

## CHAPTER IV

### AGRICULTURE AND IRRIGATION

Kendujhar is primarily an agricultural district, agriculture accounting for 73.15 per cent of the total main working force (1981 Census). The practice of cultivation is still primitive and lands are mostly rainfed. Different agro-climatic regions of the district are as follows :—

INTRODUC-  
TION

Plain region of Baitarani river belt : the Anandapur subdivision comprising 3 Blocks comes under this region where the land is mostly plain with an altitude of 45 to 60 metres above the sea level. The soil type is alluvial with loamy structure. The water level is high and the area is agriculturally developed due to its soil fertility and water resources.

Hilly region of Bhuyanpirh : this region comprises of Hansapal, Harichandanpur and Telkoi areas of Kendujhar subdivision and Joda area of Champua subdivision. This region lies between the hill ranges of Gandhamardan and Kiriburu, having undulated topography intercepted with mountains and hills with altitudes ranging from 488 to 610 metres from the sea level. The soil type is red laterite with high iron content and acidic in reaction. The texture is mostly gravelly and sandy-loam. The soil is subject to heavy soil erosion, and lacks fertility. Moreover, shifting cultivation is done by the local tribal cultivators.

Sub-mountainous region of the western and northern part: this region comprises of Champua and Jhumpura areas in Champua subdivision and Kendujhargarh, Ghatagan, Patana and Saharpada areas of Kendujhar subdivision. This region is less mountainous, but hilly with gradual sloppy terrain subject to soil erosion. The valley pockets only have comparatively deeper soil and fertile patches.

The Orissa Agricultural Statistics of 1982-83, published by the Director of Agriculture and Food Production, gives a picture of land utilised in the district for 1982-83 as follows :—

LAND  
UTILISATION

Forest	..	4070 sq. km.
Miscellaneous (tree crops not included in net area)		30 sq. km.
Pastures and other Government land	..	380 sq. km.
Culturable wasteland	..	60 sq. km.
Land put to non-agricultural use	..	210 sq. km.
Barren and uncultivable land	..	180 sq. km.
Current fallows	..	250 sq. km.
Other fallows	..	100 sq. km.
Net area shown	..	3,030 sq. km.
The total geographical area	..	8,310 sq. km.

As stated in Chapter I, the forest area of the district as furnished by the CCF is 2,500 sq. km. and the geographical area of the district as given by the Survey of India is 8,240 sq. km. There is, therefore, a great difference in figures furnished by different agencies.

#### SOIL CONSER- VATION

Kendujhar district is severely affected by the magnitude of podu cultivation practices in hilly terrain of the district. Out of 8,329 sq. km. of rolling and undulating topography, 1,191 sq. km. are suffering from active soil erosion due to shifting cultivation. From recent satellite survey of the State of Orissa and from imagery map it has been estimated that 40,638.2 ha of the district have been affected by shifting cultivation. Besides shifting cultivation, there are large areas around Suakati, Joda and Barbil which are prone to accelerated soil erosion due to wide scale exploitation of minerals from the mines. The agencies which are mainly responsible for the soil erosion in the district have scant regard for soil conservation practices like contour bunding and terracing. Large scale exploitation of natural forest in the last two decades, improper land husbandry, unprotected pasture, are many factors which are responsible in bringing about two fifth of the area of the district under various types of soil erosion.

The erosion problem of the district can be broadly brought under two major heads, i. e. (1) Erosion in the cultivated land and (2) Erosion in the Government land. There is a large scale sheet, reel and gully erosion in private holdings. Large scale ravine erosion is seen in Kendujhar and Champua subdivisions of the district. Stream bank erosion and sand casting problems are also noticed in the district.

To combat serious soil erosion of the district many soil conservation schemes were launched particularly in the wasteland and denuded forest land which are the foci of soil erosion. The soil conservation programmes were initiated in the district in the year 1959-60 in a modest scale. The problem is vast, and with limited resources the soil conservation department has only touched the fringe of the problem.

Besides executing the soil conservation programme in Government wasteland the soil conservation programme has been extended to private holdings through Integrated Tribal Development Agency, Multistate Cashew Project, Agricultural Refinance Development Corporation and Bamboo & Sabai project sponsored by the NABARD authority.

Till the end of 1984-85 soil conservation measures like Cashew Plantation over 3,847 ha including 428 ha in private holdings, Sisal plantation over 170 ha have been done in Government wasteland, contour bunding, land reclamation and land development have been done over 12,779 ha. Because of the erratic rainfall caused by vagaries of monsoon in the district the crops are severely affected by drought

even during the rainy season. With a view to impounding water temporarily in small reservoirs, to provide life saving irrigation to paddy crops under erratic rainfed condition, the Soil Conservation department so far has constructed more than 250 numbers of water harvesting structures, farm pond and diversion channel of supplemental irrigation during the Kharif season over 753 ha. Some of the structures are also able to provide irrigation during Rabi through lift irrigation. Implementation of Economic Rehabilitation of Rural Poor Programme is in progress in the district and from 1980-81 to March 1985, 2055 ha of cashew plantation i. e. 1824 ha of existing and 227 ha of new cashew plantation have been distributed to 2527 numbers of beneficiaries i.e. (Scheduled Castes-408, Scheduled Tribes-1,522 and Others-597) in the district.

With a view to demonstrate better land use pattern according to land capability and to find out methods and techniques for increased production, one soil conservation demonstration centre over 85 ha was established at Sanghagara, 4 km. away from Kendujhar town in the year 1962. Subsequently in the year 1978 this farm was transferred to the control of the Orissa University of Agriculture & Technology as per the decision of the Government. So, another soil conservation demonstration centre over 21 ha at Raisuan which is about 7 km. away from Kendujhar town was taken up. In this centre trials are being made to evolve suitable cropping pattern, produce improved seeds, seedlings and other planting materials for proper land management practices in tribal and undeveloped areas. Conservation farming demonstrations are also being taken up. The cultivators are being imparted suitable training in soil conservation and on proper land use practices.

Soil Conservation Farm & Demonstration Centre

There are 13 Community Development Blocks in the district. Out of these, 10 Blocks come under tribal sub-plan area and three Blocks come under non-tribal area. At present there are 2 soil conservation subdivisions in the district, one at Kendujhar which deals with the soil conservation programme in ten Blocks and other one at Anandapur which looks after the soil conservation programme in 3 Blocks. In a recent rearrangement, two Blocks have been proposed for transfer to the control of the Assistant Soil Conservation officer, Anandapur. There is one Soil Conservation Officer in the rank of Class-I Agriculture service with headquarters at Kendujhar to supervise works of the above two subdivisions.

Organisation Pattern

The district being situated in the hilly tract the scope of traditional irrigation is very limited. It is known that only 15.37 per cent of the total cropped area has so far been brought under irrigation in the district. But these irrigated areas are mostly confined to the plain area of Anandapur subdivision leaving the rest areas for cultivation

Impact of Soil Conservation Programme on Agriculture

under rainfed condition. In the Sixth Plan attempt was made to improve the yield of crops through dry farming technique on mini-watershed basis. In this district 13 mini-watersheds have been identified and a detailed programme has been drawn up for 3 watersheds like Kaliapal, Gumura, and Kasianala. The work has been initiated in these three watersheds.

## IRRIGATION

The crop production in the district is mostly dependant on rainfall as irrigation facility is very much limited which is only 10 per cent of the net sown area.

The irrigation potentiality of the district from various sources during 1983-84 is given below:

Source		Area irrigated (in hectares)	
		Kharif season	Rabi season
Minor Irrigation project	..	9,000	3,280
Lift Irrigation project	..	3,200	2,400
Dugwell Tank	} ..	2,000	1,675
Other sources	..	3,793	2,937
Medium Irrigation	..	14,707	3,226
Total	..	32,700	13,518

The cultivable area of this district is 3,19,000 ha and as per master plan 1,51,000 ha can be brought under irrigation through major and medium projects. At the beginning of the 6th Plan period, area irrigated through major and medium irrigation projects was 4,220 ha. The total irrigation potential of the district is expected to be 18,740 ha by the end of the 6th Plan period which is 12.41 per cent of the ultimate irrigation potential of the district.

There were no major or medium irrigation projects in the district prior to 1948. In the meantime a number of projects have been taken up in the district for execution. The details of each irrigation project are given below.

## Salandi(part)

This is a reservoir scheme across river Salandi. The project was executed with the aid received from the World Bank. The latest estimated cost of the project is Rs. 1,637.91 lakhs. The project was started in the year 1961-62 and has been completed during the 6th Plan (1981-82). This project is providing irrigation to an area of only 10 hectares during Kharif season to the Hatadihi Block of Kendujhar district, and 41,950 hectares in Kharif season and 18,180 in Rabi season in Baleswar district.

This is a canalisation scheme of taking water from Bidyadharpur Barrage to irrigate an area of 40,180 ha during Kharif on the right side of the river Salandi in Baleshwar and Kendujhar districts. This project was started in the year 1975-76 and on completion will irrigate an area of 13,830 ha in Kendujhar district. The latest estimated cost of this project is Rs. 1,217.84 lakhs and the project is scheduled to be completed during 1985-86.

Anandapur  
(part)

This scheme envisages construction of Barrage to utilise the tail race discharge of Rengali Dam to irrigate lands in Dhenkanal, Cuttack and Kendujhar districts. The latest estimated cost of this project is Rs. 51,995 lakhs. This project on completion will provide irrigation facilities to an area of 6,310 ha during Kharif and 6,160 ha during Rabi in Kendujhar district. The execution of this project was started in the year 1977-78 and is likely to be completed during the 8th Plan.

Rengali Irrigation  
(part)

This is a medium irrigation project under construction aided by the World Bank. The latest cost of this project is Rs. 1,250 lakhs and on completion it will provide irrigation to an area of 3,900 ha during Kharif and 2,500 ha during Rabi to Ghasipura and Harichandanpur Blocks of Kendujhar district.

Remal

This is a reservoir scheme aided by the World Bank. The latest estimated cost of this project is Rs. 2,074.28 lakhs. The project on completion will provide irrigation facilities to an area of 9,800 ha in Kharif and 3,590 ha in Rabi to Patana, Kendujhar, and Ghatagan Blocks of the district.

Kanjhari

This is a reservoir scheme across the river Baitarani. The latest estimated cost of the project is Rs. 7,721.15 lakhs and on completion the project will provide irrigation facilities to an area of 26,620 ha in Kharif and 17,300 ha in Rabi. The project report of this scheme is in technical scrutiny with C. W. C.

Kanupur

This is a reservoir scheme across Kusei nala. The head-works of this scheme is situated in Kendujhar district and the ayacut is located in Kendujhar and Cuttack districts. On completion the project will irrigate 2,530 ha in Kharif and 960 ha in Rabi in Kendujhar district. The latest estimated cost of this project is Rs. 2,703.00 lakhs. The preliminary work of this project commenced during 1983-84. The project report is under technical scrutiny at C. W. C.

Kusei (part)

This is a reservoir scheme across Deo nala. The ayacut of this project is located in Mayurbhanj and Kendujhar districts. The project report is under scrutiny at C. W. C. On completion this project will

Deo (part)

irrigate an area of 3,200 ha in Kharif and 2,430 ha during Rabi in Kendujhar district. The preliminary work of this project commenced during the year 1984-85.

Upper Sama-  
koi

This is a medium irrigation project located in Kendujhar district. The project report of this project is under preparation. The preliminary work of this project was started during the year 1984-85. On completion the project may provide irrigation to an area of 8,000 ha in Kharif and 2,400 ha in Rabi in Telkoi block of Kendujhar district. The estimated cost of the project is Rs. 1,633.20 lakhs.

Future  
Projects

The future irrigation projects as per Master Plan and the Blocks to be benefited are given below.

Sl. No.	Name of the project	C. C. A. (in 000' ha)	Blocks to be benefited
1	Rengali Phase-II	27.4	Hatadihi
2	Jharpada	8.90	Jhumpura, Joda
3	Ovoroi	7.7	Jhumpura
4	Bhimkund	34.29	Saharpada, Ghatagan, Patana.

Soil

The soil texture of the district is sandy and gravelly, acidic in reaction, and lacks adequate nutrients. In highland condition, crops like short duration paddy, other millets, pulses, and oil-seeds are generally grown. In medium lands, paddy is taken up followed by pulses like gram, lentil, fieldpea and oil-seed crops like *til* and linseed. Paddy is usually grown in lowland condition. During 1983-84 the extent of different types of land in the district was as follows.

Highland ( <i>goda</i> )	1,49,432 hectares
Medium land	97,356.45 hectares
Low land	40,212 hectares

Crops

The chief crop of the district is rice, both wet and upland, winter crops of almost all the cereals grown in Orissa are cultivated here. Sugar-cane is grown chiefly in lower Kendujhar and pumpkins and vegetables are also extensively grown here. In upper Kendujhar, pumpkin, bean and brinjal are grown to a large extent. Minor millets are sown by the poor people on deteriorated lands to supplement their food before rice is harvested. Maize is grown extensively in upper Kendujhar. Tobacco and fibre crops are also cultivated to some extent.

Paddy cultivation covered an area of 1,85,024 hectares during 1983-84, out of which 41,123 hectares were under high-yielding variety paddy and 52,130 hectares under improved paddy. The rest 91,722 hectares were sown with the local variety of paddy. Rice

During Kharif season 70 per cent of paddy area is covered under direct sowing method and in the rest 30 per cent area transplantation method is followed. During Rabi season paddy is grown generally under transplanted condition.

Improved varieties of paddy, i. e., T-141, T-90, T-1242, T-1145 and high-yielding varieties like Parijata, Annapurna, Caveri, Padma, Jaya, Hema, Jagannath, MR 1550, Rudra, Sonta, Daya, Pratap, OR-42-10, Kishan, Kalinga-II, Subhadra, CR-1009, GNR-26, Samalis, and Falguna have been introduced in the district. But still these varieties have not replaced the local paddy varieties. Some of the popular local varieties are Suryakanti, Kalazira, Asamisuta, Pimpudibasa, etc.

Wheat cultivation has been lately introduced in the district and is cultivated in Rabi season under irrigated conditions. High-yielding varieties, viz., Sonalika, UP-262 and OW-6 are now being cultivated popularly in the district. Wheat

Maize is grown extensively during Kharif season under rainfed condition in the high lands and under irrigated condition during Rabi season. Local varieties are usually grown. Extensive efforts have been made to popularise and increase the area under hybrid maize and composite maize. The cultivation of composite maize has been proved to be popular among the tribal cultivators because of its short duration which enables to take a second crop like mustard by availing of the residual moisture in the land. Maize

In Kharif season pulses like *mung*, *biri*, *arhar* and cowpea are cultivated in the district. Extensive cultivation of pulses viz., *mung*, *biri*, *kulthi*, gram, field-pea, lentil, etc. is taken up in Rabi season. Pulses

Besides the local varieties, improved and high-yielding varieties which are gradually becoming popular among the cultivators are given below.

*Mung*—Pusa Baisakhi, T-44, K 851, Ratila, Selectia

*Biri*—T-9, T-66, P 5-1

*Arhar*—S 5, Pravati, UPAS-126

Cowpea—SEB-2, Raturaj, Swarna, Pusa Do Fasali, C-152

Gram—Radha, JG. 62, H-208

Fieldpea—T-163, Rachana

Groundnut, castor and *til* are grown in highlands during Kharif season. During Rabi season niger, mustard, groundnut, castor, sesamum, sunflower, safflower and linseed are generally cultivated Oil-seeds



Niger is taken up in fallow lands, and after harvesting of early rice. Mustard is usually grown under rainfed conditions. Improved varieties of oil-seeds grown in the district are mentioned below.

Groundnut—AK 12-24, M13

Castor—MP-H1

Seasamum—S-14

Mustard—M-27, B-85, Sufala, APM-Pusa Kalyan, Varuna, YSB-9,  
Pusa Bold

Sunflower—EC-68414

Safflower—A-300

Sugar-cane

Cultivation of sugar-cane is mostly confined to Anandapur subdivision. The farmers have been already used to improved varieties. During the recent years two other improved varieties, viz., Co-997 and Co-62175 have been introduced for cultivation in the district.

Jute and Mesta

Both capsularies and olitorious types of jute are cultivated extensively in Anandapur subdivision. Mesta is grown on high lands throughout the district. JRC-212, JRO-632 varieties of jute and HC-583 variety of mesta have been taken up by the cultivators of the district.

Ragi

Cultivation of ragi has been introduced in Kendujhar during the last 3 years. The improved variety like Dibyasingha is being cultivated.

Area covered by important crops grown in the district during 1983-84 are given below :

Sl. No.	Type of crop	Area covered (in hectares)	
		Kharif season	Rabi season
1.	Paddy	1,85,024	1,181
2.	Wheat	..	1,768
3.	Millets	4,976	..
4.	Pulses	23,143	38,332
5.	Oil-seeds	11,291	28,078
6.	Sugar-cane	562	224
7.	Vegetables	15,607	11,920
8.	Spices	668	1,468
9.	Fibre crops (Jute and Mesta)	8,065	..
10.	Maize	19,590	157
11.	Jower	1,645	..
12.	Bajara	573	..
13.	Ragi	6,659	..
14.	Other crops	1,264	924
<b>Total crops</b>		<b>2,79,067</b>	<b>84,052,</b>



Different types of vegetables are grown in the district throughout the year. During the Kharif season, brinjal, lady's finger, ridge-gourd, bitter-gourd, snake-gourd, pumpkin, beans, radish, tomato, etc. are cultivated. In Rabi season cabbage, cauliflower, kohlrabi, radish, tomato, beans, brinjal and potato are grown. During the summer lady's finger, pumpkin, bitter-gourd, cucurbits and other leafy vegetables are cultivated in homestead lands.

VEGETABLES

Fruit crops like mango, jack-fruit and guava are grown throughout the district. Besides, the wildy grown forest fruits like black-berry and Kendu are available in plenty during their fruiting season. Generally in homestead lands papaya, banana, litchi, lime and coconut are also grown to a limited extent. Fruits like mango, jack-fruit, guava, papaya and banana can be successfully cultivated as commercial crops in this district under irrigated conditions.

FRUITS

The State Government have taken steps to raise fruit orchards of mango, guava and jack-fruit in tribal cultivators' fields and the scheme has been financed by various development agencies.

Grafts and seedlings of different fruit bearing plants distributed to the cultivators during 1983-84 are given blow.

Name of fruit bearing plants	No. of grafts and seedlings distributed	
	(1983-84)	
Mango seedling	..	1,000
Guava seedling	..	4,898
Coconut seedling	..	1,371
Orange seedling	..	5,000
Banana socker	..	11,693

Agriculture in the district is not mechanised. The age-old wooden plough and several other implements to suit the local condition of soil and crop are in use. The country plough is the most commonly used implement. The use of improved agricultural tools and implements like mould board plough, plane hoe, Gujarat hand hoe, fork hoe, garden rake, etc., are confined to a few progressive farmers of the district. Number of popular improved implements sold on subsidised during 1978-79 is given below.

AGRICUL-  
TURAL  
IMPLEMENTS

Mould board plough	..	988
Share points	..	1,730
Gujarat hand hoe	..	87
French hoe	..	361
Garden rake	..	169
Rack weeder	..	192

Use of tractor is very much restricted in this district. During the past 10 years 70 tractors have been registered in the district out of which 34 tractors are with different Government agencies and the rest are owned by private parties.

ROTATION  
OF CROPS

Generally the cultivators follow the rotation of some crops. In non-irrigated conditions maize is followed by mustard; paddy by pulses; niger or other oil-seeds; minor millets by Kulthi; and Jute by paddy. In irrigated areas paddy is followed by another paddy crop, wheat, potato or vegetables.

Rational cropping patterns which are best suited to the local conditions have been developed for the district by the State Agriculture Department and during the past few years demonstrations have been conducted in cultivators' fields under various schemes. Such demonstrations have a good impact on the cultivators to create initiative for intensive cultivation. Gradually the farmers are adopting double croppings, inter-cropping and relay cropping practices.

SEEDS

Traditionally the cultivators take care for the production of quality seeds and seedlings. After harvest the crop is dried thoroughly and threshed. It is further dried in the sun for a few days and then stored. Leaves of some indigenous plants and also ash are mixed with the seeds as a precaution against pest attack. During recent years increased attention is being given to the quality of seeds and seedling for better production and to maintain the quality of high-yieldig varieties. The nucleus seeds are generally supplied by the Agriculture Department and also by the Seed Corporation of India. Previously the tribal farmers did not pay much attention to the quality of seeds. However, of late, use of improved seeds are gaining popularity among them.

Varieties of seeds of different crops which have become very popular among the farmers of the district are given below.

Name of crops	Varieties
Composite maize	.. Vijaya, Ganga-5
Mustard	.. M-27, Varuna, Pusa Bold, UP-262
Wheat	.. Sonalika
Potato	.. K. Chandramukhi, K. Dewa, K-Sundari.
Gram	.. JG 62, H-208, Radha
Green-gram ( <i>mung</i> )	.. Pusa Baisakhi, K-581
Black-gram ( <i>biri</i> )	.. T-9, Ratila, Hybrid 12-4
Cowpea	.. Sel-2
Sugar-cane	.. Co-997, Co-62175
Jute	.. JRC-212, JRC-632
High-yielding variety paddy	.. Annapurna, GMR-28, Ratna, Parijat, Jagannath, Hema, Caveri. Kaling II, Daya, Pratap, DR-92.

The soil of the district is generally poor in humus content and acidic in nature. So, addition of adequate quantity of organic matter in terms of compost is necessary for better yield. Cowdung still remains the principal manure. The farmers dump cowdung, the refuses of cattle-shed and other leftovers from the crop which form the farmyard manure. Oil-cake and silt of tanks are also applied in the fields. Green manuring is also done to some extent.

In order to educate the farmers in preparing quality compost the Agriculture Department conducts demonstrations and also trains the cultivators from time to time. Green manuring, green leaf manuring, etc., have also been taken up to some extent. Those who take to shifting cultivation burn the vegetation on the fields and the ash obtained is spread over the soil to fertilise the field. Leaving the land fallow for 2 to 3 years is another traditional method for restoring soil fertility.

Quantity of compost produced during the years 1982-83 to 1984-85 is given below :

Year	Urban compost production (in tonnes)	Rural compost production (in tonnes)
1982-83	207	5,04,748
1983-84	676	5,71,551
1984-85	..	4,41,315

The use of chemical fertiliser is only confined to a few progressive cultivators and the consumption is not significant as compared to some other districts due to poor economic condition of the farmers, lack of adequate credit facilities and want of sufficient irrigation facilities. The farmers generally apply fertilisers in paddy, wheat, maize, mustard, jute, sugar-cane, potato and some other vegetables. Nutrition-wise application of fertilisers during 1983-84 in terms of nitrogenous fertilisers was less than 4,000 grams, phosphatic fertilisers was less than 2,000 grams and potassic fertilisers was less than 1,000 grams per hectare.

The table below gives the consumption figures of chemical fertilisers from 1979-80 to 1983-84.

Year	Nitrogenous (in tonnes)		Phosphatic (in tonnes)		Potassic (in tonnes)	
	Kharif	Rabi	Kharif	Rabi	Kharif	Rabi
1	2	3	4	5	6	7
1979-80	320	150	210	88	78	60
1980-81	343	188	276	119	82	65
1981-82	353	193	285	116	99	89
1982-83	377	238	296	150	102	106
1983-84	523	468	333	234	128	150

**PLANT PRO-  
TECTION**

The crops are damaged by a number of pests and diseases. Besides, damage is also caused by wild animals and birds. Paddy crop is generally attacked by grass-hoppers, stem borers, jassids and gallmidge. Bacterial blight and blast are the common diseases of rice crop during the Kharif season. Leaf eating caterpillar and affids are generally found in maize crop. Groundnut is affected by ticca disease. Fruit and shoot borers and bacterial wilt are found in vegetable crops like brinjal, tomato, etc. Affids are the main problem of the mustard crop in Rabi season.

Use of modern insecticides and fungicides were unknown to the cultivators in the past. A number of superstitious practices were followed by the people to ward off the pest and crop diseases. Leaves, barks and ash of some indigenous plants with very bitter taste and smell are still used to prevent pests while storing grains.

Agriculture Department has made attempts to impress upon the cultivators in the modern techniques of agricultural practices. Gradually people are adopting scientific methods to control different pests and diseases. Some stocks of pesticides and plant protection equipments are preserved at the District headquarters and at Block-levels for supply to farmers. Cultivators are being persuaded to have their own plant protection equipments at subsidised rate and they are also motivated for seed treatment, rodent control and storage of grains in scientific method.

**AGRICUL-  
TURAL FARMS**

There are 4 seed multiplication farms in the district located at Kendujhargarh, and Bhagamunda in Kendujhar subdivision, and at Sangam and Gohira in Anandapur subdivision. Besides, a vegetable seed farm and progeny orchard is located at Kuanra at a distance of 28 km. from Kendujhargarh. A grape cultivation scheme and fruit nursery has been established at Champua.

The Regional Research Station is functioning at Kendujhar under the management and control of the Orissa University of Agriculture and Technology. Besides, an adoptive Research Station is also functioning under the control of the Deputy Director, Agriculture, Kendujhar.

**NATURAL  
CALAMITIES**

In the absence of sufficient irrigation facilities the agriculture of the district depends upon rainfall. But ill-timed and ill-distributed rainfall causes drought condition and serious damage to crops. Like other districts of Orissa, flood season commences here from July and continues till the middle of September. Excess rainfall during this period causes flood in Baitarani, the major river of the district. All its

tributaries and sub-tributaries remain in spate. This causes extensive damage in a major part of Anandapur subdivision. Flood in river Samakoi (tributary of the Baitarani) also causes damage in Telkoi area and some other parts of Kendujhar subdivision. A portion of Champua subdivision is also affected by flood when Hanumantia Nala and Bolani Nala remain in spate during the flood period. Besides droughts and floods, the district is affected by storms and depressions originating from the Bay of Bengal in the monsoon months and also occasional cyclones.

In the past, there have been recurring occurrences of natural calamities one after the other and the cumulative effect of all these have been acute distress for the people. Some of these important calamities which affected the district during the present century are given below.

The devastating flood of 1927 caused much damage in Kendujhar. Heavy rains on the 29th and 30th July 1927 caused high floods in the river Baitarani and its tributaries—the Aradei, Kalinjhara, Sita, Kukurkata, Musal, Mahan, Baunsmali and Kusei. All the three subdivisions of the district were affected severely. The intensity of this flood caused the river Baitarani to change its course permanently near Champua. Flood of 1927

Altogether 289 villages in the ex-State with an area of 33,846 hectares and 15,593 houses with a population of 83,635 persons, suffered from the floods. The calamity rendered about 4,779 hectares of land unfit for cultivation owing to heavy deposit of sand. Standing crop was lost over 8,218 hectares and 5,718 houses collapsed. The total number of people reported to have been drowned was 89. Mortality of cattle in all the three subdivisions aggregated to 3,124. The temple of Lord Dadhibaman Jiu at Rajanagarin Kendujhar subdivision was damaged beyond repair.

A sum of Rs. 1,705 was advanced for gratuitous relief. Rs. 30,000 was sanctioned for distribution as Taccavi amongst the people affected by the flood and Rs. 1,200 was given as help. Many voluntary organisations also rendered help liberally to the flood affected people.

There was deficiency of rainfall during 1953 and the Kharif crop failed. Out of the total 2,100 villages in the district 2,063 villages with an area of 2,04,384 hectares having a population of 5,61,873 were affected. The severity of the drought was seriously felt during 1954-55. Relief measures were undertaken to combat the situation in the district. Various development works, viz., renovation of tanks, construction of roads and buildings were undertaken to provide employment in the drought affected areas. Mid-day meal centres were opened to feed children and destitutes. Retail sale centres were opened to supply rice at a concessional rate. Drought during 1954-55

Flood of  
1955-56

There was a high flood in 1955 due to heavy rain which began from 28th August and lasted till 3rd September. The rivers Baitarani, Salandi, Kusai, Samakoi and other rivulets were in spate causing damages mostly to crops and dwelling houses. Nearly 4,100 persons in 53 villages were affected. The intensity of this flood was specially felt in Anandapur subdivision. Besides other relief measures, Rs. 19,710 was distributed as Taccavi loans to the people of the flood affected areas.

Again in 1956 there was flood and the damage was caused mostly in Anandapur subdivision. Crops in 4,842 hectares of land in 81 villages were damaged and 29,554 persons were affected. Rs. 50,000 was distributed as Taccavi loans to the flood affected people. 54 fair price shops were opened to supply necessities at a reasonable price. Labour intensive work was started to provide employment to the poor people.

Flood of  
1960

There was continuous rainfall in Kendujhar from the 13th August to 18th August in 1960 which caused high floods in Baitarani, Salandi and many other rivers. The low-lying land in Anandapur subdivision were seriously affected. Crops on both the banks of the river Baitarani, Aradei and Samakoi were also affected in Kendujhar and Champua subdivisions. On the whole 247 villages and 52,268 persons were affected. Out of 6,307 hectares of cultivated land affected by the flood, 1,418 hectares of land were sand-cast and 71 hectares were water-logged. 416 heads of cattle were lost.

The affected cultivators were granted Taccavi loans amounting to Rs. 50,000. Gratuitous relief to a sum of Rs. 70,000 was given to the people. Besides, test relief work and other development works were undertaken to provide employment to the labourers.

Flood of  
1961

There were floods in the river Baitarani and Kusei on three occasions viz., the 7th, the 13th and the 29th in the month of September 1961. The standing Kharif crop was mostly affected alongwith 79 villages in Anandapur subdivision. A cropped area of 3,749 hectares was damaged, of which 581 hectares were sand-cast, 1,662 hectares water-logged and 1,384 hectares were washed away by the flood. House building grants and relief were granted to the affected people. Relief works were undertaken to provide employment to the flood-stricken people.

Drought of  
1965

In 1965 the monsoon was erratic and rainfall scanty in as many as twelve out of the thirteen districts of the State. The result was that practically the entire State was adversely affected. Crops failed in 13 Blocks of the district. The Kharif crop was completely damaged in 4,618 hectares and partly damaged in 1,11,325 hectares.

To meet the drought situation different categories of relief operations were taken up in the drought-affected areas. Steps were taken to provide work to the able-bodied and for the supply of water in the scarcity areas. Gratuitous relief to the needy and financial assistance to the cultivators in the form of loans were granted. Besides, remission and suspension of land revenue, suspension of collection of loans, supply of rice at fair price shops, etc. were also ensured.

Rs. 1,43,228 was spent for 36 labour-intensive works and Rs. 18,862 was given as subsidy to the Grama Panchayats of Ghatagan Block for pisciculture tanks and Rs. 51,375 was given as pisciculture loan. Rs. 1,72,500 was sanctioned under A.L. Act and L. I. L. Act.

Close on the heels of severe drought there was heavy rainfall in July and in the first part of August 1975. Heavy precipitation in the catchment areas of Baitarani, Salandi and other rivers was the cause of high flood which crossed danger levels between the 18th and the 22nd August. There were several breaches in the embankments and flood water inundated extensive areas in this district and caused heavy damage to home-steads, institutions, crops, roads, bridges, embankments and irrigation works, besides causing loss of human lives and cattle. The Blocks of Banspal, Telkoi, Patana, Jhumpura, Champua and Saharpada were cut off from the district headquarters. 817 villages with a population of 223,757 were affected by this flood and 9,883 houses were damaged. 16,000 hectares of cultivated area was affected. 9 persons lost their lives and the total valuation of live-stocks lost was Rs. 64,331. Adequate relief measures were undertaken by the Government. The amount made available for meeting the expenses under various heads, besides the feeding programmes, are given below:

Flood of  
1976

	( Rs. )
1. Test relief ..	6,08,383
2. Gratuitous relief ..	4,64,500
3. House building grant (flood) ..	1,68,300
4. Disbursement out of Chief Minister's Relief Fund	1,59,000
5. Taccavi loans ..	8,50,000

At 4-30 p. m. on the 16th April, 1978 a devastating tornado lashed Kendujhar and Cuttack and within a short time marooned several villages and took the inhabitants unawares. In the district of Kendujhar 10 villages were affected, out of which 7 were severely damaged. Loss of human life and property in Purunabandhagoda, a village in Saïnkula police-station of Anandapur subdivision, was the highest.

Tornado of  
1978



The affected villages of the district with the loss of human lives, cattle and number of houses damaged are given in the table below.

Name of village	Human loss	Cattle loss	House damaged
Purunabandhagoda ..	140	281	145
Balibandha ..	2	21	31
Barang ..	6	107	132
Tigiria ..	7	64	95
Karadamali ..	7	281	45
Sapuasahi ..	3	40	39
Narada ..	2	12	56
Gudjadihi ..	..	1	37
Modubahal ..	..	..	21
Nuhamali ..	..	12	37
<b>Total:</b> ..	<b>167</b>	<b>819</b>	<b>638</b>

Besides private houses, 26 public institutions like schools, grain-golas, Government offices, etc., were also damaged. Electrical installations within that zone were severely affected. All the trees and orchards were destroyed.

#### Relief measures

Rescue and relief operations were undertaken immediately after the devastation. The injured persons were rescued and removed for treatment to the hospitals at Barpada, Anandapur, Jajpur Raod, Kendujhar and Cuttack. The dead bodies and carcasses were recovered from the debris and disposed of with the help of sweepers, social workers, labourers and police-men. Immediate water supply arrangement was made through tankers by the Public Health Department and the Fire Brigade. The tractors and bulldozers and other equipments of Salapada Irrigation Circle were utilised for clearance of debris and de-watering of the wells and tanks in the affected villages which were also disinfected by the Public Health staff. A temporary medical aid centre was opened in a tent at Purunabandhagoda for giving treatment to the injured persons. After the disposal of the carcasses a veterinary doctor with staff provided medicines and other aids to the injured and incapacitated cattle surviving the tornado.

A total number of 341 tornado affected persons were given treatment in the hospitals at Barpada, Anandapur, Jajpur Road, Kendujhar and S.C.B. Medical College, Cuttack. The Specialists of the Medical College also visited Anandapur hospital where a large number of affected persons were under treatment.

Tents, tarpaulins, and gunny bags were immediately distributed among the affected people for provisional accommodation. These articles were collected from different sources including the Red Cross organisation. Temporary structures were set up by the R. E. O., Salapada Irrigation Circle, O. M. C., and FACOM.

Free kitchen was organised by the Government in village Purunabandhagoda and Bilabandha. The FACOR also opened a free kitchen in village Karadamali and the Budhiraj Company opened a free kitchen in village Sapuasahi.

Relief camps were opened in the villages of Purunabandhagoda, Tigiria, Baranga, Karadamali and Sapuasahi. Officers and staff were posted in each relief camp. Moreover, a Central relief camp worked in the village Purunabandhagoda with tented accommodation for stores, information centre, etc. A temporary office also started at Ramachandrapur P. W. D. Inspection Bungalow for monitoring relief and rescue operations. In addition to the relief materials given by the Government, there was a flow of relief materials from semi-government and private organisations. The relief operations were conducted by the Officers and staff of Kendujhar district. Revenue Divisional Commissioner, Northern Division and the Member, Board of Revenue, Orissa, Cuttack also camped at Ramachandrapur.

Rice rations and money @ Rs. 2 per adult and Re. 1 per minor was given by the Government for a period of one month to the affected people. Chura, Atta, Dal, salt, potato, Gur, etc. were also distributed by the Government. Milk powder and biscuits were also distributed. Lanterns, kerosene oil, buckets, Dhotis, Sarees, cooking sets, utensils and umbrellas were also given. A total quantity of 102 quintals of rice, 105 bags of Chura, 90 quintals of Atta, 17 bags of salt, 16 Chakis of Gur, 50 cartons of milk powder, 50 tins of biscuits, 463 lanterns with 7 tins of kerosene oil, 769 mats, 119 tents, 1,820 bamboo mats, 563 buckets, 984 Dhotis, 424 Sarees, 3,806 metres of cloth, 114 napkins, 2,055 garments, 999 Thalies, 599 Dekchis, 809 Ginas, 682 Tatias, 1,003 glasses, 100 utensil sets, 45 cooking sets, 266 mugs, 980 empty gunnybags, 198 umbrellas, 27 spoons and 91 packets of candle were supplied to the affected people through the relief camps.

In addition to the relief measures of the Government, a number of voluntary organisations distributed food stuff and relief materials to the affected people either through Government agency or through their own volunteers. The Indian Red Cross Society, State Branch, Bhubaneswar distributed 100 sets of kitchen utensils, 70 packets of biscuits, 55 tins of baby food, 40 cartons of milk powder, 3 packets of assorted used cloth,

5 packed bundles of Dhotis and Sarees and 175 tents to the affected people through the Government agency. The State Social Welfare Board and the Samaj Mangal Board and several other organisations helped the affected people.

A sum of Rs. 7,297.41 was also received towards cash donation from different persons and organisations. This amount was deposited in the Chief Minister's Relief Fund.

Soon after the tornado the electric generating set of the Salapada Irrigation Circle was kept in the village Purunabandhagoda which facilitated rescue and relief operations to a large extent. 21 tube wells were also sunk in the affected area by the Public Health Department which solved the problem of drinking water as a permanent measure. Fair price shops were opened in the affected villages through the Supply Department in which foodgrains, kerosene oil and other articles of daily use were made available to the affected people. The Superintending Engineer, Salapada Irrigation Circle, also constructed a hall with G. C. I. sheets for giving shelter to the affected people of Purunabandhagoda. The CASA Organisation constructed semi-permanent houses in the village Balibandha for the affected people.

Immediate assessment was made in respect of the damaged houses. It was decided that in the village Purunabandhagoda permanent houses will be built by Government. In other villages house building grants were given @ Rs. 500 per house fully razed to the ground, Rs. 200 per house fully collapsed and Rs. 100 per house partly collapsed. Ex-gratia grant was also given @ Rs. 1,500 each where the earning member of the family died in the tornado. Test relief operations were started for giving employment to the affected people and also A. I. loans were given for purchase of bullocks and seeds which were immediately necessary for agricultural operations. The amounts sanctioned by Government under different relief measures and the expenditure incurred on each item is given in the statement below:—

Sl. No.	Name of the Unit	Amount received (in Rs.)	Expenditure incurred (in Rs.)
1.	Test Relief ..	1,00,000	1,00,000
2.	House Building Grant ..	2,00,000	1,92,442
3.	Gratuitous Relief (Food & Clothing)	2,02,852	2,02,850
4.	Ex-gratia payment ..	1,07,000	1,07,500
5.	Transporting charges ..	33,000	33,000
6.	Bullocks & Seed Loan ..	2,00,000	2,00,000

People gradually recovered from the shock and life returned to normalcy within a fortnight. It was considered that permanent measures, like, afforestation of the denuded hills and the reserved forest areas and creation of shelter belts should be made so that in future these green patches will reduce the effect of tornado and cyclones. Estimates were prepared for restoration of electric lines, public institutions, minor irrigation projects, roads, etc., besides the construction of permanent houses in the affected villages. Central Plan assistance to the tune of Rs. 191.56 lakhs was released by the Government of India on different accounts.

Another devastating tornado racked the district on 17th April 1981 during 2 p. m. to 3 p. m. which devastated 12 villages of the Patana and Saharpada Blocks. Out of the total population of 8,503, 5,783 people were affected by the tornado. The calamity took a toll of 37 lives and injured 721 persons. 136 houses were razed to the ground, 205 houses collapsed and 358 houses were partly damaged. Total number of casualties of cattle and poultry was about 3,000. The fierce wind uprooted about 42,000 trees in that area.

Tornado of  
1985

The Government gave immediate relief to the affected persons. Rs. 45,000 was spent to give emergent relief for 15 days to the affected people. Besides, the Board of Revenue and some voluntary organisations sent provisions for the victims. Rs. 90,600 was spent as house building grant among 453 beneficiaries. 259 temporary sheds were constructed at a cost of Rs. 40,000. Tents and tarpaulins were supplied for providing temporary shelters. From the Chief Minister's Relief Fund 26 bereaved families received ex-gratia grant amounting to Rs. 39,000. 72 seriously injured persons received Rs. 36,000 as financial assistance and 144 injured persons received Rs. 17,000. 322 school students and 7 college students received Rs. 16,800 as financial assistance. 22 tube-wells were constructed at a cost of Rs. 3,13,320 and forest materials worth Rs. 1 lakh were supplied for the relief operations.

Out of the total live-stock population of 11,08,000 (1982 live-stock Census) in the district, the cattle population is estimated at 6,10,000 heads inclusive of cows, oxen and calves, but exclusive of buffaloes, sheep and goats. The natural result of such a large number of cattle is reflected in the poor health and small size of bullocks which are not very efficient for agricultural purposes and cows whose milk yielding capacity is very low. The excessive cattle population has resulted in the uneconomic proposition of maintenance of superfluous cattle.

ANIMAL  
HUSBANDRY

Domestic poultry farming is prevalent widely among the Scheduled Castes and the tribal communities. Birds and eggs are sold by the local people in the weekly markets. Piggery is also widely prevalent mainly among the Scheduled Castes and the Scheduled Tribes. Goats and sheep are reared for table purpose.

The live-stock and poultry population (according to live-stock Census, 1982) of the district is given below :—

Cattle	..	6,10,000
Buffaloes	..	46,000
Sheep	..	94,000
Goats	..	3,16,000
Pigs	..	17,000
Others	..	25,000
Poultry		8,55,000

#### Animal Feed

The pastures and grazing grounds available in the district are not sufficient for all categories of animals to graze for the whole year. There are extensive areas of forest and wastelands and plenty of green grass for the cattle to graze during the rains. Every village has its own pasture (*gochar*). Acute shortage of green grass is felt after the rains and the animals remain underfed during the summer months depending mostly on paddy straw.

To substitute the shortage of natural pasture, fodder cultivation has been taken up in the district. Seeds of improved varieties of fodder like M. P. Chari, Barseem, Dinanath, Cowpea, Maize, etc. are being distributed free of cost along with fertilisers among the intending cultivators. Fodder cultivation covered an areas of 102 hectares during 1978. A fodder seed production farm has been established at Salapada to meet the requirement of seeds.

Agricultural by-products like rice bran, wheat bran, edible oil-cakes and pulses like *biri* and *kulthi* are also consumed as cattle feed. Premixed cattle and poultry feeds are sold to a limited scale in the district.

#### Milk-supply

Milk yield of the local cows is very meagre and they remain dry for most part of the year. Generally the cows are neglected and preference is given to bullocks because of their utility in agriculture. Till recently no systematic attention was given by the local people for improved breeds.

Established since 1946 at Kendujhar town, the dairy farm of the ex-State of Kendujhar has been converted into a breeding farm which, apart from catering to the milk need of the area, produces improved stock suited for breeding purpose. During 1979 there were 128 cattle in the farm including 26 milch cattle. The average milk yield of the farm was 130 litres per day.

Besides, the farm supplies cross breed bulls to the Utkal Gomangala Samiti for upgrading the local breed of the district.

During recent years steps are being taken by the Government through various development projects to develop dairy farms on a commercial basis. To organise marketing of milk, milk producers co-operative societies have been formulated in the district since 1977.

An Integrated Dairy Development programme called Operation Flood-II Project has been launched by the India Dairy Development Corporation in Orissa since January, 1981. Kendujhar is one of the 4 districts selected for this project. The project is being implemented by a 3 tier co-operative organisation on the Anand pattern, i. e. Milk Producers' Co-operatives at the base (village level), District Milk unions at the district levels and Orissa State Co-operative Milk Producers Federation at the apex. The project aims at enhancement of milk production through genetic up-gradation of indigenous cattle, scientific dairy management and marketing of the surplus milk. The apex body is known as OMFED. It has been entrusted with the implementation of this project.

The Kendujhar District Co-operative Milk Producers' Union Ltd, was registered on the 22nd December 1978 prior to the implementation of Operation Flood-II Programme in the district. It is an affiliated member of OMFED. This union has three milk chilling centres, one at Anandapur of 500 litres per day capacity, one at Raisuan of 2,000 litres per day capacity and another at Sillisuan of 10,000 litres per day capacity. Till the end of March 1985, 49 milk producers' co-operative societies have been organised in this district bringing 1,589 farmers and members together into its co-operative fold. The total investment of Kendujhar milk union is Rs. 77 lakhs. The total milk procurement was 1,61,240 kg. in 1981-82, 2,43,240 kg. in 1982-83, 1,97,960 kg. in 1983-84 and 2,75,260 kg. in 1984-85. The milk was supplied to local marketing centres. There have been an increase of 39 per cent in milk procurement and 178 per cent in milk marketing in 1984-85 over the year 1983-84. Besides the union has done 6,480, artificial inseminations with frozen semen in 34 artificial insemination centres.

The local breeds of cattle are generally stunted in growth and are poor in quality. Bullocks and buffaloes are employed in ploughing and pulling carts. Cows and she-buffaloes are maintained for milk purpose. In the past, steps were being taken to improve the local breed of cattle with Haryana and Red Sindhi bulls. During recent years Jersey breed has been successfully introduced in the district. Cross breeding is mostly done by artificial insemination. The semen collection centre having 10 bulls of Haryana and

Cattle  
Breeding

Jersey breeds meets the requirement of the district served through artificial insemination centres and 11 veterinary dispensaries having provision for artificial insemination. Besides the District live-stock breeding farm located at Kendujhar, there are graded bulls for supply to different centres through the Utkal Gomangala Samiti for upgrading local cattle.

Pigs

As per the Census of 1982, there were 17,000 pigs of indigenous variety in the district. These small sized pigs are found mostly in tribal villages. Pork is not popular among the inhabitants of the district and is mostly exported to outside markets.

Keeping in view the marketing facilities in Rourkela and in neighbouring townships—Joda and Barbil a special live-stock programme for development of piggery was sponsored by the Central Government towards the end of the year 1975-76 for the benefit of Scheduled Castes and Scheduled Tribes people as pigs are very first breeders. Government of India are providing 50 per cent Central Assistance. Subsidy in the usual Integrated Rural Development Programme pattern is also provided to small and marginal farmers, agricultural labourers and tribals. The unit cost of the scheme is Rs. 3,870 for each beneficiary which includes the cost of 3 sows, feed, equipments and shed. Achievement during the 6th Plan period (April, 1980 to March 1985), year-wise is indicated below :

Year	Achievement (No. of beneficiaries)
1980-81	97
1981-82	156
1982-83	102
1983-84	62
1984-85	..

To implement this project one Project Officer, one Assistant Project Officer with five Livestock Inspectors are working.

Goats and  
Sheep

The huge goat population of the district belongs to the Black Bengal variety. The quality of meat of this local breed is good. Steps are being taken by the State Government through various development agencies to popularise goat rearing and also to improve the local breed. Eight hundred units, each consisting of 4 country does have been supplied among the poor and marginal farmers of the district. Beta! bucks from Ganjam district have been supplied to the villages for breeding purpose. A small goat farm has been



established at the Suakati Ashram School which has also been provided with 4 does and a buck of improved U. P. variety to upgrade the farm products.

The local non-wooly type of sheep are reared only for table purpose. To improve the local breed steps have been taken recently by supplying 10 units consisting of 40 upgraded sheep with Bikaner rams for improvement.

Poultry keeping is widely prevalent in the district, especially among the Scheduled Tribes and the Scheduled Castes. The local birds are small in size and require no special care for rearing. Being shy layers, the country birds are mainly used for table purpose. The cocks are usually sacrificed by the Adivasis on ceremonial occasions and also offered to the tribal dieties.

Poultry

In order to improve the local breeds by cross-breeding with improved species and also to attract the people for keeping poultry for profit, various schemes are being implemented by the Government. Improved varieties of R. I. R. and White Leghorn breeds have been introduced in the district. A poultry farm has been established at Harichandanpur having 530 birds mainly for the production of hatching eggs. There are 3 more poultry units located at Matkhambeda near Barbil having a total strength of 205 birds. Besides, there is one unit at Kendujhar having 83 birds and another at Anandapur having 98 birds.

The district has a number of hill streams, rivers and the Bhairabpat swamp which are natural sources of fish supply in the district. Moreover, a water area of about 780 hectares is available from the tanks. The irrigation projects have also created a water area of about 260 hectares suitable for pisciculture.

FISHERIES

About 226 tonnes of inland fish was produced in the district during 1982-83. Being insufficient for internal requirement, a like quantity of marine fish is imported from Paradeep. Moreover, a considerable quantity of dry marine fish is imported from the coastal districts.

The State Government maintains 4 fish farms in the district located at Digdan, Musakhuri, Machhalo and Telkoi. Out of these four, fry breeding has been taken up only in Digdan and Musakhuri. For the development of pisciculture due attention is to be given to the Grama Panchayats as 71 per cent of tanks in the district are under their control.

Fish Farms

Fishing  
Implements

Since fishery resources in the district are limited, popularisation of improved types of costly fishing implements have little effect over the fishermen of the district. Traditional fishing implements like cast nets and other fishing nets and traps are in common use.

IMPORTANCE  
OF FOREST IN  
THE ECONOMY  
OF THE  
DISTRICT

The forest of this district is rich in both major and minor forest produce. Sal, which commands the most certain market is available in considerable quantities and in all sizes. Of the miscellaneous species *piasal*, *sissoo*, *kurum*, *asan*, *dhawra*, *kasi*, *phasi*, *rajmahi*, etc., are also available.

Most of the sal logs are exported to the Calcutta market. Coal fields lie within a distance of 320 km. by rail from Jamda and provide a market for pit props, poles and small timber. Jamshedpur is a good market for fire wood and charcoal of the Kendujhar forest division.

The important minor forest produce of the district are Kendu leaves, Genduli gum, lac, tasar, tamarind, nuxvomica and Patalgaruda.

Timber for plough and other agricultural implements, poles for house building, bamboo for roofing, fencing and basket making, and fuel constitute the main requirements of local peasantry. The needs of the population in respect of other minor produce are chiefly edible fruits, seeds and sal leaves for use as plates

Up to 1930 sal sleepers had been the main product of the ex-State of Kendujhar but from the year onwards, with the introduction of Mooney's plan, considerable quantities of small timber and fuel had been sold from the coppice coupes of Anandapur and Champua ranges. In Champua range due to the development of mining industry and the proximity to the industrial area of Jamshepur and the coal mines the demand still exceeds the supply. In Anandapur range the coppice coupes are unable to cope with the local demand for fire-wood. There is also a great demand for timber in Baleshwar and Cuttack districts, which can be met from the forest of this district. The potential markets of this district are (1) Indian Railways, (2) Jamshedpur, (3) Calcutta, (4) Coal Fields, (5) Baleshwar and Cuttack districts. Certain local industries get their supply of raw materials from the forests. Such industries are cart making, basket making, matting and tasar cloth.

A considerable number of labourers find employment in various works connected with forest. Both the State Government and the forest contractors employ the local labourers in roadwork, tree plantation, and in operations like felling, logging, loading and transport of timber.

The most valuable forest produce of the district is *sal*. The other important species are *piasal*, *sisso*, *kurum* and *mundi*. Bamboos occur in small quantities. The important minor forest products are *kendu* leaf, lac, tasar, genduligum, sabaigrass, *mahul* flowers, sal seeds, tamarind and mirabolan.

Yield of forest produce like timber, fire wood, other minor forest produce and the revenue earned in Kendujhar Forest Division from 1977-78 to 1981-82 is given in the tables below :

Yield of Forest produce

Year	Timber (in '00 cu. m.)	Fire wood (in '00 cu. m.)	Other minor forest produce (in Rs.)
1977-78	257.23	299.71	7,13,404.00
1978-79	214.04	573.89	6,43,856.00
1979-80	272.11	643.85	8,27,680.00
1980-81	248.90	592.70	6,49,206.00
1981-82	134.88	516.94	11,33,620.00

Revenue and Expenditure

Year	Revenue (in Rs.)	Expenditure (in Rs.)
1977-78	1,02,69,072.61	16,34,553.60
1978-79	1,16,415,52.50	42,09,924.97
1979-80	1,63,36,713.41	24,54,545.44
1980-81	1,88,28,245.94	26,81,537.90
1981-82	1,61,96,738.42	30,56,105.49

Production and sale value obtained from Kendu leaves from 1981 to 1984 in Kendujhar district are as follows :

Year	Production (in quintal)	Sale value obtained (in Rs.)
1981	6,319.20	25,88,976.20
1982	6,443.60	23,37,093.80
1983	6,093.00	31,47,643.80
1984	8,157.00	39,32,897.50