15.17 The net output of factory industry would increase eight-fold during 1961–71. Of the additional net output, about 75 per cent would be generated in mineral-based industries (almost wholly in steel industry), 11 per cent in metal-based industries and 9 per cent in chemical industries, the remaining 5 per cent coming from all other factory industries.

15.18 The change in the composition of the factory sector would be of fundamental importance for a rapid economic growth in Orissa. Firstly, it implies the predominance of those industries in which not only net output per worker is the highest, but which are also technologically among the most advanced. Consequently, their impact on the area in which they develop is more decisive. Secondly, the iron and steel industry gives a big impetus to further industrial development. The increased demand for iron and steel from a large number of engineering industries, the demand for products of industries ancillary or subsidiary to iron and steel industry, the availability of by-products utilized for other manufacture, and the increased income generated within the region, all provide a stimulus for the growth of other factory industries. This makes the iron and steel industry the spearhead of growth of the State's economy.

15.19 However, the impetus to industrial growth provided by it will not become effective unless a planned effort towards this end is made. Unlike metallurgical industries manufacture of metal products is market-oriented for whose development the availability of skilled labour is an important location factor. The large investment suggested for construction, transport, sanitation and drainage facilities, and for agriculture is likely to lead to an increased demand for tools and implements, pipes and other items. At the same time, with the establishment of the steel plants, a nearby source of raw material and a nucleus of skilled labour would be created. Together with the encouragement received from the Government these conditions would lead to the growth of engineering industries aimed at meeting initially the local demand and subsequently, national as well as export demand.

15.20 Roughly a quarter of the total industrial investment and about 40 per cent of the net output, employment and power requirements would materialize during the Third Plan (Table 34). The investment-output and the investment-labour ratios during 1961–66 would thus be lower than those in 1966–71. This is largely on account of the expansion of Rourkela Steel Plant and the resulting increase in output and employment during the Third Plan. The higher capital-output ratio during 1966–71 would be the result of the new investment in the second steel plant at Bonaigarh, the full output of which would materialize only after 1971.

15.21 About three-fourths of the total investment in large scale industry would be in the public sector, the proportion being 58 per cent in the Third Plan and 92 per cent in the Fourth. All this investment would be in the iron and steel industry. The rise in the proportion of total industrial investment in the public sector does not indicate a trend that will persist in Orissa in the future. It is a result of the expansion of a steel plant and the anticipated establishment of another. In succeeding Plan periods, these plants would stimulate industrial growth most of which would in all probability be in the private sector. When this growth materializes the predominance of public investment in the industrial sector would decline.

15.22 The bulk of the industrial growth would occur in the triangular area with Cuttack at the apex and Rourkela–Hirakud as the base. Both the existing and the suggested steel plants would be on the proposed rail-link between Rourkela and Cuttack, and subsidiary and ancillary industries are likely to develop along the railway line. Paper, aluminium, engineering and cera-

mics industries would grow in the Hirakud–Brajrajnagar area, and engineering, ceramics and glass industries around Cuttack.

15.23 The northern districts of Mayurbhanj and Balasore and the southern districts of Koraput and Ganjam would thus be outside the pale of industrial development. From the point of view of regional balance, some industrial development is necessary in these districts. The chief resources of the area are the forests of the Eastern Ghats, minerals such as manganese and clays, and agricultural produce, such as sugarcane. Industries based on these resources would mainly produce consumer goods. Their development would be closely related to the progress of agriculture and animal husbandry and the resultant rise in agricultural per capita income in the region. Strengthening of the agricultural base of this area is, therefore, particularly important.

15.24 A large expansion of small scale and cottage industries is also envisaged in Orissa. On account of the rapid growth of income and the increase in population that is likely to occur, the demand for consumer goods would increase rapidly and despite competition from factory industry and the consumer preference for factory-produced articles it is estimated that the demand for the output of non-factory industry would grow, although at a somewhat slower rate than the total demand. A rapid growth of small scale factory industry producing both ancillary products and consumer goods is also to be expected in Orissa. This is particularly so because in size, technology and productivity small scale factories represent a big step forward from the cottage industry and more akin to modern large scale enterprise. As such their growth and development bear a positive correlation with large scale industrial expansion envisaged for Orissa during the present decade. A total investment of Rs. 11·7 crores in cottage industry and Rs. 22·5 crores in small scale factories is estimated to materialize in Orissa during 1961–71. The net output of cottage industries is expected to increase by Rs. 14·72 crores and of small scale factories by Rs. 11·25 crores during the same period.

Mining

15.25 Growth of mining activity in the State is geared both to the development of mineral-based heavy industry and to the expansion of iron ore exports. A growth rate of about 37 per cent per year is implied in the programme for mining. The very fast rate of increase would raise the share of mining in the State's net product from 2·3 per cent at the beginning of the Third Plan to 4·7 per cent at the end of the Fourth Plan. The main deposits are located in the four inland districts of Mayurbhanj, Keonjhar, Sundargarh and Sambalpur where the major development of mining would occur.

Power Development

15.26 The provision of power is essential for industrial development. Orissa has a very large hydro and thermal power potential. The hydro power potential is estimated at 2,875 MW, and is supplemented by a deposit of 800 million tons of coal suitable for power generation. In spite of this, per capita electricity consumption in Orissa is the lowest in India. These facts along with the large power requirements resulting from the programme of industrial growth explain the allocation of Rs. 184 crores or 13 per cent of the total investment, for power development. The estimated total power requirement of the State in 1971 is 860 MW. As against this, an in-

stalled capacity of about 1,000 MW has been suggested so as to meet the effective power demand during the decade and also to serve as a reserve capacity for uninterrupted industrial development towards the end of the period and for a few years thereafter.

Development of Transport

15.27 Orissa has a deficient and ill-distributed transportation system. This hampers all-round economic development and hinders the exploitation of resources. Without a large expansion of existing facilities, the transport requirements cannot be met. Under these circumstances an investment of Rs. 105·8 crores in transport and communications, though apparently modest, would still be adequate for industrial as well as agricultural development. About 3,097 miles of roads would be built, and railway links between Sambalpur and Titlagarh, Domaro and Talcher, and Cuttack and Paradip port constructed.

Growth in Primary Sector

15.28 Under ideal conditions an investment of Rs. 270·5 crores in agriculture could raise the net value of agricultural production by about 90 per cent during 1961–71. This, however, is only a technical feasibility of production, and the more realistic estimate would be that the net output of agriculture would increase by about 6·5 per cent annually. This implies a higher capital-output ratio in agriculture than would prevail if the organizational and other shortcomings did not exist.

15.29 The major methods proposed for increasing production are better techniques and irrigation. Irrigation absorbs about 60 per cent of the total investment and is directly responsible for about 14 per cent of the increase in agricultural production suggested. The emphasis on irrigation is not only on account of the large irrigation potential of the State, but also because it enables an increase in cropping intensity through extension of double cropping and permits the extensive use of fertilizers. Thus a large part of the increase in agricultural production is the result either directly of extension of irrigation or indirectly of measures made possible by it. However, it raises the capital requirements of the programme for agriculture.

Animal Husbandry

15.30 An investment of Rs. 8 crores is proposed for animal husbandry development programme during 1961–71. Nearly three-quarters of this would be for artificial insemination centres and veterinary clinics with the object of improving the quality of the cattle in the State. A programme for the development of poultry farms is also proposed. However, the bulk of the investment is on programmes which have a long gestation period, being mainly directed towards improving the quality and efficiency of the stock. Hence, only a modest growth of 2·7 per cent per annum is expected in this sector during the next 10 years. The direct employment potential of the programme is also very limited.

Forest Development

15.31 An investment of Rs. 16 crores is proposed for the development of the State's forests. About 25 per cent of the investment would be used for afforestation and the remainder for

development and fuller exploitation of the existing forest wealth. With the investment pattern envisaged, forest output is expected to grow at an annual average rate of 9·4 per cent during 1961–71 and employment for some 1,500 technical personnel and seasonal employment for over 500,000 of unskilled workers would also be created.

Growth in Tertiary Sector

15.32 Nearly a quarter of the investment during 1961–71 is allocated to the tertiary sector including transport and public health and it is expected to generate nearly one-third of the increment in net output during the period. The stimulus for the expansion of tertiary activities can be traced to three different sources. First, there is expansion of activities directly linked to the requirements of the growing industrial and agricultural sectors, e.g., training of skilled labour and development of transport and trade and commerce. Second, accepted social norms lead to expansion of facilities like education and public health. Finally, with growth of industrial and agricultural production and rise in per capita income there is expansion of demand for all kinds of services. It is estimated that the sector as a whole will grow at about 14 per cent per year during the decade.

15.33 The relatively high death rate and poor health standard prevailing in Orissa cause a high burden of dependency, depress the productivity of the working force, and hamper economic development. An expenditure of Rs. 49.7 crores has been suggested for a public health programme which would reduce the economic burden of the high incidence of mortality and disease, and would provide protected water supply and modern drainage facilities to important urban centres.

Conditions for Development: Manpower

15.34 Manpower must be available if the programme for development is to be fulfilled. The demand for manpower in each sector of the economy is a function of its rate of growth and the productivity of labour in it. However, employment in agriculture is residual, the sector absorbing surplus manpower in the economy and releasing it as required. Labour productivity in agriculture, under the prevailing social and economic organization, is, therefore, not simply an independent variable affecting manpower requirements but to some extent a dependent variable reflecting the supply of labour. Consequently, the employment generated during 1961–71 in the non-agricultural sector has been estimated on the basis of the rate and character of expansion envisaged in the programme for development in that sector. The incremental employment in agriculture is derived as residual by subtracting manpower requirement of non-agricultural sector, from the additions to labour force. (Table 89)

15.35 It appears that the additional manpower requirements in the non-agricultural sector during 1961–71 would be about 1·40 million, of which the largest increase would be in the tertiary sector followed by construction and mining. The new entrants to the labour force during the period would be 1 million, just sufficient to meet the demand in the non-agricultural sector. An equality of labour supply and requirements would result for the economy as a whole only if the demand for labour in agriculture were unchanged. However, this is not possible since with 6·5 per cent annual increase in agricultural output proposed for 1961–71, mostly through better techniques and increased intensity of cultivation, labour requirements would increase in agri-

culture substantially, leading to an overall shortage of manpower in Orissa. This may hinder the implementation of the measures to increase agricultural production especially if there is an exodus of workers from land to other occupations as employment opportunities are created by growth of mining, industry and tertiary activities. It, therefore, appears that the suggested programme of development would require an additional supply of labour. The shortage of manpower in industry and other non-agricultural sectors could be met to some extent by migrant labour from other States. If, on the other hand, migrant labour in industry and mining is not available, it is all the more necessary to reorganize the techniques of cultivation with a view to making more efficient use of the smaller labour force available for agricultural work.

15.36 This would reduce the manpower requirements of agriculture and would also raise the net output per worker thereby facilitating the attainment of a higher standard of living. It would reduce the chances of creation of a "dual" society, composed of a non-agricultural sector with a high level of technology and labour productivity and an agricultural sector with backward techniques and a very low net output per worker.

15.37 For the improvement of cultivation, a thorough study of rice cultivation should be made to determine the operations for which simple mechanical appliances would be used, and an attempt should be made to propagate the adoption of labour-saving devices in agriculture.

15.38 Considering the pattern of growth proposed for the State, it is evident that skilled labour would be required in considerable numbers. It is estimated that the annual requirements for engineers during 1961-71 would be 70 per cent higher than the annual outturn of training institutes in the State at present. For craftsmen the annual requirements are estimated to be three times the annual supply. A big programme for expanding technical training facilities is, therefore, necessary. However, an expansion of training facilities cannot meet the shortage of trained personnel immediately because the lag between the establishment of training institutions and the outturn of trained personnel is fairly large—from 2 to 5 years. In the initial period, therefore, the shortage of technical personnel within the State implies the use of skilled people from other States if the programme of development is not to suffer.

15.39 Apart from sufficiency of manpower, other conditions must be met if the programme for development is to be successfully implemented. To encourage the "snow-ball" development of industries around the nucleus provided by steel, government planning and aid are necessary. It is suggested that a Development Wing be established in the Department of Industries to advise entrepreneurs and an Industrial Development Trust should be set up to attract capital required for industrial development.

15.40 For the achievement of the target for agricultural production a great strengthening of the agricultural extension service is necessary. Better cultural practices, fertilizers, improved seeds and irrigation will be adopted by the cultivators if intensive efforts to overcome their inertia are made. This would require a larger number of trained workers in specific fields. Special emphasis must be placed on improving the techniques of rice cultivation as the crop accounts for three-fourths of the net output of agriculture.

Impact on the Economy

15.41 If all the development programmes suggested in this report are successfully implemented, the State income would increase from Rs. 372·6 crores to Rs. 896·1 crores during 1961-71,

or at an average annual rate of 14 per cent. At the same time per capita income would be almost doubled from Rs. 212 to Rs. 420.

Sectoral Growth

15.42 This rate of growth of income is much faster than that anticipated for India as a whole during the Third and Fourth Plans. It is largely on account of the rich mineral resources of the State which, as indicated earlier, are bound to be exploited as a part of national policy, and are expected to support a rapid expansion of industry. Agricultural output would grow at about 6·5 per cent and that of factory industry at over 71 per cent per annum and the total output of all sectors increase at a rate of 14 per cent per year. Output of tertiary activities during 1961–71 is assumed to grow at the same rate as the output of primary and secondary sectors (Table 86). As a result of the envisaged development during the period the net output originating in agriculture would fall from 50·5 per cent of total State income to 30·3 per cent, and that in industry would rise from 5·9 per cent to 20 per cent (Table 89). Consequently, Orissa would be transformed from a relatively backward agricultural economy into an advanced industrial State.

Productivity

15.43 The change in the economic structure would be accompanied by an increase in overall labour productivity. A part of this would be due to shift of the working force from a low productivity sector like agriculture to a high productivity sector like industry. In addition, however, there would be marked increase of productivity within the various sectors of the economy (Table 88). The major increase in productivity (about 250%) is expected to occur in the factory industry of Orissa where the output per worker is already very high. This is largely due to the character of industrial development envisaged for Orissa. Metallurgical industries that would dominate the industrial scene in the State are technologically among the most advanced and capital intensive and have a very high labour productivity. Output per worker in the other sectors of the economy is expected to increase by roughly 50 per cent during 1961–71.

Occupational Structure

15.44 The change in the economic structure of Orissa, when considered in terms of employment, would, however, be more modest though large when compared to the change anticipated to occur in all-India during the same period. The proportion of the total working force in agriculture and allied activities would decline from 73·1 per cent to 62·8 per cent during 1961–71, while that in factory industry would rise from 1·2 per cent to 2·1 per cent. The tertiary and mining sectors which are estimated to employ 15·2 per cent and 1·2 per cent of the working force respectively in 1961, would employ 20·6 per cent and 3·4 per cent in 1971 (Table 89). Broadly, the share of the working force in sectors with relatively low labour productivity like agriculture is likely to decline while in other sectors, it would increase.

Importance of Agriculture

15.45 It appears that roughly three-fifths of the population of Orissa would still be dependent

on agriculture in 1971. The importance of implementing the programme of agricultural development in an attempt to raise the standard of living of the masses is, therefore, obvious. Industrial development in Orissa is already on its way, with the net output of factory industry expected to increase by 357 per cent between 1956-57 and 1960-61. There is little doubt that this growth will be maintained during the next ten years. By contrast, the progress of agriculture in Orissa has been slow. It has to be stepped up considerably if sectoral disparities are to be reduced. Particular emphasis should, therefore, be laid on the fulfilment of the targets for agricultural development.

Chapter 16

Summary of Conclusions and Recommendations

1. THE SETTING

ORISSA IS ONE of the more backward States in India. Its per capita income was Rs. 190 in 1956-57 as compared with Rs. 294 in all-India.

2. Structurally, its economy is dependent on agriculture to a greater extent than the economy of the country as a whole and the manufacturing industry is relatively less important.

3. Agricultural productivity both in relation to land and working force is very low in Orissa, because of relatively low crop yields and poor harvest price of rice—a crop which covers over 62 per cent of the State's cultivated area. Backward techniques are mainly responsible for poor yields, and lack of transport and organized marketing facilities for the low price of rice.

4. Industry in Orissa is dominated to a greater extent by cottage and village type of manufacturing activity than in all-India. Agriculture-based industry contributes the major part of total industrial output. Average net output per worker is low both in factory and non-factory industry as compared with the average for all-India.

5. Mining activity is meagre viewed against the large mineral resources of the State.

6. Seventy per cent of the working force is engaged in agriculture. The efficiency of the working force as a whole is adversely affected by their poor health and lack of training.

7. Orissa is rich in its natural resources. Its forests cover 42 per cent of the State's area (as against 17 per cent in all-India) and are a large potential source of industrial raw material. Its mineral deposits, chiefly iron ore, coal, manganese, limestone, fire clay and chromite are among the best in the country. The rivers of the State provide much scope for considerable development of irrigation and hydel power. There are several fertile regions in the State which can give high yields of crops, specially rice.

8. During the Second Plan period a big step forward has been taken to exploit the mineral resources of the State for industrial development and for expansion of export trade. The establishment of the Rourkela steel plant and the development of other mineral-based industries (refractories, ferro-manganese and cement) have resulted in a large expansion of the State's industrial output. An even more important aspect of this development is that firm foundation has now been laid for industrialization of the State.

9. In the meantime, however, agricultural development has progressed rather slowly. This is significant for the future development of the economy, because unless the agricultural sector grows at a rapid rate the State will face the danger of having a dual economy—one sector having a very low productivity and the other having a very high productivity. Thus, while the development of industry should follow the lines on which considerable progress has already been achieved, great effort should be made to put agriculture on a sound footing.

10. In order to bring about the desired growth in both these sectors, improvement of the

infra-structure of the economy, chiefly transport, power and public health must receive a high priority.

2. AGRICULTURE

11. Agriculture (excluding allied activities) contributed more (48 per cent) to total net output in Orissa than it did to the total net product in all-India (43 per cent). A large proportion—about 70 per cent—of the working force of the State was employed in agriculture.

12. Agricultural productivity per acre of land as well as per engaged worker was lower in Orissa than in all-India, which is to be attributed to relatively low yields and low harvest price of rice.

13. With the exception of sugarcane, pulses and rice, the yield per acre of all other crops is lower in Orissa than in all-India. In the case of rice, which covers over 62 per cent of the total cultivated area of the State, the yield compares favourably with the all-India average but is still below the average yield in other rice growing States like Madras, Andhra Pradesh, Kerala and West Bengal.

14. On account of the overwhelming importance of rice in the cropping pattern of the State, the price of rice plays an important part in determining the value of agricultural output. The average harvest price of rice in Orissa was about 30 to 40 per cent lower than in Madras and Andhra Pradesh and about 15 to 30 per cent lower than in Bihar and West Bengal.

15. Considering the topography, soils and climate, the delta area of the coastal plains, river basins of the central table-land, the upland plain in Mayurbhanj district and parts of Koraput are capable of considerable agricultural development. It is therefore suggested that the development effort in agriculture should be concentrated in these regions.

16. On the basis of the existing potential for irrigation in the State it is suggested that an additional 3·5 million acres should be brought under irrigation during the ten-year period, 1961–71.

17. With additional irrigation, double cropping should be extended to 40 per cent of the net sown area and area under green manure to 5 million acres. Fertilizer input should be increased to 700,000 tons of ammonium sulphate and 100,000 tons of super-phosphate. Improved seeds should be provided for the entire area under major crops, whether through organization of seed farms in each NES block or through mutual exchange of improved seeds among cultivators.

18. In addition, cultural practices should be improved by introducing Japanese method of rice cultivation, line sowing of jute, deep ploughing where possible and use of better tools and proper cropping pattern.

19. To check soil erosion, shifting cultivation should be discouraged by settling tribal people on permanent farms and a programme of afforestation, contour bunding and terracing should be undertaken.

20. If all the development possibilities suggested in this report are fully realized, the production of foodgrains should increase in 1970-71 by 4·3 million tons, and the net value of total agricultural production should go up by Rs. 178·4 crores, an increase of 108 per cent over 1960-61 level.

21. Considering the development potential and the past trends of agricultural production in Orissa, it would be reasonable to expect agricultural output to increase at a rate of 6·5 per cent per year.

22. All this would require an immense organizational effort which can be made only through

the extension service. It is, therefore, suggested that the number of blocks should be increased to cover the entire agricultural area of the State, the number of village level workers and experts per NES block strengthened, and their quality and training improved.

23. With this increase of agricultural production, a surplus of 1·8 million tons of cereals would be available in 1970-71 for export to other States.

24. The investment required for the programme suggested is estimated at Rs. 212·3 crores in the public sector.

3. ANIMAL HUSBANDRY

25. Animal husbandry accounted for a lower proportion of the income generated on farms in Orissa than in all-India. The low output of animal husbandry was not due to low density of livestock per cultivated area but to its poor quality, attributable to the prevalence of poor indigenous breeds and lack of proper feeding.

26. To upgrade the cattle population, new breeds, preferably the Hariana, should be introduced. Since there is a great demand for Hariana bulls all over the country an adequate number may not be available. Artificial insemination should therefore be resorted to, and the establishment of an additional 154 main insemination centres is suggested for this purpose. The indigenous Parlakhemidi breed and the North Indian Murrah breed should be used to upgrade the buffalo stock.

27. The implementation of the programme for agricultural development suggested in this report would increase the supply of paddy straw, pulse wastes and oilcakes for cattle. The output of fodder crops should also be increased.

28. The poor veterinary facilities of the State should be improved by opening 250 additional dispensaries. The technical personnel required should be trained by using the veterinary college in the State at full capacity.

29. The development of dairying is an important part of any programme for livestock development. Milk unions should be established, and four composite milk plants and four rural creameries should be set up. These are likely to create an incentive among farmers to adopt measures to improve breeds and feed, and thus accelerate the pace of livestock development.

30. The poultry breeds in the State should be improved by establishing one poultry farm in each NES Block to demonstrate scientific poultry farming, and to spread high egg yielding breeds like Leghorns and Rhode Island Reds. Cooperatives should also be established to ensure efficient collection and distribution of egg production.

31. The investment required for the suggested development programme is estimated at about Rs. 8 crores.

32. By and large the pattern of investment suggested for livestock development is such that additions to output could be secured through improvement in livestock quality, which is essentially a long term process, rather than by measures yielding direct and immediate return.

33. The impact of the proposed programme on employment would also be mostly indirect. Besides creating many new jobs for technical personnel, it would enable the agriculturists to utilize their idle time profitably.

4. FORESTS

34. Orissa has 25,000 square miles (42% of total area) covered by forests. Of this, only 15,000 square miles, mainly in the hilly regions of the Northern Plateau and the Eastern Ghats, can be considered to be productive forest area.

35. The production of timber is about 17·7 million cu. ft., of which 44 per cent is exported. The annual consumption of firewood, estimated at 103 million cu. ft., is also supplied by the forests. The present yield of timber and firewood is about 50 per cent of the estimated optimum potential. About 2,455 square miles of bamboo forest yield roughly 180,000 tons per year, or only 25 per cent of the estimated potential production. Minor forest produce includes *kendu* leaves for *beedi*, and Sabai grass.

36. Large increase in the output of forest products is possible in Orissa and it offers scope for a large expansion of forest-based industries like paper mills and saw mills in the State. The first step in the development of forest resources is a detailed survey of the entire forest area. This will provide a basis for drawing up working plans for all the forest divisions.

37. A long term afforestation policy should be followed. Only the species most suitable for each area should be planted. There should be same emphasis on planting quick growing species, such as casuarina, cashew and eucalyptus which are suitable for the coastal regions. Dry *sal* areas are suitable for teak plantations. It is suggested that 450,000 acres should be afforested during 1961–71 at an estimated cost of about Rs. 4 crores. A systematic training programme for personnel required for afforestation should also be started.

38. The rate of extraction from forests should be stepped up by improving transport facilities and adopting better felling methods. It is suggested that 7,500 miles of forest roads should be constructed and existing roads be improved. The expenditure required is estimated at Rs. 4 crores.

39. Shifting cultivation which hinders exploitation and development of forest resources should be checked by persuading *podu* cultivators to adopt the practice of permanent agriculture. In some areas miscellaneous forests after *podu* cultivation are replaced by *sal* jungles. Such miscellaneous forests should be stockmapped and shifting cultivation utilized to raise *sal* forests in them.

40. A techno-economic study should be made to investigate the possibility of using improved hand tools for felling purposes. Also, modern methods of wood seasoning and wood preservation should be used. The Government should set up a seasoning kiln and wood preservation plant as part of the Government-owned mill at Rourkela.

41. With the implementation of the suggested programme, the net value of forest output would increase from Rs. 7 crores in 1961 to Rs. 13·5 crores in 1971. About 28 per cent of the additional net product would originate in the existing forests and the remainder from new plantations. The investment required is about Rs. 16 crores, of which half would be for afforestation and transport facilities, and the rest for improved practices.

5. FISHERIES

42. Orissa is a maritime State with a 250-mile coastline. Besides, it has 600 sq. miles of riverine area and several lakes, ponds and tanks. However, the fish resources are under-exploited, with

the result that the per capita availability of fish for the fish eating population was only 5·3 lbs. in Orissa as against 9·5 lbs. in all-India, in 1957-58.

43. The chief reasons for the backwardness of fishing industry in the State are inefficient and primitive techniques, inadequate exploitation of existing and potential resources, and lack of transport, and refrigeration and marketing facilities.

44. A programme for development of fisheries during the Third Plan is outlined. It is suggested that to develop marine fisheries, 100 well equipped mechanized boats should be used, preferably through Fishermen's Cooperatives, proper harbour facilities should be developed, especially at Chandbali, Mayapura, Paradip, Machgaon and Puri, and road links with markets should be constructed, particularly the one between Kujong and Paradip. Cold storage plants, manufacturing units for fish meal, and fish curing yards should also be established at these bases. A switch-over to nylon nets and improved gear with the use of mechanized boats would also help develop estuarine fishing. Riverine fisheries would develop if transport and marketing facilities were provided. In addition, culture fishing should be encouraged and 30,000 acres should be brought under fish cultivation during the Third Plan.

45. The formation of cooperative marketing societies and a State Fish Marketing Board, the provision of refrigerated trucks and insulated vans for transporting fish, and training centres to teach fishermen the techniques of handling mechanized boats are also suggested to facilitate the exploitation of the fish resources of Orissa.

46. The total investment to implement the programme suggested is estimated at Rs. 9 crores —Rs. 3 crores to be invested during Third Plan period and the remaining during the Fourth Plan period. Fish output is expected to increase from the present level of 24,500 tons to 51,000 tons by 1965-66 and to 100,000 tons by 1970-71.

47. About 10,000 tons of fish would be available for industrial consumption in 1970-71 and sea-fish-based industries like fish curing and manufacture of fish meal and fish oil could develop in the State.

6. MINERALS

48. One third of the State has not yet been geologically surveyed; but the proved mineral resources in the surveyed tracts are very abundant. Till recently, these resources were hardly exploited. In 1951, only 39,000 persons were employed in mining and its contribution to total net output was Rs. 4·5 crores or about 1·5 per cent of the total. Some growth of the mining activity occurred during the First Plan as indicated by the increase in employment to 50,000 in 1956-57. As compared to the other mineral-producing States, labour productivity in the mines of Orissa is low. This is largely attributed to the lower degree of mechanization in the mines, poor health of the workers, and the interruptions in operations caused by heavy rainfall.

49. Most of the mineral deposits occur in the four inland districts of Mayurbhanj, Keonjhar, Sundargarh and Sambalpur. The main good quality iron ore concentrations are in Keonjhar district and in Bonai area in Sundargarh district. Orissa has a third of the proved Indian reserves of high grade iron ore, and 40 per cent of the possible reserves. The known reserves of manganese ore are about 10 million tons or 8 per cent of the all-India estimate, and are located chiefly in Keonjhar and Sundargarh districts. The proved reserves of limestone are 50 to 60 million tons mainly in Sambalpur and Sundargarh districts and of coal about 800 million tons,

located mainly at Talcher in Dhenkanal district and Hinger-Rampur in Sambalpur district. The coal is however of the non-coking variety. In addition, depsoits of chromite, dolomite, china clay, fire clay, bauxite and other minerals are found scattered in the State.

50. The demand for minerals from industries and from foreign countries has grown in recent years. Nearer home, there are big plans for developing basic industries. To cater to these demands a rapid increase in the output of major minerals should take place in Orissa. A study of the production trends during 1950–57 indicates that a beginning in this direction has already been made.

51. The most significant development over the current decade should be in iron ore mining. It is estimated that in the Third and Fourth Plans an additional 12 million tons of ore would be required to meet the demand from Rourkela and Durgapur steel plants and the proposed plants at Bokaro and Bonaigarh, and about 10 million tons for export. Total production may be thus expected to increase from 4 million tons in 1961 to 26 million tons in 1971. This will require an investment of about Rs. 40 crores and an additional 140,000 workers in the iron mines. The output of manganese ore is estimated to increase from 400,000 tons in 1961 to 700,000 tons in 1971. On the basis of the probable growth of industries the output of coal should be increased from the present level of 600,000 tons to 3·9 million tons by 1971 through an investment of Rs. 15 crores and the employment of 30,000 additional workers. Considering the growth possibilities of cement, refractories, etc, the limestone output will have to be doubled over 1961–71. The additional production of 3·5 million tons will require an investment of Rs. 15 lakhs and create an employment potential of 14,000.

52. This growth of mineral production would increase the net product of mining from Rs. 8·98 crores in 1961 to Rs. 42·22 crores by 1971, and would require another 210,000 workers, of which one-third would be skilled and semi-skilled. The net output per worker in this sector would also increase from Rs. 1,380 in 1961 to Rs. 1,530 in 1971 due to better mining techniques. Of the Rs. 33 crores increase in net value of output of mining, 80 per cent would be in Sundargarh, Keonjhar and Mayurbhanj districts.

53. The prospective growth of the mineral industry in Orissa would require the fulfilment of several conditions. Firstly, the maximum development of mineral-based industries should take place near mineral deposits, and the export trade should be systematically expanded. Secondly, transport facilities connecting the mineral deposits to industrial centres and to the ports should be developed. Thirdly, the existing methods of mining should be improved and mechanized mining techniques adopted. Fourthly, scientific data about the deposits should be collected, research carried out and an effective mineral intelligence service developed. Fifthly, the Orissa Mining Corporation should undertake mining operation on a large scale without delay. Finally, the problem of supplying 72,000 skilled and semi-skilled workers to the mines by 1971 should be tackled and solved.

7. A PROGRAMME FOR LARGE SCALE INDUSTRY

54. Industrially, Orissa is among the more backward States in India. The share of the industrial sector in the total income generated in the State (8%) is much lower than in all-India (16·3%). This sector is also much more dominated by cottage industry in Orissa than

it is in all-India. Furthermore, the net output per worker in both factory and non-factory industry is lower in Orissa than in all-India.

55. The composition of the factory industry in 1956-57 in Orissa showed that agriculture-based industries were the most important followed by forest-based industries while mineral-based industries were relatively unimportant.

56. During the period 1956-57 to 1960-61 it is estimated that the net output of factory industry would increase by about 375 per cent. These developments would lay the foundation for vital change in the composition of factory industry and would, in fact, usher in a new era of industrial development in the State. This would be brought about mostly by steel and also by other industries such as, refractories, aluminium, ferro-manganese and cement. But in spite of these developments, even in 1961, large scale industry would contribute only 6 per cent of total net output in Orissa as against 8 per cent in all-India.

57. Considering the natural resources of Orissa in the context of the pattern of development envisaged for India as a whole, all-India demand trends, and availability of power, water, transport and labour, a programme for investing Rs. 550 crores in large scale industry has been suggested. The total additional output expected from this investment is Rs. 146 crores and the additional direct employment about 90,000. Mineral-based industries would account for roughly 88 per cent of the investment, 75 per cent of the additional net output, and 42 per cent of the additional employment. Metal-based industries would absorb 3 per cent of the total investment, and provide 10·8 per cent of additional net output and 27·4 per cent of the additional factory employment. Chemical industries which have 7·2 per cent of the investment in the programme would produce 9 per cent of the additional net output and employ 17·3 per cent of the additional factory workers.

58. About a quarter of the investment for 1961–71 would take place in the Third and the rest in the Fourth Plan. However, over 40 per cent of the additional net output for the decade would accrue in the Third Plan. Of the total investment in large scale industry, 82 per cent would be in the public sector, and all of it in the iron and steel industry.

59. The provision of social and economic overheads, such as, transport, power, technical education and public health measures, is necessary to facilitate not only the implementation of the industrialization programme recommended, but also for the growth of feeder and ancillary industries which is essential for the diversification of the industrial structure. Hence the development of the overheads for which suggestions have been made in this report should be given high priority.

60. Despite the growth of the metallurgical industry in the public sector, and the availability of overheads, the development of industries in the private sector may be hindered on account of lack of information, inadequate technological knowledge, and shortage of finance. To overcome these impediments assistance should be given. The Department of Industries should have a Development Wing staffed by competent engineers to advise entrepreneurs. An Industrial Investment Trust should also be established to encourage the middle class population and the ex-landlords and ex-rulers to invest their savings in industry. All efforts should also be made to simplify Government procedures as regards licences, permits and grant of loans and other assistance. The State Development Wing should offer guidance with regard to these procedures.

61. With the implementation of the programme suggested in this report, the net output

of large scale industry would increase from about Rs. 22·1 crores in 1961 to Rs. 179·4 crores in 1971 or by 710 per cent. Employment would be about 165,000 or 120 per cent above the 1961 level, and the output per worker would rise from Rs. 3,000 in 1961 to Rs. 10,000 in 1971. In addition the character of the industrial sector would be fundamentally changed. With the predominance of steel in the industrial structure the emphasis would have shifted from agriculture-based and consumer goods industries to producer goods and durable consumer goods industries.

8. LARGE SCALE INDUSTRIES WITH SCOPE FOR DEVELOPMENT

62. The future growth of agriculture-based industries depends on the rate of increase of population and per capita income on the one hand and the growth of agricultural production on the other. The future of the textile industry in Orissa is related more intimately to the first of these, and that of the food processing industries to the second. The cotton textile industry is not likely to grow substantially on account of the poor prospects for growing cotton in the State and the relative advantage of the industry in other regions. The large increase in agricultural production, however, indicates a rapid expansion of food processing industries.

63. Orissa is potentially rich in forest resources and with the future rise of incomes, the expansion of education and the growth of construction activities, the demand for furniture, paper, and timber is likely to increase. A rapid increase in forest-based industries, is, therefore, likely.

64. Orissa is one of the richest areas of the country in mineral deposits. Despite the recent development of mineral-based industries like steel, aluminium and ferro-manganese, the installed capacities are very small relative to the available mineral resources. In addition, a large increase in the demand for steel and the products of other mineral-based industries is expected. A considerable expansion in the capacity of steel production, besides that already planned for the Rourkela steel plant, is suggested to be achieved by installation of the new plant at Bonaigarh. The rise in steel production would increase the requirement of ferro-manganese and refractories. A large expansion of their production is also recommended. In addition, demand and resource considerations indicate the scope for development of ferro-chrome, ferro-silicon, ceramics and glass manufacture, for which plants are suggested.

65. Engineering industries which form the bulk of metal-based industries, are market oriented or are located in areas with skilled labour. With the growth of the steel industry, the development of hydro-electric power and the extension of transport facilities, the conditions encouraging metal-based industries will appear in Orissa. At the same time the demand for engineering products is expanding with rising incomes and urban development. An expansion of this group of industries, is, therefore, also recommended.

66. The coke-oven plants at Rourkela and later at Bonaigarh would produce a number of by-products which would be the basis for expansion of chemical industry. Plants for producing styrene, polystyrene, ammonium sulphate and nitrogenous fertilizers are suggested. The demand for these products is expected to expand considerably.

67. The bulk of the investment for the development of large scale industries suggested would take place in the triangular area with Cuttack at the apex and Rourkela and Hirakud at the

base. Steel, metal-based and chemical industries would centre around Rourkela and Bonaigarh; aluminium, engineering, paper, etc., around Hirakud; and engineering, ceramics, glass and others around Cuttack.

9. SMALL SCALE AND COTTAGE INDUSTRIES

A. Cottage and Village Industry

68. Compared with the factory industry, the non-factory industry is far more important in Orissa than in all-India. It contributes over 80 per cent of the industrial output of the State as against a little over 50 per cent in all-India. The ratio of factory to non-factory employment was 1:14 in the former as against 1:3·8 in the latter. The net output per worker in non-factory industries in Orissa (Rs. 494) was lower by one-third than the all-India average (Rs. 790) in 1956-57.

69. Despite the increase in demand for consumer goods resulting from the expected growth of population and per capita income, owing to the rapid expansion of factory industry in Orissa, and the price and quality differential existing in favour of factory products, the conclusion is that cottage and village industries will grow at a slower rate than that at which demand for consumer goods will rise. This is likely to happen despite Government efforts to encourage the growth of cottage industries.

70. Cottage industries which have scope for expansion are: *beedi*-making and hand pounding of rice. Handloom industry, being in direct competition with mill produce, is not likely to expand substantially.

71. It is estimated that the net output of cottage industry in Orissa will increase from Rs. 22·9 crores to Rs. 38 crores, and employment from 430,000 to 523,000 between 1960-61 and 1970-71. The proportion of industrial output originating in the cottage sector is, however, expected to decline from 47 per cent at the beginning of the decade to 15 per cent at the end.

B. Small Scale Factory Industry

72. Small scale factory industry provided only 1·5 per cent of total industrial employment, but over 25 per cent of the total factory employment in Orissa.

73. In the future industrial structure, the small factory is likely to occupy an important place. The demand for consumer goods output of small scale factory industries is likely to increase with rising population and income; of feeder and ancillary producer goods with the expansion of transport, agricultural production and construction activity. In addition, the expansion of education, medical facilities and urban drainage system will also increase the demand for a variety of articles that small scale industries are well fitted to produce.

74. The existing and potential agricultural, forest, and mineral resources available in the State are large enough to support a big expansion of small industries.

75. At present the growth of small scale industries is hindered by the inefficient techniques employed, the shortage of credit facilities and the scarcity of local skilled labour. These problems are likely to be reduced in intensity in the future on account of efforts being made to tackle them.

76. The Pilot Project started in 1957 holds great potentialities for assisting small industry development. The working of the project could, however, be improved by the appointment

of a Pilot Project Administrator with adequate technical staff to advise the Industries Department on matters relating to the administration of the Project and the prospective entrepreneur in technical and economic matters.

77. Considering profitability, demand, availability of raw materials, skills, transport and power, the establishment of 92 small plants during 1961–71 is suggested under the Pilot Project involving a total investment of Rs. 3 crores, and an additional employment of 3,566. Fifty-one of the plants suggested should be set up in the Third, and the remainder in the Fourth Plan. On account of the disposition of resource and overhead facilities, the pattern of location suggested for the new plants does not deviate from the pattern of existing location of small scale factories. In addition, about Rs. 6 crores would be invested in industrial estates, and the private sector could be expected to invest another Rs. 13·5 crores in small scale factory industry, bringing the total investment to Rs. 22·5 crores. Further, investment in cottage industries during the period 1961–71, may be of the order of Rs. 11·7 crores.

10. POWER

78. Orissa had about 3·5 per cent of the country's total installed capacity and accounted for 3·3 per cent of the country's generation at the end of March 1960.

79. The State has made remarkable progress in the field of electric power development during the course of the last decade (1950–60). The State's total generating capacity increased from nearly 10 MW at the end of 1950 to 264 MW by the end of 1960.

80. This has resulted in important shifts in the pattern of generation and consumption of electricity and improved the relative position of the State's power development as compared to the progress made all over India. The generation is now predominantly hydel-based. The share of industry's consumption of electricity in the State is higher than for the country as a whole.

81. The electric power development in Orissa has been faster than that of the country as a whole. As a result, annual per capita availability and consumption of electricity are already nearly 90 per cent of the corresponding indicators for the country.

82. There has been a big decline in the relative importance of industry-owned power plants for meeting the State's demand for electricity. Their share has come down to 22·6 per cent of the total.

83. In view of the scope for rapid development of raw material oriented industries, there will be a steep rise in the demand for electricity during the ten-year period 1961–71. The maximum demand will go up to 500 MW in 1966 and 860 MW in 1971. To meet this, installed capacity will have to be increased by nearly 800 MW.

84. The additional demand can be met from both hydro and thermal resources, both of which are available in plenty.

85. Planning for power has to be on a long term basis. Hydel-based projects take 7 to 8 years to yield benefits. It is therefore necessary to plan for power 8 to 10 years ahead.

86. The demand for power in the Third Plan cannot be met by developing hydel resources only. Hence a pit-head thermal station (initial capacity of 240 MW—to be expanded later to 360 to 400 MW) will have to be built at Talcher. This will supply nearly half the additional demand for the decade. The construction of this station is a matter of top priority; without

it, the power demand for the period 1963 to 1968 cannot be satisfied. The State is expected to need about 500 MW of hydel power during 1968–73.

87. Vigorous investigations are recommended during the Third Plan period, so that, by 1963, the State would be in a position to select the most economical hydel projects and initiate work on them. This will assure adequate supply of power in the concluding years of the Fourth Plan as well as for the subsequent Plans.

88. Existing transmission lines serve particular districts only and there is no inter-connection between the two power systems of Orissa—the Hirakud and the Duduma. Much attention will have, therefore, to be paid during the current decade to remedy this defect. Extra H.T. transmission line connection is recommended between Rayagada, Cuttack and Sambalpur.

89. An overall investment of nearly Rs. 184 crores will be necessary to implement the above programme. Of this, Rs. 85 crores will be required during the Third Plan.

11. TRANSPORT

90. Relative to its resources and area, transport in Orissa is poor. In 1957, there were 13·9 miles of railway and 246 miles of roads per 1,000 square miles of area in Orissa as compared to 27·3 miles of railway and 292 miles of roads in all-India. In addition, there were 652 miles of inland waterways.

91. Furthermore, the transport facilities in the State are not distributed well from the point of view of exploitation of resources. There are three railway routes along the three sides of the State and the existing road network and inland waterways are also concentrated in the coastal districts. The interior of Orissa where much of the mineral wealth of the State is located is thus relatively isolated.

92. The unevenly distributed road and inland waterways of Orissa are also poor in quality. Nearly 82 per cent of the roads are unsurfaced, and there are many breaks and interruptions in them on account of absence of bridges. The inland waterways are silted up and not properly maintained.

93. The inadequacy of transport facilities as regards extent, distribution and quality explains, in a large measure, why Orissa is a backward State despite its rich natural resources. It is also responsible for the relatively low agricultural prices since the surplus output cannot be transported out of a restricted area.

94. The development of large scale and heavy mineral-based industry envisaged for Orissa, requires the movement of huge volume of raw materials to producing centres and the distribution of the finished product over widespread markets. This industrial development cannot occur unless adequate transport facilities are provided in advance.

95. The existence of iron ore deposits favourably located for export, and a large forest area which is not fully exploited, are additional reasons for improving transport in the interior of Orissa.

96. Development of transport facilities has been undertaken in both the First and Second Plans, but the achievement so far is only a small part of what has to be accomplished. An accelerated programme of transport development is, therefore, necessary. The State Government proposes to spend about Rs. 10·5 crores on road development to construct 62 miles of

new roads and improve 1,388 miles of roads in the Third Plan. These targets are too low and must be stepped up. It is suggested that Rs. 17·2 crores should be spent to construct 3,097 miles of roads during the Third Plan.

97. In addition, to facilitate the exploitation of forest resources, forest road mileage should be increased from the existing 2,775 miles to 10,275 miles by constructing 2,500 miles of roads in the Third Plan and 5,000 miles in the Fourth Plan. The existing roads should also be improved. The estimated total cost of this programme is Rs. 4 crores.

98. As regards railway development it is suggested that four connecting links should be constructed. A 17-mile line from the Tomka-Daiteri iron deposits to the main line of the South Eastern Railway and a siding to transfer the ore to the canal head would facilitate the export of ore to Paradip. A line from Sambalpur to Titlagarh would provide a direct route to Visakhapatnam, and another from Dumaro to Talcher would shorten the distance between Rourkela and Cuttack. A line from Cuttack to Paradip together with a 30-mile track connecting Gua and Manoharpur would facilitiate the export of Keonjhar iron ore and manganese through Paradip port. The total expenditure for constructing these lines is estimated to be Rs. 30·4 crores.

99. An expenditure of Rs. 4·5 crores should also be incurred on improving and deepening the inland waterways and the terminal facilities at Jonapur and Paradip during the Third Plan.

100. Advantage should be taken of the favourable natural features and geographical location of Paradip to develop it into a major deep-sea port.

101. The total investment required for the implementation of the suggested programme is about Rs. 60·8 crores. About 50 per cent of this will be on railway development, 35 per cent on road development and the remainder on bridge construction, and the development of road transport and inland waterways. The implementation of the programme would be facilitated if the larger number of Government agencies at present concerned with the different aspects of transportation were reduced.

102. The suggested development programme, if carried out by 1966, would create transport facilities sufficient to meet the requirements necessary for the anticipated developments during the Fourth Plan.

12. MANPOWER

103. It is estimated that the programme of development suggested for the non-agricultural sector in this report would require additional manpower of the order of 1·40 million by 1971.

104. As against this requirement, the supply of manpower during the same period would be roughly 1·46 million.

105. Agriculture, for which a programme of development resting mainly on intensive cultivation is suggested, would also require additional manpower. If these requirements were also to be met the additional labour force in the State would not be adequate.

106. This problem of manpower shortage could be best resolved by reducing labour requirements in the agricultural sector. This can be done by bringing about organizational improvement and by using labour-saving devices.

107. This course of action has a further advantage in that it would result in a greater increase in agricultural productivity. If the programme for the non-agricultural sector suggested in this report is fully implemented it would result in a per worker net output of Rs. 1,840 in that

sector. This would be much higher than the net output per worker in agriculture (Rs. 609). The shortage of labour in agriculture would necessitate introduction of capital intensive methods of production in agriculture.

108. In the absence of this line of development, a part of the manpower requirement in the non-agricultural sector would have to be met by immigrant labour.

109. If labour-saving appliances are introduced in agriculture, though additional labour force may not be released for non-agricultural activities, the labour productivity in agriculture could increase and the difference in productivity between the two sectors will be reduced.

110. It is, therefore, suggested that a study should be made to identify agricultural operations where labour-saving devices can be applied and a campaign should be carried out to educate the farmers to accept these devices.

111. A part of the requirement of manpower would be for technical personnel. It is estimated that 1,040 engineers and diploma holders and 11,000 craftsmen would be required annually during the next ten years. As against this, the annual supply of engineers and diploma holders would be 615 and of craftsmen 2,560 in 1961.

112. It is recommended that training facilities should be provided in the early part of the Third Plan period to bridge this wide gap. For training craftsmen progressively greater responsibility should be taken by industry. In order to encourage this, a committee with representatives of the Industries Department, industrialists and training schools should be formed. This committee should plan the training programme after periodically evaluating the requirements for various types of skill in the State. The large public sector in the State should give the lead in this programme of in-plant training.

13. PUBLIC HEALTH

113. Public health conditions in Orissa are poorer than in most other States in India. This is indicated by the fact that the death rate in Orissa (33·3 per 1000) in 1941–50 was 16 per cent higher than the average for all-India (28·5). About 60 per cent of the deaths in the State were accounted for by fever (including malaria).

114. Among the major economic effects of poor health conditions are the loss to society of the investment made in bringing up those young ones who die before they can participate in productive activity, and the generally low level of efficiency prevailing in the various sectors of the economy.

115. One of the underlying causes of poor health of the people is dietary deficiency, mainly shortage of proteins and vitamins. Other causes are lack of modern sanitation facilities and protected water supply even in the urban areas, and the inadequate medical and health facilities in the State.

116. The attempts that have been made in the First and Second Plans to improve prevailing health standards are not only very modest when viewed against requirements, but also small compared to the average all-India effort measured in terms of per capita expenditure.

117. It is suggested, therefore, that the per capita allocation for public health programme in Orissa during 1961–71 should be brought up to the all-India level. This would imply an expenditure of Rs. 49·7 crores in the next ten years.

118. About Rs. 1·3 crores of this should be spent on malaria and filaria control. An expenditure of Rs. 3 crores on protected water supply and Rs. 14·4 crores on modern drainage and sanitation facilities, is also suggested for important urban centres especially industrial towns. A large programme for training medical and health service personnel should be started. A thousand primary health units, each covering 1,000 persons, should also be established. The estimated cost for both these programmes is Rs. 20·5 crores. A sum of Rs. 4·3 crores should be devoted to the construction of hospitals and dispensaries in the State. Mobile health units for inoculation and vaccination, sanitoria for tuberculosis control, and maternity and child welfare centres should also be established. In addition, health publicity should be stepped up, experimental programmes for reducing existing dietary deficiencies should be started, and the collection of vital statistics should be put on a sound basis.

14. FINANCIAL RESOURCES

119. The experience of the Orissa Government in implementing the Second Plan has highlighted the problem of inadequate resources that has inevitably to be faced by any backward region trying to accelerate its economic development.

120. Per capita revenue from State taxes in Orissa in 1957-58 was Rs. 4·07—the second lowest in India, the lowest being Jammu and Kashmir's at Rs. 2·04. Not only is per capita revenue from State taxes low in Orissa, but the ratio of State taxes to State income also is low compared to many other States. The ratio was 1·6 : 1·1 in 1956-57 and about 2·6 per cent in 1960-61. This low ratio may be taken to indicate a relatively low tax effort by the State.

121. Total revenue of Orissa Government has increased by about 200 per cent between 1951-52 and 1959-60 (B.E.) but revenue from State taxes has increased only by 62 per cent. It is the grants from the Centre and shared taxes that have contributed most to the increase in revenues. The low rate of increase of State tax revenue is due to (*a*) the inelasticity of the land revenue system, and (*b*) the relatively late emergence of the commercial taxes as a source of revenue.

122. If we consider revenue expenditure alone, in Orissa, the share of development expenditure has been increasing since 1951-52. However, if total expenditure is taken into account, the share of development expenditure has fallen from 75 per cent in 1951-52 to 62·8 per cent of the total in 1957-58. Thus the share of non-development expenditure has increased. The bulk of the increase in non-development expenditure is accounted for by payment of interest and repayment of debt. Payment of interest is already quite large and in 1957-58 constituted about 15 per cent of current revenues (excluding income from investments). Much of the interest due to the Centre is met through fresh loans. Added to this are the repayment obligations mostly to the Centre. There is no doubt that the State Government has to examine the whole question of its debt and the proper management of it in the future.

123. The greater part of the debt of Orissa Government consists of loans from the Central Government. This is primarily due to the fact that Orissa could not raise on its own the resources needed for huge projects like the Hirakud multipurpose scheme. In future, the State should try to preserve a better balance between loans from the Centre and market loans.

124. Though the general sales tax has become of late an important source of revenue in

Orissa, compared with all-India, Orissa relies more on land revenue than on the general sales tax. The State has as yet only a small industrial structure and a small urban population. However, in the Third and Fourth Plan periods, a complex of industries is likely to grow up based on the mineral resources of the region. In this situation, the fiscal structure must rely for some time to come on the taxation of the agricultural sector. At the same time elements should be introduced into the structure which would enable the State to benefit from the subsequent growth of the secondary and tertiary sectors. Therefore, attention should at this stage be devoted both to the improvement of land taxation and the rationalization of the structure of commercial taxes, especially the general sales tax.

125. The land revenue system of the present Orissa State has not yet become integrated and uniform. In the peculiar conditions obtaining in the State, resettlement operations would be preferable to simple standardization as recommended by the Taxation Enquiry Commission.

126. When land ceilings are imposed, the agricultural income tax, in its present form, will have to be given up. However, a progressive surcharge on land revenue may be imposed on holdings above, say, 5 acres.

127. Lands used for non-agricultural purposes must be specially assessed according to the recommendations of the Taxation Enquiry Commission.

128. As regards sales tax, the problem at the moment is to discover what system of sales taxation is best suited to conditions obtaining in Orissa. At present, there is a single-point tax levied at the last stage of sale. A multi-point levy may be more suitable for Orissa at the present stage of its development.

129. Recently, a tax has been imposed on some goods carried by roads and inland waterways. In course of time, this tax may be applied to passenger fares.

130. Additional taxation can also be related to direct benefits that can be shown to have flowed from public investment. Betterment levy is an instance. There is considerable scope for this levy in Orissa. The implementation of the Betterment Charges Act, 1955 ran into difficulties because the levy was related to increases in capital value which it was almost impossible to estimate. It can be shown that the usual way of assessing betterment contributions is likely to impose hardships on the small owners. It is suggested that the period of payment be made longer and the levy related to the cost of the undertaking rather than the presumed increase in capital value.

131. The arrangements for financing the Hirakud project have been such as to lead the State Government to assume debt obligations clearly beyond its capacity to discharge. Unless some arrangement is made with the Centre in regard to the debt incurred on account of Hirakud and unless determined efforts are made to increase revenues, it would be unwise to embark upon large scale borrowing for further investment. Indeed this may not be possible, as new loans may be used up in paying off old loans.

132. The total yield of State taxes in Orissa was expected to be Rs. 8·24 crores in 1959-60. Even if this were increased by 50 per cent, the additional revenue would be small in absolute terms—Rs. 4 crores. Compared with the (recommended) annual outlay of about Rs. 60 crores during the Third Plan period, it is apparent that additional taxation can play only a limited role. Every effort has to be made to find additional non-tax revenues, though there are definite limitations to the use of public enterprises as a source of revenues to the Government.

133. The surplus that can form the basis of capital formation in Orissa consists of the revenue

from the sale of the products of agriculture, forests and extractive industries. The State can play an useful role in utilizing this surplus for capital formation.

134. Steps to be taken:

(*a*) Consistent with all-India policies, the State may be allowed to make a normal profit on the sale of surplus foodgrains not at the expense of consumers but at the expense of middlemen.

(*b*) More business-like disposal of minor forest produce—revision of price where necessary, e.g., bamboos—afforestation.

(*c*) Further development of the Orissa Mining Corporation.

(*d*) Increase the profits of electricity undertakings, as with increase in installed capacity, a more or less proportionate increase may be expected.

135. The report envisages a total programme of investment in the State of the order of Rs. 1,430 crores in 1961–71. Of this total, it is estimated that roughly Rs. 576 crores of investment will fall within the State sector. In other words, the State Government will be called upon to find resources of this magnitude in the ten-year period, 1961–71.

136. Tentative estimates show that the State Government would be able to raise about Rs. 203·2 crores in 1961–71, after allowing for additional taxation amounting to Rs. 46 crores, and market loans and share of small savings amounting to Rs. 73·8 crores. There would thus arise a gap of Rs. 372·8 crores which has to be met through Central assistance, if the programme recommended is to be implemented within the ten-year period. In addition, the State would have to find resources also for the current outlay under the Plans which has not been included in our estimate of financial requirements.

15. PATTERN OF GROWTH

137. The total investment required to implement the programme of development proposed for 1961–71, in this report is estimated at Rs. 1,427 crores.

138. Of the total investment, 39·3 per cent would be in factory industry, 21·7 per cent in agriculture and allied activities, 21·3 per cent in tertiary activities, 12·9 per cent in power, 4 per cent in mining and 0·8 per cent in non-factory industry. Compared to the estimated investment during the preceding decade (1951–61), the largest increases are proposed for power and tertiary activities, thus emphasizing the need for strengthening the infra-structure of the economy of the State.

139. Of the total investment, 76.9 per cent would be in the public sector. The contribution of CentralGovernment in it would be 47·5 per cent. The bulk (86%) of the Central Government investment in Orissa would be in iron and steel industry. Agriculture, power and transport development would be the main fields for investment by the State Government. One-third of the private investment would be in industry, the remaining being mainly in agriculture and housing.

140. The main impetus for the rapid growth of the State's economy during 1961–71 would come from the development of heavy and metallurgical industries, mainly iron and steel industry. Over this period, the industrial output is expected to increase eight-fold, the mineral-based industries contributing about three-fourths of the additional net output of industry. Significant improvement is anticipated in the structure and productivity of factory industry.

141. The bulk of the industrial growth would occur in the triangular area with Cuttack at the apex and Rourkela and Hirakud as the base.

142. Development of mining in Orissa is geared both to the development of mineral-based heavy industry and the expansion of iron ore exports. With an accelerated growth of mining output at the rate of 37 per cent per annum during 1961–71, the share of mining in the State net output would increase from 2·3 per cent to 4·7 per cent.

143. A substantial sum of Rs. 184 crores or 12·9 per cent of total investment has been allocated for power development, and an installed capacity of about 1,000 MW by 1971 is proposed, to meet the effective power demand during the decade.

144. An investment of Rs. 105·8 crores is proposed for development of transport and communications, and another Rs. 199·7 crores for other tertiary activities mainly for health and housing. Growth in tertiary output is expected to be 14 per cent per annum—the same as the increase of commodity output.

145. An investment of Rs. 276 crores is proposed for agricultural development in Orissa, of which Rs. 62·4 crores would be private investment and the remaining by the State Government. The agricultural output is expected to increase at the rate of 6·5 per cent per annum—the same as in all-India. By 1971, the State would be exporting about 1·8 million tons of foodgrains to other States after meeting its own requirements. This development is to be preceded by an effective price policy chiefly in respect of rice.

146. There is possibility of shortage of manpower in agriculture, especially if there is an exodus of workers to non-agricultural occupations in which productivity is higher. To meet this shortage, immigration of labour from other States may have to be encouraged to some extent. Alternatively labour-saving techniques may have to be adopted in agriculture.

147. The development programme underlines the necessity of training a large number of industrial workers and technicians. It is estimated that the annual outturn of engineers and diploma holders from the existing training institutes would fall short of the requirement by 70 per cent. The shortage of technical personnel may have to be met by recruitment from other States.

148. With development of this magnitude, the State income is expected to grow at the rate of 14 per cent per annum during 1961–71. Per capita income will almost double from Rs. 212 to Rs. 420—reaching the all-India level in 1971. The share of agriculture in State income will fall from 50·5 to 30·3 per cent and that of industry would go up from 5·9 to 20·0 per cent.

149. The shift of working force from low productivity sectors to high productivity sectors would raise average productivity. The major increase in productivity (about 250%) would be in factory industry, due mostly, to the predominance of metallurgical industries. In other sectors productivity per worker would increase by about 50 per cent.

150. The programme of development envisaged in this report would transform Orissa from a relatively backward agricultural economy into a progressive industrial State.

Tables

TABLE 1

AREA AND POPULATION DENSITY IN ORISSA, 1951

District	*Area* (sq. miles)	*Total Population*	*Density of Population*
1. Balasore	2,462	1,106,012	449
2. Bolangir	3,444	917,875	267
3. Cuttack	4,224	2,529,244	599
4. Dhenkanal	4,181	839,241	201
5. Ganjam	4,835	1,624,829	336
6. Kalahandi	5,086	858,781	169
7. Keonjhar	3,211	588,441	183
8. Koraput	9,875	1,269,534	129
9. Mayurbhanj	4,025	1,028,825	256
10. Phulbani	4,270	456,895	107
11. Puri	4,001	1,573,000	393
12. Sambalpur	6,767	1,301,804	192
13. Sundargarh	3,755	552,203	147
TOTAL	60,136	14,645,946	244

SOURCE: *Census of India, 1951.*

TABLE 2

DISTRIBUTION OF POPULATION IN VILLAGES AND TOWNS OF DIFFERENT SIZES—ALL-INDIA AND ORISSA, 1951

Size of Village or Town	All-India					Orissa				
	Number of Villages or Towns	Percentage	Population	Percentage	Average	Number of Villages or Towns	Percentage	Population	Percentage	Average
Rural (Villages)										
Less than 500	380,019	68	78,347,691	27	206	40,654	84·00	7,265,533	52	179
500–1000	104,268	19	72,920,756	25	699	15,852	12·09	4,030,961	29	688
1000–2000	51,769	9	71,050,482	24	1,374	1,652	3·40	2,141,301	15	1,296
2000–5000	19,896	4	47,060,497	19	2,868	237	0·50	596,650	4	2,517
Above 5000	2,136	0·4	15,518,845	5	7,265	3	0·01	17,431	0·1	580
TOTAL	558,088	100	295,004,271	100	529	48,398	100·00	14,051,876	100	290
Urban (Towns)										
Less than 5,000	611	20	2,030,159	3	3,323	1	2·56	4,956	0·83	4,956
5,000–10,000	965	32	5,253,108	9	5,438	23	58·97	178,415	30·04	7,757
10,000–20,000	856	28	11,680,768	19	13,646	8	20·52	107,796	19·14	13,476
20,000–50,000	401	13	11,804,047	19	29,436	5	12·82	138,055	23·24	27,611
50,000–100,000	111	4	7,555,324	12	68,066	1	2·56	62,343	10·49	62,343
Above 100,000	73	3	23,551,617	38	322,625	1	2·56	102,505	17·25	102,505
TOTAL	3,018	100	61,875,123	100	20,502	39	100·00	594,070	100·00	15,233

SOURCE: *Census of India, 1951.*

TABLE 3

URBAN POPULATION AS PERCENTAGE OF TOTAL POPULATION BY DISTRICTS, 1951

District	*Urban Population as Percentage of Total Population*
1. Balasore	3·8
2. Bolangir	4·4
3. Cuttack	5·4
4. Dhenkanal	3·3
5. Ganjam	7·0
6. Kalahandi	1·4
7. Keonjhar	1·6
8. Koraput	4·3
9. Mayurbhanj	0·9
10. Phulbani	1·2
11. Puri	4·8
12. Sambalpur	3·9
13. Sundargarh	2·7
TOTAL	4·1

SOURCE: *Census of India, 1951.*

TABLE 4

PROPORTION OF SELF-SUPPORTING PERSONS AND EARNING DEPENDENTS TO TOTAL POPULATION IN ORISSA AND OTHER STATES, 1957

States	*Self-Supporting*		*Earning Dependents*		*Earners*	
	Total (million)	*Percentage of Total Population*	*Total* (million)	*Percentage of Total Population*	*Total* (million)	*Percentage of Total Population*
1. India	104·40	29·3	37·94	10·6	142·34	39·9
2. Andhra Pradesh	8·34	26·7	3·49	11·2	11·83	37·9
3. Assam	2·41	26·6	1·29	14·2	3·70	40·8
4. Bombay	12·93	26·8	8·63	17·9	21·56	44·7
5. Bihar	12·16	31·4	1·56	4·0	13·72	35·4
6. Madhya Pradesh	8·19	31·4	4·87	18·6	13·06	50·0
7. Madras	7·85	30·1	1·12	4·3	8·97	34·4
8. *Orissa*	*4·18*	*28·8*	*1·42*	*9·8*	*5·60*	*38·6*
9. Rajasthan	5·90	37·0	2·13	13·4	8·03	50·4
10. West Bengal	8·38	31·8	0·36	3·3	9·24	35·1

SOURCE: *Census of India, 1951.*

TABLE 5

NUMBER OF FEMALE EARNERS PER 100 MALE EARNERS IN ORISSA BY DISTRICTS, 1951

District	Earners				Number of Female Earners Per 100 Male Earners
	Number of Males	Percentage of Total Population	Number of Females	Percentage of Total Population	
1. Balasore	305,831	27·7	79,850	7·2	26·109
2. Bolangir	263,339	28·7	139,810	15·2	53·091
3. Cuttack	721,242	28·5	183,310	7·2	25·416
4. Dhenkanal	241,018	28·7	85,499	10·2	35·474
5. Ganjam	424,478	26·1	135,196	8·3	31·850
6. Kalahandi	238,927	27·8	129,179	15·0	54·066
7. Keonjhar	161,518	27·4	28,630	4·9	17·726
8. Koraput	334,041	26·0	67,873	5·3	20·319
9. Mayurbhanj	300,822	29·2	221,863	17·0	52·349
10. Phulbani	137,363	30·1	25,482	5·6	18·551
11. Puri	435,884	27·7	106,181	6·8	24·360
12. Sambalpur	423,813	32·6	221,863	17·0	52·349
13. Sundargarh	157,613	28·5	75,395	13·7	47·836
TOTAL	4,145,889	28·3	1,450,053	9·9	34·976

SOURCE: *Census of India, 1951.*

TABLE 6

DISTRIBUTION OF EARNERS BY INDUSTRIAL STATUS IN ALL-INDIA AND ORISSA, 1951

Sectors	*All-India*		*Orissa*	
	Number (thousands)	*Percentage*	*Number* (thousands)	*Percentage*
1. Agriculture, Animal Husbandry and Ancillary Activities	102,711	71·8	3,975	71·0
2. Forestry	350	0·2	22	0·4
3. Fishery	579	0·4	44	0·8
Total of Agriculture, Forestry and Fishery	*103,640*	*72·4*	*4,041*	*72·2*
4. Mining	780	0·5	21	0·4
5. Factory Establishments	22,967	2·1	24	0·4
6. Small Enterprises and Construction	11,521	8·0	434	7·8
Total Mining, Manufacturing and Hand Trades	*15,270*	*10·6*	*479*	*8·6*
7. Communications	195	0·1	5	0·1
8. Railways	1,178	0·8	13	0·2
9. Organized Banking and Insurance	147	0·1	3	0·1
10. Other Commerce and Transport	9,533	6·7	252	4·5
Total of Commerce and Communications	*11,053*	*7·7*	*273*	*4·9*
11. Professions and Liberal Arts	6,425	4·5	526	9·4
12. Government Services (Administration)	3,886	2·7	71	1·3
13. Domestic Service	2,947	2·1	206	3·7
Total of Other Services	*13,258*	*9·3*	*803*	*14·4*
TOTAL EARNERS	143,221	100·00	5,596[a]	100·00

[a] This figure includes 70,000 earners who depend on income from pensions, begging and other unproductive activities.

SOURCE: For India: Final Report of National Income Committee, February 1954. For Orissa: NCAER estimates (Table 8).

TABLE 7

SECTORAL DISTRIBUTION OF THE NET OUTPUT IN ORISSA AND ALL-INDIA, 1956-57

Sector	*Contribution to Total Output* (Percentages)	
	Orissa[a]	*All-India*[b]
Agriculture and Allied Activities	54·5	49·8
Mining	2·0	1·0
Industry	11·3	16·4
Tertiary Activities	32·2	32·8
TOTAL	100·0	100·0

[a] NCAER estimates of State Income for Orissa (*vide* Table 8 and Appendix 2).

[b] Central Statistical Organization.

TABLE 8

STATE INCOME OF ORISSA FOR THE YEARS 1950-51, 1956-57 AND 1960-61 (AT 1956-57 PRICES)

(Rs. crores)

Sector	1950-51		1956-57			1960-61			
	Net Output	Per cent of Share in Total	Net Output	Per cent of Share in Total	Percentage Increase or Decrease over 1950-51	Net Output	Per cent of Share in Total	Percentage Increase or Decrease over 1957-58	Percentage Increase or Decrease during 1950-51 to 1960-61
1. Agriculture and Allied Activities									
(i) Cultivation	139·92	48·8	147·57	47·7	+5·5	164·74	44·2	+11·2	+17·8
(ii) Animal Husbandry	18·42	6·4	14·43	4·7	−23·9	14·43	3·9	..	−21·6
(iii) Forestry	5·46	1·9	4·98	1·9	−8·8	6·97	1·9	+40·0	+27·7
(iv) Fisheries	1·60	0·6	1·76	0·5	+10·0	1·85	0·5	+5·1	+15·6
(A) Total Agriculture	*165·40*	*57·7*	*168·74*	*54·5*	*+2·0*	*187·99*	*50·5*	*+11·4*	*+13·6*
2. Mining	4·52	1·6	6·40	2·0	+41·6	8·98	2·4	+40·3	+98·7
3. Factory Establishments	3·07	1·1	4·84	1·6	+57·7	22·10	5·9	+356·6	+619·9
4. Power	·02	..	·06	..	+200·0	3·36	0·9	+5,500·0	+16,700·0
5. Non-factory Enterprises	20·05	7·0	22·24	7·2	+11·1	24·51	6·6	+10·1	+22·5
6. Construction (All types)	2·55	0·9	7·66	2·5	+200·4	11·95	3·2	+56·0	+368·6
(B) Mining, Manufacturing, etc.	*30·21*	*10·6*	*41·22*	*13·3*	*+36·4*	*70·90*	*19·0*	*+720·0*	*+134·8*
7. Transport and Communications	4·37	1·5	4·69	1·5	+7·3	5·78	1·5	+23·2	+32·3
8. Trade and Commerce	33·06	11·5	35·47	11·5	+7·3	43·74	11·7	+23·3	+32·3
9. Other Services	41·55	14·5	46·12	14·9	+11·0	49·81	13·4	+8·0	+19·9
10. House Property	12·00	4·2	13·32	4·3	+11·0	14·39	3·9	+8·0	+19·9
(C) Total Services	*90·98*	*31·7*	*99·60*	*32·2*	*+9·47*	*113·72*	*30·5*	*+14·2*	*+25·0*
(D) Total State Income (million *Rs.*)	*286·59*	*100·0*	*309·56*	*100·0*	*+8·0*	*372·61*	*100·0*	*+20·4*	*+30·0*
(E) Population (million)	*14·65*		*16·26*		*+11·0*	*17·57*			*+19·9*
(F) Per Capita Income (Rs.)	*196*		*190*		*−3·0*	*212*			*+8·2*

NOTE: For methodology of estimates of income, *vide* Appendix 2.

TABLE 9

ESTIMATE OF INVESTMENT IN ORISSA DURING 1950-51 TO 1956-57 AND 1957-58 TO 1960-61

(Rs. crores)

Sectors	1950-51 to 1956-57					1957-58 to 1960-61				
	Centre's Share	*State's Share*	*Total Public Sector*	*Private Sector*	*Total*	*Centre's Share*	*State's Share*	*Total Public Sector*	*Private Sector*	*Total*
1. Agricultural and Allied Activities	31·70	6·52	38·22	11·76	49·98	..	25·02	25·02	7·84	32·86
2. Mining	..	..	..	5·64	5·64	0·25	0·25	0·50	7·24	7·74
3. Factory Industries	4·50	1·40	5·90	10·40	16·30	145·50	0·84	146·34	71·46	217·80
4. Power	0·40	..	0·40	..	0·40	..	33·00	33·00	..	33·00
5. Small Scale and Cottage Industry	..	0·74	0·74	3·64	4·38	..	0·95	0·95	3·59	4·54
6. Transport and Communications	..	..	4·20	1·45	5·65	..	3·88	3·88	4·75	8·63
7. House Property	..	0·49	0·49	21·95	22·44	..	2·74	2·74	15·45	18·19
8. Trade and Commerce	..	..	..	0·22	0·22	..	..	..	0·41	0·41
9. Education	..	0·56	0·56	..	0·56	..	1·16	1·16	..	1·16
10. Health	..	1·14	1·14	..	1·14	..	2·14	2·14	..	2·14
11. Backward Class Welfare	..	0·68	0·68	..	0·68	..	0·98	0·98	..	0·98
TOTAL	36·60	11·53	52·33	55·06	107·39	145·75	70·96	216·71	110·74	327·45

NOTE: On the basis of these estimates, capital-output ratio may be worked out for the two periods. The output figures are:

Period	*Total Investment/Output*	*Capital Output ratio*
1. 1950-51 to 1956-57	107·39 / 22·97	4·7: 1
2. 1956-57 to 1960-61	327·45 / 63·05	5·2: 1

TABLE 10

CONSTRUCTION EXPENDITURE IN ORISSA DURING 1950-51 TO 1956-57 AND 1957-58 TO 1960-61

(Rs. crores)

Sectors	*Construction Expenditure 1950-51 to 1956-57*	*Total Investment during 1957-58 to 1960-61*	*Construction Expenditure during 1957-58 to 1960-61*	*Construction Expenditure as Proportion of total investment* (Per cent)
1. Agriculture	36·47	32·86	26·29	80·0[a]
2. Mining	0.15	7·74	0·39	5·0
3. Factory Industires	8·04	217·80	62·07	28·5
4. Power	0·32	33·00	26·40	80·0
5. Small Scale Industries	0·74	4·54	1·50	33·0
6. Transport and Communications	4·30	8·63	3·45	40·0
7. House Property	12·24	18·19	18·19	100·0[b]
8. Trade and Commerce	0·30	0·41	0·41	100·0
9. Education	0·56	1·16	1·16	100·0
10. Health	1·14	2·14	2·14	100·0
11. Backward Class Welfare	0·68	0·98	0·98	100·0
TOTAL	64·94	327·45	142·98	43·6

[a] Cost of construction of dams. [b] Total road expenditure.

NOTE: The total investment during the first period (1950-51 to 1956-57) was Rs. 107·39 crores and construction expenditure Rs. 64·94 crores. Construction expenditure is 60·5 per cent of the total investment. During the second period (1957-58 to 1960-61) this proportion is 44 per cent, the total investment and construction expenditure being Rs. 327·45 crores and Rs. 142·98 crores respectively.

TABLE 11

AVERAGE YIELD PER ACRE OF MAJOR CROPS IN ORISSA AND ALL-INDIA, 1955-58

Crops	*Orissa* (lbs. per acre)	*All-India* (lbs. per acre)	*Orissa as per cent of India*
1. Rice	776[a]	754	103
2. Oilseeds	277	441	62
3. Pulses	487	423	115
4. Jute	864	935	92
5. Sugarcane (Gur)	3,663	3,013	122
6. Other Cereals and Millets (including Wheat)	390	477	82

[a] The figures have been obtained by dividing the estimated rice production of 1959-60 by the area devoted to it in that year. The estimate of production is based on crop cutting surveys conducted by the State Government. The figure is close to the estimated yield based on a recent sample survey undertaken by the Bureau of Statistics. The survey yields a figure of 15·5 maunds per acre of paddy which when multiplied by a 64 per cent average recovery, gives 812 lbs. of rice.

SOURCE: *Abstract of Agricultural Statistics*, Ministry of Food and Agriculture, Government of India.

TABLE 12

AREA UNDER PRINCIPAL CROPS AND THEIR CONTRIBUTION TO TOTAL AGRICULTURAL OUTPUT, 1955-56

Crops	*Percentage of Total Cropped Area in 1955-56*[a]	*Percentage of Total Value of Agricultural Output in 1956-57*[b]
1. Rice	62·3	74·2
2. Wheat	0·1	0·1
3. Millets and Other Cereals	2·0	2·1
4. Pulses	7·8	6·8
5. Oilseeds	3·4	1·9
6. Jute	0·7	1·5
7. Sugarcane	0·4	2·0
8. Tobacco	0·1	0·5
9. Cotton	0·2	0·03
10. Others	23·0	10·87
TOTAL	100·0	100·0

[a] *Statistical Abstract of Orissa*, 1957
[b] NCAER estimates of State Income of Orissa.

TABLE 13

IRRIGATION POTENTIAL IN ORISSA--MAJOR AND MEDIUM PROJECTS

Region and District	*Potential* (Thousand acres)	*Percentage of Total*
1. *Coastal Districts*		
Cuttack	1,167	45
Puri	791	
Balasore	532	
Ganjam	253	
2. *Northern Plateau*		
Mayurbhanj	766	15·5
Sundargarh	36	
Keonjhar	132	
3. *Central Table-land*		
Sambalpur	815	25
Bolangir	190	
Dhenkanal	526	
4. *Eastern Ghats*		
Phulbani	122	14·5
Koraput	486	
Kalahandi	229	

SOURCE: *Irrigation Potential of Orissa*, Irrigation Department, Orissa.

TABLE 14

IRRIGATION SCHEMES FOR THIRD AND FOURTH PLANS

Name of Scheme	*Location (District)*	*Catchment Area* (Sq. miles)	*Normal Monsoon Rainfall June-October* (Inches)	*Irrigation Potential* (Thousand acres)	*Approximate Cost* (Rs. lakhs)
(1)	(2)	(3)	(4)	(5)	(6)
1. Upper Khadakai Project	Mayurbhanj	195	47·12	40·5	203
2. Lower Khadakai Project weir at Radhanagar	"	485 (Int. 195)	47·12	24·8	124
3. Suharneekha Project	Balasore and Mayurbhanj	6,078·5 (Int. 190)	47·12	640·8	3,204
4. Burabalang Project	Mayurbhanj	519·5 (Int. 233)	51·81	78·5	390
5. Paharajpur Project	Balasore	6,900 (Int. 5677)	47·12	103·12	516
6. Saluchua Tangana Project	Balasore and Mayurbhanj	198	51·81	54·1	271
7. Ordai Project	Keonjhar	205	45·56	35·2	176
8. Khairibhaban-Dev. Project	Mayurbhanj	316	45·56	56·0	280
9. Bhimkund Project	Keonjhar, Balasore and Cuttack	2,370	45·56	205·5	1,028
10. Kusai Project	Keonjhar and Cuttack	182	45·56	24·3	122
11. Upper Brahmani Project	Sundargarh	8,576	50·38	36·0	180
12. Kankra Project	Sambalpur and Dhenkanal	124	50·38	7·2	36
13. Rengali Project	Dhenkanal and Cuttack	22,363	50·38	874·8	4,374
14. Tikara—Aunil Project	Sambalpur and Dhenkanal	521	50·38	131·0	650
15. Samkoi Project	Keonjhar	127	50·38	11·7	59
16. Bheden Project	Sambalpur	701	58·14	238·0	1,190
		49,860·5		2,561·6	12,811

TABLE 15

PROPOSED TARGETS AND OUTLAY FOR THE AGRICULTURAL PROGRAMME, 1961-71

	Area Covered (Million acres)	*Additional Quantity* (Million tons)	*Investment Component* (Rs. crores)
1. Irrigation			
(a) Major and medium	2·5	0·47(f)	128·10
(b) Minor	1·0	0·20(f)	35·00
2. Land Development			
(a) Extension of area	0·8	0·14(f)	11·10
(b) Soil conservation	2·0	0·09(f)	4·24
(c) Afforestation of shifting cultivated areas	7·68	..	20·35
(d) Planting of catchment	0·5	..	1·33
3. Manuring			
(a) Fertilizers			
(i) Nitrogenous (0·4 million tons)	..	0·7(f)	..
(ii) Phosphatic (0·1 million tons)	..	0·1(f)	..
(b) Compost (20 Million tons)	..	0·5(f)	..
(c) Green manuring	5·0	0·6(f)	..
4. Improved Seeds	10·0	0·50(f)	0·28
5. Better Techniques	..	0·3(f)	..
6. Crop Intensity			
(a) Jute	0·5	1·87 (million bales)	
(b) Tobacco	0·05	0·00134	
(c) Oilseeds			
(i) Groundnut	0·3	0·134	..
(ii) Linseed	0·2	0·027	
(iii) Mustard	0·3	0·070	..
(d) Pulses	3·15	0·700(f)	
7. Extension of area for high value crops			
(a) Sugarcane	0·15	3·0	
8. Agricultural Extension	..	..	11·90
			212·30

f: Foodgrains

NOTE: (*a*) Of the expected additional production potential created under various heads, the following percentages are assumed to be allowed for foodgrains production—Irrigation and Soil Conservation 90, Reclamation 70, Compost 60, Fertilizers 50, Green Manuring and Improved Seeds 100. The balance will be accounted for by other crops.

(*b*) It is assumed that due to improved practices and better techniques, an additional production potential of 10 per cent is expected to be created under various schemes.

(*c*) Investment component is assumed to be the following percentage of total expenditure under each head—Irrigation 100 per cent, Reclamation Seeds 53 per cent, Better Techniques (including Soil Conservation) 53 per cent and Agriculture Extension 70 per cent.

TABLE 16

ESTIMATED GROWTH OF AGRICULTURAL PRODUCTION

Product	*Unit*	*Estimated Output 1960-61*	*Additional Output 1961-71*		*Expected Output 1970-71*
			At Technically Feasible Level	*Expected (i.e. 60 % of Technically Feasible Level)*	
1. Foodgrains	Million tons	*4.00*	*4.30*	*2.58*	*6.58*
(*a*) Rice and other Cereals and Millets	-do-	3·70	3·60	2·16	5·86
(*b*) Pulses	-do-	0·30	0·70	0·42	0·72
2. Sugarcane	-do-	*1·00*	*3.00*	*1.80*	*2.80*
3. Oilseeds	-do-	*0.09*	*0.23*	*0.14*	*0.23*
4. Jute	Million bales	*0.265*	*0.75*	*0.45*	*0.715*

TABLE 17

LIVESTOCK IN ALL-INDIA AND ORISSA

Livestock	*All-India*		*Orissa*		
	Total Number (Thousands)	*Col. (2) as per cent of Total Livestock (India)*	*Total Number (in 1957)* (Thousands)	*Col. (4) as per cent of Total Livestock (Orissa)*	*Number of Col. (4) as per cent of Number in Col. (2)*
(1)	(2)	(3)	(4)	(5)	(6)
Cattle	158,863	51·73	8,220	67·79	6·17
Buffaloes	44,766	14·58	888	7·32	1·98
Sheep	38,666	12·59	1,117	9·21	2·89
Goats	56,628	18·44	1,694	13·96	2·99
Horses and Ponies	1,503	0·49	79	0·65	5·26
Other Livestock (Mules, Donkeys, Camels and Pigs)	6,675	2·17	130	1·07	1·95
TOTAL LIVESTOCK	307,083	100·00	12,128	100·00	3·95

SOURCE: For All-India: *Agricultural Statistics of Reorganised States.*
For Orissa: Directorate of Animal Husbandry, Government of Orissa.

TABLE 18

ADDITIONAL EMPLOYMENT POTENTIAL IN FOREST DEVELOPMENT

(During Third Plan period)

Sector	*Divisional Forest Officers Level*	*Forest Rangers*	*Deputy Forest Rangers*	*Foresters*	*Forest Guards*	*Upper Division Clerks*	*Lower Division Clerks*	*Malis*	*Unskilled Labour* (Man-days in hundred thousands)
1. Additional Employment (Extension of Forestry)	..	1	..	6	30	..	..	30	8·82
2. Economic Plantations	2	10	..	70	186	..	..	..	80·00
3. Land Utilization	1	6	..	26	9	..	..	..	..
4. Consolidation	..	..	..	60	60	13	13	..	3·30
5. Forest Resources Survey	1	5	20	..	28	..	..	..	8·24
6. Forest Working Plans	2	8	16	..	..	..	..	..	3·75
7. Rehabilitation	..	5	..	12	60	..	12	..	53·66
8. Grazing Facilities	..	..	1	4	14	..	..	..	3·76
9. Minor Forest Products	..	..	..	20	40	..	..	..	1·79
10. Tassar Development	..	..	..	..	..	..	..	..	0·80
11. Ramnofia Surpentina	..	..	..	..	..	..	..	..	0·96
12. Camphor	..	..	..	..	..	..	..	..	0·20
13. Communication	..	12	..	33	84	..	12	..	22·95
14. Building	..	..	..	..	..	..	..	..	41·37
15. Forest Survey	..	..	..	..	..	..	..	..	2·67
TOTAL	6	47	37	231	521	13	37	30	232·27

SOURCE: NCAER Estimate.

TABLE 19

MARINE FISHING VILLAGES, CRAFT, FISHERMEN AND LANDINGS

	Orissa	*India*	*Percentage of Col. 2 to Col. 3*
(1)	(2)	(3)	(4)
Number of Fishing Villages	115	1,734	6·7
Number of Fishing Craft	2,837	85,063	3·3
Number of Fishermen (engaged in fishing)	11,150	395,230	2·8
Average Landings[a] (metric tons)	7,635	816,705	0·9
Catch per Fishing Craft (in kgms)	2,690	9,550	28.0
Catch per Fisherman (in kgms)	684	2,060	33.0

[a] Average for 1956, 1957 and 1958.

TABLE 20

INCREASE IN OUTPUT AND INVESTMENT IN FISHERIES BETWEEN 1960-61 AND 1965-66

Fisheries	Production (Tons)		Additional Output (Tons)	Investment (Rs. lakhs)	Percentage Increase in Output
	1957-58	1965-66[a]			
(1)	(2)	(3)	(4)	(5)	(6)
I. *Marine*	*7,500*	*21,000*	*13,500*	*112*	*180*
(a) Coastal	7,500	16,000	8,500		
(b) Off-shore	..	5,000	5,000		
II. *Estuarine*	*9,000*	*12,000*	*3,000*	*15*	*33*
(a) Chilka Lake	4,000	4,000	..		
(b) Other Estuaries	5,000	8,000	3,000		
III. *Riverine*	*2,000*	*4,500*	*2,500*	*170*	*125*
IV. *Reservoirs and Culture*	*6,000*	*13,500*	*7,500*		
TOTAL	24,500	51,000	26,500	297	92

[a] For figures in these columns it has been assumed that production increase between 1957-58 and 1960-61 will not be significant as indicated in para 5.5 of Chapter 5.

TABLE 21

PROBABLE CHANGES IN THE UTILIZATION PATTERN OF FISH OUTPUT, 1961–71

	1957-58 (tons)	1965-66 (tons)	1970-71 (tons)	Percentage Increase in 1970-71 over 1957-58
(1)	(2)	(3)	(4)	(5)
Output	*24,500*	*51,000*	*100,000*	*308*
(a) Export	*4,000*	*9,000*[a]	*18,000*[c]	*400*
(b) Industrial Consumption	..	*3,000*[b]	*10,000*[d]	*230*[e]
(c) Available for human consumption	20,500	39,000	72,000	235
(i) Per capita annual consumption for the entire population[f]	2·9		8·0	150
(ii) Per capita annual consumption for the fish-eating population	4·2		11·0	150

[a] Of the additional catch of 'A' class marine fish of 3,400 tons, prawns would constitute about 1,000 tons. On the basis of present export and probable exploitation market demand in Calcutta and other out of State markets, it is anticipated that two-thirds of the prawns of about 8,100 tons of 'B' class fish would be exported. Of about 8,000 tons of 'B' class fish nearly one-fourth is expected to be exported. The total export in 1965-66 (including the current export) is thus likely to be 9,000 tons or roughly 18 per cent of the total output.

[b] Expected utilization of fish meal and oil industry.

[c] Exports would constitute the same proportion of total output as in 1965-66.

[d] Expansion of fish meal and oil and shark liver oil industry anticipated for the period 1966–71 will be much higher than in the previous five year period. The figure does not include fish earning.

[e] Over 1965-66.

[f] Population for 1970-71; according to NCAER projections fish-eating population takes at the rate of 70 per cent of the total.

TABLE 22

MINERALS OF ORISSA: DEPOSITS AND OCCURRENCES

Minerals	Location (Districts)	Composition of Ores (Percentage Ranges) Fe	P	S	Proved and Indicated Reserves (Million tons) Orissa	All-India	Possible (inferred) Reserves (Million tons) Orissa	All-India	Remarks
1. Iron Ores	Keonjhar[a]	2·95 to 4·92	0·05 to 0·088	0·002 to 0·030	988				[a] *Iron Ores in India* by M. S. Krishnan. The figures shown for reserves refer largely to Hamatite Ores.
	Sundargarh[a] (Bonai)	About 60·0	0·04 to 0·1	0·02	648		8,000[b]		[b] Bulletin No. 9—*Iron Ore, Iron & Steel* by M. S. Krishnan. The figure of 8,000 million tons includes deposits in Singhbhum district in Bihar.
	Mayurbhanj[a]	61·46 to 67·74	0·023 to 0·075	0·012 to 0·036	60				
	Cuttack[c]	66·60 to 69·38	..	..	31		130[d]		[c] Geological Survey of India: *The Economic Geology of Orissa.*
	Koraput[c]	60·50 to 62·70	0·23 to 0·33	..	10				[d] *Sukinda-Paradip Project* by Dr. H. B. Mohanty.
	Sambalpur[c]	55·0 to 60·0	0·31	..	50				[e] United Nations: *Survey of World Iron Ore Resources, 1955.* (The figure of 17,630)
	Total				1,787	5,316	8,130	17,630[e]	

(Contd. overleaf)

TABLE 22 (*Contd.*)

MINERALS OF ORISSA: DEPOSITS AND OCCURRENCES

Minerals	*Location (Districts)*	*Composition of Ores (Percentage Ranges)*				*Proved and Indicated Reserves* (Million tons)		*Possible (inferred) Reserves* (Million tons)		*Remarks*
						Orissa	*All-India*	*Orissa*	*All-India*	
		Mn	Fe	SiO_2	P					
2. MANGANESE	Sundargarh[a]	36·15 to 59·00	1·12 to 11·22	0·39 to 8·26	0·011 to 0·18					[a] *India's Mineral Wealth* by J. Coggin Brown and A. K. Dey.
	Keonjhar[a]	38·00 to 58·85	0·45 to 14·00	0·78 to 6·00	0·075 to 0·15					[b] Geological Survey of India: *Indian Minerals*, Vol. XI, No. 3.
	Koraput[b] (Kutingi)	44·34 to 55·42	1·12 to 5·02	..	Nil to 0·02					[c] These figures are not available but it is generally accepted that the possible reserves are several times the present estimated reserves.
	Bolangir[b] (Patna)	38·00 to 54·15	3·00 to 18·00	Nil to 8·60	0·036 to 0·103					
	TOTAL				10	125		..[c]	..[c]	
		Cao	MgO	R_2O_3	Insol					
3. LIMESTONE	Sundargarh[a] (Birmitrapur) and other areas	45·90 to 50·55	..	About 3 to 4	..	25 to 30		300[b]		[a] *India's Mineral Wealth* by Brown and Dey.
	Koraput[b]	25·35	19·18	0·20	14·72					[b] Bulletin No. 12 of G.S.I., series A—*Economic Geology*. Of the total reserves it is estimated that 21 million tons are first grade material and suitable for metallurgical purpose and about 69 million tons are second grade materials suitable for lime burning.
	Sambalpur[b]	21·28 to 49·84	15·24 to 20·04	..	..	23				
	TOTAL					..[c]	..[d]	..[c]	About 13,000[d]	[c] This total has not been stated as the reserves of Koraput are not known definitely.
										[d] The possible reserves in the country stated in *India's Mineral Wealth* amount to about 13,000 million tons (without Bihar for which no figures have been furnished).

			CaO	MgO	SiO_2	Fe_2O_3					
4.	Dolomite	Sundargarh[a] (Birmitrapur)	30·58	19·55	2·95	0·80	84[a]		250[a]		[a] *India's Mineral Wealth* by Brown and Dey.
		Sambalpur[a] (Koraput)	29·68	20·41	3·40	0·78	5[a]				[b] The extent of proved and possible reserves in the country is not known.
						Total	93	..[b]	250	..[b]	

			Moisture	*Volatile*	*Fixed Carbon*	*Ash*					
5.	Coal	Dhenkanal[a] (Talcher)	5·88 to 6·20	29·34 to 34·73	43·86 to 47·35	11·72 to 20·92	100[a]	N.A.	N.A.		[a] G.S.I.: *India's Coal Resources, 1957.*
		Sambalpur[a] (Rampur Hingir)	4·66 to 12·22	28·44 to 34·73	33·34 to 51·64	12·80 to 25·00	700[a]	N.A.	1845[a]		[b] The reserve figures refer only to Gondwana coals.
		Total					800	38,116[ab]	74,925[ab]		

			Cr_2O_3	SiO_2	Al_2O_3	FeO					
6.	Chromite	Keonjhar[a]	43·86 to 56·64	6·18 to 20·40	1·53 to 5·24	12·99 to 18·12	0·20				[a] Bulletin No. 7—Chromite, issued by G.S.I.
		Cuttack[a]	..	..	..	..	..				[b] *India's Mineral Wealth* by Brown and Dey.
		Dhenkanal[b]	..	..	..	..	0·120				
						Total				1·53[a]	

			Al_2O_3	Si	Fe						
7.	Bauxite	Sambalpur[a] Kalahandi[a] Koraput[b]	27·34 to 60·49	2·06 to 19·80	7·11 to 42·66	.. ..	0·85		3·00[b]		[a] G.S.I.: *Economic Geology of Orissa.* [b] This is a figure estimated by Mr. S. C. Chakrabarthy of G.S.I. but there are no published data confirming this.
						Total	0·85	25·77[c]	3·00	250·00[d]	[c] *India's Mineral Wealth* by Brown and Dey. [d] *Mineral Production in India, 1957.*

(Cotd. overleaf)

TABLE 22 (*Contd.*)

MINERALS OF ORISSA: DEPOSITS AND OCCURRENCES

	Minerals	*Location (Districts)*	*Composition of Ores (Percentage Ranges)*				*Proved and Indicated Reserves (Million tons)*		*Possible (inferred) Reserves (Million tons)*		*Remarks*
							Orissa	*All-India*	*Orissa*	*All-India*	
8.	CHINA CLAY	Keonjhar[a] Sundargarh[a] Sambalpur[a] Mayurbhanj[a] Koraput[b]	Not available					26·95[c]	..	..	[a] *India's Mineral Wealth* by Brown and Dey. [b] G.S.I.: *Economic Geology of Orissa.* [c] This total refers only to the reserves of Bihar and Madras as given by Brown and Dey. Reserves of other States are not known. The Orissa reserves are reported to be of a good quality.
			Silica	*Alumina*	*Iron Oxide*	*Lime*					
9.	FIRE CLAY	Sambalpur[a] Dhenkanal, Puri	50·34	34·30	1·00	Traces	N.A.	N.A.	N.A.	N.A.	[a] *India's Mineral Wealth* by Brown and Dey.
			TiO_2	V_2O_5	SiO_2	Fe					
10.	VANADIUM	Mayurbhanj[a]	14·00	1·26	2·30	82·44	9 to 10[c]				[b] Non-ferrous Metal industry in India—CSIR—1957. [c] This figure also includes the reserves of Singhbhum district in Bihar. [d] *India's Mineral Wealth* by Brown and Dey.
		Keonjhar[b]					0·05[b]				
11.	GRAPHITE	Kalahandi[a] Sambalpur[a] Koraput[a] Bolangir[a] Cuttack[b]	*Fixed Carbon* 55 to 60				N.A.	N.A.	N.A.	N.A.	[a] *India's Mineral Wealth* by Brown and Dey. Occurrences have been reported in these districts but the extent of the reserves is not known. No figures are available for the country's reserves. [b] G.S.I.: *Economic Geology of Orissa.*

12.	KYANITE	Mayurbhanj	The occurrence of these minerals has been reported in the districts mentioned but the quality and the extent of the reserves are not known.
13.	TITANIUM	Cuttack Puri	
14.	GOLD	Koraput Cuttack	
15.	MICA	Sambalpur Balasore Koraput	
16.	DIAMOND	Sambalpur	
17.	OCHRES	Koraput Puri	
18.	ILMENITE	Sambalpur	
19.	LEAD	Sambalpur	
20.	FELDSPAR	Sambalpur	
21.	BERYL	Sambalpur	
22.	GARNET	Sambalpur	
23.	STEATITE	Cuttack Koraput	

TABLE 23

NUMBER OF MINES IN ORISSA (1950–57)

Mineral	*1950*	*1951*	*1952*	*1953*	*1954*	*1955*	*1956*	*1957*
1. Iron Ore	32	32	32	32	32	32	32	32
2. Coal	6	6	6	6	6	6	6	6
3. Manganese	82	82	82	82	82	82	87	89
4. Graphite	5	5	5	5	5	5	3	8
5. Limestone	6	6	6	6	6	6	6	6
6. Dolomite	4	4	4	4	4	4	..	..
7. Kyanite	1	1	1	1	1	1	1	1
8. Asbestos and Vanadium	2	2	2	2	2	2	..	..
9. China Clay	5	5	5	5	5	5	6	5
10. Fire Clay	1	1	1	1	1	1	3	3
11. Chromite	4	4	4	4	4	4	6	6
12. Soapstone	3	3	3	3	3	3	..	1

TABLE 24

MINERAL PRODUCTION IN ORISSA (1950-57)

(Output in tons)

Name of Mineral	*1950*	*1951*	*1952*	*1953*	*1954*	*1955*	*1956*	*1957*
1. Iron Ore	1,527,301	1,822,747	1,724,640	1,665,239	1,793,632	1,881,537	1,769,831	2,054,281
2. Coal	375,850	482,111	459,481	489,982	525,403	551,968	603,131	532,290
3. Manganese	151,007	252,221	308,765	431,544	346,767	401,171	366,932	382,307
4. Limestone	706,700[a]	622,021[a]	1,126,382[a]	1,188,267[a]	1,071,999	1,101,204	1,049,344	1,362,599
5. Dolomite	48,146[a]	56,046[a]	49,668[a]	62,240	126,273	72,376	94,858	136,117
6. Chromite	2,259	1,598	16,901	31,380	14,011	70,457	45,734	68,970
7. Kyanite	..	63	1,169	..	167	224	223[a]	..
8. China Clay	3,111	3,640	4,424	4,249	4,957	3,878	11,173	17,466
9. Fire Clay	11,065	14,881	18,675	18,680	10,496	11,380	12,224	19,034
10. Salt	32,976	37,664	37,121	54,138	26,168	32,299	50,521	44,398
11. Graphite[a]	632	747	1,164	381	804	917	631	976
12. Steatite	184	55	577	70	..	65	18	129
13. Asbestos[a]	56	..	..	..	..	..	..	..
14. Kaolin	..	..	..	..	..	..	..	1,735

[a] *Quarterly Bulletin of Statistics*, Government of Orissa.
SOURCE: *Mineral Production in India*, 1957.