing forest resources as well as more business-like disposal of minor forest produce is expected to increase forest revenue by Rs. 17 lakhs by 1970-71. Further, the fruits of afforestation are expected to be received by the State beginning from 1964-65. Additional revenue on this account in 1970-71 is expected to be Rs. 48 lakhs.

Profit from Electricity Undertakings

3. Consumption of electricity in Orissa is expected to increase from 697 million kWh in 1960-61 to 3719 million kWh in 1970-71. The shares of public sector generation in total consumption are estimated to be 547 million kWh, 1,758 million kWh and 3,419 million kWh respectively. Total profits from electricity are calculated on the assumption that the average rate of net profit would be one nP per unit.

4. *Profits from mining*: The mining of iron ore is expected to increase from 4 million tons in 1960-61 to 26 million tons in 1970-71. If we assume that half of this increase will be in the public sector as a result of the development of the Orissa Mining Corporation, output in the public sector will be 11 million tons in 1970-71. At the rate of profit of Rs. 2 per ton, the profits of the Corporation will increase from Rs. 0·2 crore in 1961-62 to Rs. 2·2 crores in 1970-71. Half of the profits of the Corporation is assumed to be accruing to the State Government year by year.

5. Royalties from mining are expected to rise from Rs. 59 lakhs in 1960-61 to Rs. 3 crores in 1970-71. (*See* Chapter 6).

6. Administrative receipts have been projected at the rate of 5 per cent per annum (average).

PROJECTIONS OF TAX REVENUE IN ORISSA (1961–71)

(Rs. crores)

Name of Tax	*Yield in 1960–61*	*Basis of Projections*	*Total Yield 1961-71*
1. Share of Income Tax	3·24	Estimated Rise in Income in Secondary and Tertiary Sectors in All-India[a]	46·63
2. Estate Duty	0·03	Trend in Receipts[b]	1·35
3. Tax on Railway Fares	0·24	Growth in Passenger Traffic[c]	2·78
4. Share of Union Excise	2·67	Increase in the Output of Excisable Commodities Concerned[d]	35·32
5. General Sales Tax	2·53	Estimated Rise in State Income[e]	44·96
6. Stamps and Registration	0·79	do.	13·87
7. Entertainment Tax	0·14	do.	2·42
8. Motor Vehicles Tax	0·79	Rate of Growth of Traffic[f]	12·22
9. Sales Tax on Motor Spirit	0·37	do.	5·70
10. Land Revenue	3·14	50 per cent Increase by 1965-66	43·94
11. Road Transport Tax	0·44	No Increase	4·40
12. Agricultural Income Tax	0·03	No Yield After 1965-66	0·15
13. State Excise	1·25	Estimated Rate of Growth of Population[g]	13·85
14. Electricity Duty (Fees)	0·04	No Increase	0·40
TOTAL	*15·75*		*227·99*

[a] 8 per cent per annum. Income in the secondary and tertiary sectors is expected to rise by 7 per cent per annum in the country as a whole. Since the Corporate Sector will grow at a faster rate, an 8 per cent rate of growth is chosen for income tax yield.

[b] On the basis of past trend, the share of estate duty is assumed to increase by Rs. 1 lakh per annum.

[c] Based on Planning Commission's Projections.

[d] 55 per cent per year in 1961–66 and 5·5 per cent per annum (over the 1965–66 base) in 1966-71; derive from projection of output of the excisable commodities concerned during the Third Plan Period.

[e] 14 per cent per annum; National Council's Projections.

[f] The yield of motor vehicles' tax and that of sales tax on motor spirit are taken to increase at 10 per cent per annum, that is, at a rate slightly lower than the rate of growth of State income. Implicitly traffic and number of vehicles are assumed to increase at the same rate.

[g] 2 per cent per annum being the estimated rate of growth of the population of the State, it is assumed that the per capita consumption of liquor will remain constant.

NOTE: 1. All rates are average rates except in the case of railway fares.
2. In the case of all shared taxes the percentage shares going to Orissa are taken, being as constant.
3. Electricity duty in Orissa is only in the nature of licence fees.

Development Expenditure

7. 1960-61 revised estimate has been taken as the basis. From this has been deducted Plan expenditure on Revenue Account in 1960-61. The remainder of the expenditure is projected at 2 per cent per annum. To this has been added the committed expenditure on Second Plan schemes.

Non-Development Expenditure

8. With 1960-61 revised estimate as the basis, non-development expenditure has been projected at the rate of 3 per cent per annum. Interest charges are assumed to average Rs. 3 crores per annum during the ten-year period. No allowance is made for repayment of debt to the Centre. Market loans outstanding are not very large and conversion operations can be easily undertaken in respect of those loans.

Market Loans and Share of Small Savings

9. Targets for the Third Plan have been taken as the basis. The target for 1966–71 has been arrived at by increasing the base by 50 per cent. As already indicated, it has been assumed that having made some arrangement with the Centre about the loans contracted on account of Hirakud, the State will be in a position to borrow further from the market for productive investment.

Appendix 12

Proposed Investment by Centre, State and Private Sector in Orissa During 1961-71

Agriculture and Allied Activities

Public investment in agriculture is estimated in Chapter on Agriculture (Chapter 2) and is presented in Table 15. The entire investment of Rs. 212·3 crores would be in the State sector. The private investment in agriculture is estimated as follows:

The ratio of private investment to public investment in agriculture in the (all-India) Draft Third Plan is 40 per cent. Since agricultural incomes in Orissa are rather low, it is assumed that the ratio for the State would be about 30 per cent. Private investment in agriculture during 1961–71, therefore, is Rs. 63·7 crores, that is 30 per cent of Rs. 212·3 crores.

2. Total investment proposed for development of livestock, forestry and fisheries, for the period 1961–71 is Rs. 33 crores, which would all be in the State sector.

Large Scale Factory Industry

3. A total investment of Rs. 538·6 crores is proposed for large scale industries during 1961–71 both in the public and private sectors as presented in Tables 36 and 37 indicating the phasing between the Third and Fourth Plan periods.

Small Scale Factory Industry

4. The public investment in small scale factories is estimated at Rs. 9 crores—Rs. 6 crores in industrial estates and Rs. 3 crores in the Pilot Project. In the Third Plan the ratio of private to public investment in small scale industry is estimated at 1·8 : 1. Orissa being relatively under-developed and lacking in an active entrepreneurial class, a lower ratio of 1·5 : 1 may be expected. Private investment in small scale industry during 1961–71 is thus estimated at Rs. 13·5 crores.

5. The total investment in factory industry is Rs. 561·1 crores. Of this, Rs. 450 crores relating to steel industry would be by the Centre, Rs. 9 crores in small scale and the rest in private sector (i.e., Rs. 113·5 crores).

Cottage Industries

6. In the Third Plan a ratio of 2 : 1 between public investment in small scale and in cottage industries is indicated. This ratio is applied to the public investment in small scale industries in Orissa (i.e., Rs. 9 crores) to estimate public investment in cottage industries during 1962–72 at Rs. 4·5 crores. On the basis of the Third Plan ratio of 1 : 1·6 between public and private

investments in cottage sector, private investment in cottage industries in Orissa over the decade is likely to be Rs. 7·2 crores.

Mining

7. Total investment in mining comes to Rs. 57·1 crores. Of this, all the investment in coal mining (i.e., Rs. 15 crores) is attributed to the Central Government. It is indicated in the chapter on Mining that about half of the additional production of iron ore, and therefore about half of the investment in iron ore mines during 1961–71 (i.e., Rs. 20 crores) would be by the Orissa Mining Corporation. Half of this investment is attributed to the Central Government and the other half to the State Government, as both share the capital of the Corporation on that basis. The remainder of the investment in mining (i.e., Rs. 22·1 crores) is in the private sector.

Power

8. The whole of the investment (Rs. 184 crores) in power development is by the State Government.

TERTIARY SECTOR

(*a*) *Transport*

9. Investment of Rs. 30·4 crores on railways is by the Central Government, and of Rs. 30·4 crores in roads, forest roads, inland waterways, nationalized road transport, etc., by the State Government (Table 60). Investment in private transport during the present decade would be largely related to development of industries and roads in Orissa; and on a broad estimate some 10,000 additional trucks may have to be added to the existing fleet. On a conservative basis, private investment in new goods carriers may, therefore, be placed at Rs. 30 crores. In addition, an investment of about Rs. 10 crores would be required in the Central Government sector, for construction of Paradip port. According to the Third Plan about 6 per cent of the expenditure on transport is allocated to the development of communications. Applying this proportion to the transport investment proposed for Orissa, approximately Rs. 5·8 crores investment in communications is expected. All of this will be in the Central Government sector.

(*b*) *Public Health*

10. In the chapter on Public Health an investment of about Rs. 27·2 crores is proposed. This will be in the State Government sector.

(*c*) *Housing*

11. The investment in rural housing is estimated as follows:

In the Reserve Bank estimate of rural investment a ratio of 1·4 : 1·0 is indicated between private investment in agriculture and investment in rural housing for all-India. Applying this ratio to the estimated private investment in agriculture in Orissa (i.e., Rs. 62·4 crores) rural housing investment is estimated at Rs. 44·6 crores.

12. Private investment in urban construction is estimated as follows:

The cost of urbanization according to Town Planning estimates by Eheveria works out at roughly Rs. 1,600 per capita. This includes private housing, sanitation, health and other facilities. This represents an ideal situation. In actual fact the cost of urbanization may be taken at Rs. 800 per capita for Orissa. The urban population is estimated to increase by about 1·5 million during 1961–71. The total cost of urbanization is, therefore, likely to be about Rs. 120 crores. Of this, about Rs. 27·2 crores would be part of public health investment (*See* Table 79) and should be deducted. Practically all the investment in education represents construction costs, and so the estimated investment in education should also be deducted from the cost of urbanization to get an estimate of urban private and commercial construction. As indicated below, this comes to Rs. 32·6 crores. After the deduction indicated, the private investment in urban residential and commercial construction in Orissa during 1961–71 is likely to be Rs. 60·2 crores.

(*d*) *Education*

13. The estimated investment in education is computed as follows: About a fourth of the population consists of children aged 5-14 years. About 40 per cent of these would be in school at the end of the Second Plan. If universal primary education is to be achieved, with the given cost of Rs. 86 per primary school student, the total investment in primary education is estimated at Rs. 28·8 crores. Of this 90 per cent may be taken to be rural. Secondary and university education is estimated to require another Rs. 14·7 crores. An investment of Rs. 15 crores is estimated to be necessary to increase the existing facilities for training engineers by 120 per cent and for craftsmen by 450 per cent as proposed in the report. The total estimate for education adds up to Rs. 50·5 crores, all of it by the State Government.

(*e*) *Miscellaneous*

14. In addition, an investment of Rs. 14·8 crores is considered necessary for miscellaneous items of investment chiefly by the State Government, e.g., on welfare of backward classes and demonstration centres and resettlement programmes in tribal areas.

15. The total investment in the tertiary sector during 1961–71 would thus aggregate to Rs. 304·1 crores as indicated in the table below:

BREAKDOWN OF TERTIARY INVESTMENT IN ORISSA (1961-71)

(Rs. crores)

	Centre	*State*	*Private*	*Total*
Transport	46·2	30·6	30·0	106·8
Public Health	..	27·2	..	27·2
Housing (Rural and Urban)	..	..	104·8	104·8
Education	..	50·5	..	50·5
Miscellaneous	..	14·8	..	14·8
TOTAL	*46·2*	*123·1*	*134·8*	*304·1*

Appendix 13

State Income of Orissa, 1970-71—Methodological Notes

The estimates presented represents the net social product and net income. They indicate the income generated in the State and not the income accruing in the State. For estimating the latter, it would be necessary to adjust for the quantity of plus/minus remittances.

2. The estimates are tentative and are made to assess broadly the relative change in the magnitudes of sectoral incomes and per capita income.

Agriculture

3. Net addition to the agricultural output during 1961–71 is estimated by deducting 14 per cent from the increase in gross output expected to occur during 1961–71. The additional increase has been estimated by the product method. The figure thus obtained is Rs. 107·02 crores.

Animal Husbandry

4. Net output has been estimated by applying a capital output ratio of 2 : 1. The additional investment for the period 1961–71 is estimated at Rs. 8 crores. This gives an additional net output of Rs. 4 crores.

Forestry

5. The net output of forest is estimated by utilizing a ratio of 1 : 10 for revenue and net output. The revenue increase for the period 1961-71 is estimated on the basis of increased output from existing forests and new plantations.

Fishery

6. The net output of fisheries has been estimated by the product method. Output of fisheries is expected to increase by 75,500 tons. An average price of Rs. 50 per maund has been used to arrive at the value of gross output which is netted at 5 per cent to give a figure of Rs. 9·57 crores.

Mining

7. The net output is estimated by the product method. After netting at 7 per cent for all minerals and 13 per cent for coal, additional net output of Rs. 33·24 crores is obtained.

Factory Industries

8. The additional net output for 1961–71 is estimated by the product method. The additional net output from large scale factory industry comes to Rs. 146 crores and from small scale factory industry to Rs. 11·25 crores.

Power

9. Additional net output for 1961–71 is obtained by applying a capital-output ratio of 10 : 1 to the additional investment estimated to be required for power development during the period. The proposed investment is Rs. 184 crores and after applying the ratio, the additional output comes to Rs. 18·4 crores.

Non-Factory Industries

10. Income spent on products of non-factory industries in 1961 was 6 per cent. (Obtained by dividing the net output for non-factory industry by the net output of the State and multiplying by 100.) On the assumption that 3 per cent (half the proportion in 1961) of the additional income generated between 1961–71 would be spent on products of non-factory industry, the additional net output of non-factory industry for the period 1961–71 comes to Rs. 14·72 crores.

Construction

11. On the assumption that the Fourth Plan investment is 50 per cent higher than the Third, and that the investment is distributed evenly within each Plan period the total investment in 1971 is estimated at Rs. 178·2 crores. For estimating the income from construction activities expenditure on construction is taken at 44 per cent of the total investment (*refer* Table 10). The construction expenditure in 1971 is thus estimated at Rs. 74·8 crores. At the rate of one-third of construction expenditure the total net output due to construction in 1971 is about Rs. 24·9 crores.

Tertiary Sector

12. The rate of growth of commodity output which comes to 140·5 per cent for the 10-year period is applied to obtain the net output of the tertiary sector for 1971. On this basis, the additional net output of tertiary sector for 1961–71 comes to Rs. 159·78 crores.

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