

**FISHING****Coverage**

- 11.1 In the national accounts, activities covered in the fishing sector are (i) commercial fishing in (a) ocean, coastal and offshore waters and (b) inland waters, that include catching, tackling and gathering of fish from rivers, irrigation and other canals, lakes, tanks, fields inundated tracts etc., (ii) subsistence fishing in inland waters and artificial ponds, (iii) gathering of sea weeds, sea shells, pearls, sponges and other ocean and coastal water products and (iv) fish curing viz., salting and sun-drying of fish. In order to cover the production of goods for own consumption, as recommended in the System of National Accounts (SNA), subsistence fishing has been included in the coverage. Activities of salting and sun-drying of fish are also included in this sector, since these are undertaken predominantly by the same households, which are engaged in commercial/subsistence fishing.
- 11.2 According to the National Industrial Classification (NIC) 1998, the activities that are covered in the fishing sector under NIC code 050 are (i) fishing on commercial basis in ocean, sea, coastal areas and inland waters, (ii) gathering of marine materials such as natural pearls, sponges, coral and algae, (iii) fish farming, breeding and rearing including operations of hatcheries for fin and shell fish, mollusks, aquatic plants and cultivation of oysters for pearls or food, and (iv) service activities related to marine and fresh water fisheries and to operators of fish hatcheries or fish farms.
- 11.5 The estimates of production from coastal marine sector are compiled through a sample survey in all the maritime states. The marine fish landing takes place all along the coast line in all seasons. The data on production of marine fish is collected through a stratified multistage random sampling (stratification being over space and time). The stages of selection of sampling units are (i) fish landing centres, (ii) days within a month, and (iii) fishing vessels/craft for weighment of fish landed. The survey is conducted consecutively for two days in each centre adopting both enquiry and observation methods. On the fixed time of observation, the landings of first 10 fishing vessels are enumerated completely. When the fishing vessels exceed ten in number, then additional units are selected as (i) every second unit in next ten, (ii) every fifth vessel upto 50<sup>th</sup> and (iii) every tenth vessel thereafter. Night catches between the first and second day are ascertained by contacting fishermen and local persons at the landing centers. The sampling design for collection of marine fish data has been developed by the Central Marine Fisheries Research Institute (CMFRI), Kochi.
- 11.6 For estimating the inland production, each state is divided into 3 zones or strata based on the fish culture practices, rainfall, temperature, soil condition and other geographical parameters. A sample of three districts from high rainfall stratum, sample of two districts from moderate rainfall stratum and one district from low rainfall stratum are selected. The sampling frame of all the selected districts is prepared by enlisting all the villages of each district. This frame is further divided into 3 strata in such a way that the number of villages in each stratum is nearly equal. From each stratum within a district, six villages (called key villages) are selected at random from the list of villages. A random sample of 4 villages surrounding each of the key villages, are then selected. In this way, a sample of six clusters of 5 villages each in a stratum is selected. A cluster of villages will constitute the first stage unit and the ponds within cluster as the second stage unit. Selected villages are surveyed completely and all the water units in the village are enumerated by physical observation for estimating the average area under water units. After completing the above information, a random sub-sample of 5 water bodies are selected from each cluster for observing fish catch

**Method of Estimation of Gross Value Added (GVA)**

- 11.3 In the national accounts, the GVA from the fishing sector is estimated by the production approach. It involves the estimation of total value of output at factor cost and deducting therefrom the value of various inputs at purchasers' prices which are used in the process of production. The estimates are prepared at the State level.

**Sources of data**

- 11.4 The sources of data on fisheries statistics are the State Fisheries Departments (SFDs). The data on fish production is captured under following the categories:
- (i) marine – (a) coastal marine  
(b) deep sea; and
  - (ii) inland – (a) aquaculture  
(b) capture fisheries.

from the sub-sample of water units. Further sampling in time is also adopted so that each water unit is visited at least once in a month for recording the catch more accurately and for providing for estimates of monthly catches. This sample is used for estimation of catch of fish from this class of resources. The sampling design for collection of inland fish data has been developed by the Central Inland Fisheries Research Institute (CIFRI), Barrackpore, West Bengal.

### Estimates at current prices

#### Value of Output

- 11.7 **Marine fish:** Data on estimated landings of marine fish, prices and value of fish catch are directly obtained from the SFDs of maritime states/union territories. For the estimation of marine fish production almost all maritime States follow the statistical sampling design. The produce of prawns is separately valued.
- 11.8 **Inland fish:** The data on inland fish production are also supplied by the SFDs. By and large the estimates are prepared on the basis of market arrivals of fish or on the basis of surveys conducted in selected landing centers; the key information that is used in collecting data on inland fish is on the data in respect of inland water bodies. The produce of prawns is separately valued.
- 11.9 **Subsistence fishing:** The data supplied by the SFDs includes production from subsistence fishing, in the case of most of the states. For other states, it is estimated at 12.5 per cent of inland fish production. This ratio has been arrived at on the basis of type studies conducted by few state Governments.
- 11.10 **Salting, Sun-drying and Frozen Fish:** Most maritime states resort to allied activities of fish curing, which include salting and sun drying of fish. The data on quantities and prices of fish let-in (raw fish going into salting, sun drying and frozen purposes) and fish let-out (the resultant salted, sundried and frozen fish) is also available from, the SFDs.
- 11.11 **Other products:** Data on producer prices and value of output in respect of gathering of pearls, chanks, oysters, sea-weeds, lime-shells, sea-shells etc., are not available, as such these are not included. However, from the available data from few states, it is assessed that the contribution of these activities is not significant.

- 11.12 **Prices:** For working out the value of output, the average annual auction prices of marine fish (species wise) collected by the SFDs at the landing centres and the inland fish prices reported by the SFDs from the assembling centers, are used.

#### Value of input

- 11.13 In the absence of any data based on scientific studies, it has been assumed, after consultation with the SFDs that the operational costs and repairs and maintenance in the case of marine fish, prawns, inland fish and subsistence fish, form 22.5 per cent, 22.5 per cent, 10 per cent, and 1 per cent, respectively of the corresponding items' values of output. For the activity of sun-drying and salting of fish, the inputs are assumed to be 1 per cent of the value of output. Operational costs broadly include expenditure on boats (mechanised and non-mechanised), trawlers, liners, fishing gears, gillnets, trawl-nets, cast-nets, traps, other bag-nets, consumption of diesel etc. The value of inputs is estimated at the State level.

#### Estimates at constant prices

- 11.15 The current catch of marine fish, inland fish and subsistence fish are valued at constant (1999-00) prices for the estimation of the output at constant prices. Similar treatment is given to data on fish curing also. The same proportions of expenditure on operational costs and repairs & maintenance to total output as for estimates at current prices are used to obtain corresponding estimates of value added at constant prices.

#### Quality and limitations of data base

- 11.16 The data on production of marine and inland fish is collected through scientific sample surveys. However, some States are not able to conduct these surveys according to the guidelines, due to variety of reasons. The information on fish curing activities is provided by SFDs, but they are based on different procedures and methods adopted by SFDs. The sampling designs developed by the Central Marine Fisheries Research Institute and the Central Inland Fisheries Research Institute, must be adopted by all the States. The fish production through deep sea fishing also need to be included in the respective states' marine fish production. As regards subsistence fishing, no reliable data are available and the methods followed for the estimation at state level are based on studies conducted by few States. The data on collection of pearls, chanks, weeds etc., are not available. The data on these also need to be provided by the States. No

appropriate official mechanism exists in the states for collecting reliable data on the activity of fish curing. Although, States are providing the data on various fish curing activities, the details on methods followed by the SFDs are not available.

11.17 The proportion used for preparing estimates of operational costs and expenditure on repairs and maintenance is not based on any scientific enquiries. The information on expenditure on repairs, maintenance of boats and nets by types, average cost of boats, number of boats etc., available with the states needs further examination.

### Appendix 11.1

#### GDP FROM FISHING SECTOR IN 1999-2000

Items	QTY (00 thous. MT)	VALUE (Rs. crore)
<b>1. Total Production (Excl Subsistence Fish)</b>	56.75	20484
1.1 Marine Fish	24.89	5675
1.2 Inland Fish	28.23	9750
1.3 Prawns/Shrimps	3.63	5060
<b>2. Total Disposal (Excl. Subsistence Fish)</b>	56.73	20973
2.1 Marine Fish - Raw Form	15.90	4119
2.1.1 For Salting of Fish	3.69	637
2.1.2 For Sun Drying of Fish	5.15	1079
2.1.3 For Frozen Fish	1.20	611
2.2 INLAND FISH - RAW FORM	26.59	9643
2.2.1 For Salting of Fish	0.23	83
2.2.2 For Sun Drying Of Fish	0.34	97
2.2.3 For Frozen Fish	0.01	5
2.3 Prawns - Raw Form	1.36	1981
2.3.1 For Salting of Fish	0.02	6
2.3.2 For Sun Drying of Fish	0.03	24
2.3.3 For Frozen Fish	2.22	2688
<b>3. TOTAL VALUE OF OUTPUT</b>	54.30	22293
3.1 Marine Fish - Raw Form	15.90	4119
3.2 Inland Fish - Raw Form	26.59	9643
3.3 Prawns - Raw Form	1.36	1981
3.4 Salting of Fish - Let Out	2.01	844
3.5 Sun drying of Fish - Let Out	1.95	820
3.6 Frozen Fish	3.36	3761
3.7 Subsistence Fish	3.13	1125
<b>4. Repair And Maintenance &amp; Inputs</b>		3354
4.1 Marine		1318
4.2 Inland		976
4.3 Subsistence		11
4.4 Prawns		1040
4.5 Salting		9
<b>5. Gross Value Added</b>		<b>18939</b>