

**METHODOLOGY FOR
PREPARATION OF ESTIMATES OF
DISTRICT DOMESTIC PRODUCT**

PREPARED JOINTLY BY

**DIRECTORATES OF ECONOMICS AND STATISTICS
KARNATAKA AND UTTAR PRADESH**

JOINT PAPER ON THE METHODOLOGY FOR PREPARATION OF ESTIMATES OF DISTRICT DOMESTIC PRODUCT

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INTRODUCTION

1. In the second regional conference on statistical matters, it was decided that the Government of Karnataka and Uttar Pradesh will jointly prepare a paper on estimation of District Domestic Product, for discussion in the next regional conference. Accordingly, a note on methodology adopted by the Directorate of Economics and Statistics (DES), Karnataka, in preparation of these estimates was sent to the DES, Uttar Pradesh (U.P.). After examining the same, the Economics and Statistics Division of the State Planning Unit, U.P. also prepared a draft paper with slight modifications and supplied the same to the DES, Karnataka and to the Government of India. After, thus exchanging the draft notes on methodology, a detailed discussion on the subject was held between the officers of both the concerned Directorates on March 8 and 9, 1996 at Bangalore. Accordingly, a draft methodology was prepared and submitted to the Central Statistical Organisation (CSO). The draft methodology was discussed in a meeting of Directors of some States and representatives of the Ministry of Agriculture and the CSO, held on 2nd July 1996 at Sardar Patel Bhawan, New Delhi. The suggestions received in the meeting were taken into account and this draft report has been revised accordingly.

2. It was observed that the availability of district-wise basic data required for estimation of income at the district level is still not satisfactory in any of the States in India. The data in respect of commodity producing sectors, viz., primary sectors and manufacturing (registered) sector, is fairly available but in respect of remaining sectors, it is very scanty. As such, it was decided that wherever district-wise basic data are available, the same may be utilized to compute the district income estimates following the State level methodology. In case of non-commodity producing sectors, where district-wise basic data are not available, the State level estimates may be allocated to the districts on the basis of suitable district-wise indicators. Further, in some of the commodity producing sectors, though district-wise production data are available, the corresponding prices are not available. In such cases, district-wise production and State average prices may be utilized for preparation of District income estimates. Similarly, wherever certain ratios/norms, yield rates, etc. are used for the State estimates and which are normally not available at the district level, the State level ratios/yield rates, etc. may be utilized for district income estimates also.

3. Broadly the methodology of computation of sectoral estimates is the same as adopted for estimates of State Domestic Product (SDP). However, sector wise details of methodology to be adopted are given in the following paragraphs.

AGRICULTURE INCLUDING ANIMAL HUSBANDRY

Value of Output

Agriculture (Proper)

4. As in the case of State level estimates, the estimates at district level can also be worked out by 'production approach'. But district level data on production and prices are generally not available uniformly for all the crops. Hence, for estimation purpose, crops can be classified in different categories as follows:-

- a) Crops for which reliable district-wise data on area, production and prices are available: In such cases district-wise value of output for each crop may be worked out by using district-wise production and prices. The wholesale prices of primary market during peak marketing period should be taken.
- b) Crops for which though district-wise production are available, corresponding district-wise prices are not available: For this category of crops district-wise value of output may be computed by using district-wise production and neighboring district prices, if available. In case neighboring district prices are also not available, regional prices may be used. If these are also not available, the State prices may be utilised. The wholesale prices of primary market during peak marketing period should be taken. Efforts should be made to collect prices in respect of such crops for which are and yield estimates are available.
- c) Crops for which district-wise data, both on production and prices, are not available but area figures are available: In such cases, district-wise value of output of these crops may be worked out by allocating the State level value of output on the basis of district-wise area.
- d) Miscellaneous and unspecified crops for which production and price data are not available even at the State level but district-wise area is available: In such cases, the value of output may be worked out by multiplying the district-wise area by the State level value per hectare of *similar* crops.
- e) For by-products or miscellaneous type of products, wherever possible, cost of cultivation studies (CCS) data to be used, otherwise data from latest studies to be used. If necessary, conduct type studies to update the ratios. In case such data are not available, State level ratios, whether in relation to output or in relation to area as used in current series of estimates of SDP, may be adopted uniformly for all the districts.

5. For the quantity of food grains which are procured on Government account, the prices are different from the prevailing market rates. As such adjustments are made in the value of such agricultural produces by evaluating separately the quantity procured and sold in primary market by their respective prices.

Animal Husbandry

6. Similar procedure as adopted at the State level may be followed at the district level also. District-wise estimates of number of different categories of animals and poultry may be worked out from the results of latest two livestock census assuming linear/compound growth rates and utilised along with relevant yield rates to obtain the estimates of production of various livestock products and by-products and poultry meat. The extreme, (-)ve or (+)ve, growth rates should be judiciously accepted at district level.

7. The results of Integrated Sample Survey (ISS) conducted by State Animal Husbandry Department provide State/District level data on production of milk, meat, wool and egg. It also provides estimates of category wise number of slaughtered animals. Wherever, ISS results are available only for the State, the estimates for district may be obtained by allocating the same to the districts on the basis of relevant livestock population. To estimate district-wise production of all other items (i.e. other than milk, meat, egg and wool), State level yield rates and ratios may be utilised along with district estimates of number of relevant animals/poultry.

8. District-wise value of output may then be worked out by evaluating the production obtained as above, by the corresponding district prices, wherever available. In absence of district level prices, the State prices may be utilised for evaluating the district production. The totals of the value of output thus worked out may then be adjusted to the State level estimates.

9. In regard to items for which price data are not available, wholesale/retail prices of allied items should be utilised. The price data which can be used in various cases are indicated below.

Item	Price to be used
i) Milk	rural price/coop. collection price
ii) Meat(Buff)	Slaughter house price
iii) Goat, Sheep and Pig meat	Slaughter house price
iv) Hides (Cow and buff)	Slaughter house price
v) Skins (Goat and Sheep)	Urban wholesale price of goat skin
vi) Bones (of various animals)	Urban wholesale price of bone
vii) Dung	Rural prices of dung cake
viii) Egg (Hen and Duck)	Prices from National Egg Coordination Committee.

10. In case of other animal products, the State level value may be distributed between the districts in proportion to the number of animals of each category separately.

11. District-wise increment in stock for each category of animal/poultry may be worked out as at the State level and these may be evaluated by corresponding district prices.

12. The value of silkworm cocoons arrived at the State level, after adjusting the cost of rearing silkworm cocoons, may be allocated to districts in proportion to the area under Mulberry in each district.

Value of Inputs

13. As at the State level estimates, to arrive at the district-wise Gross Value Added (GVA) from agriculture including Animal Husbandry sector, value of various input items are to be first deducted from the Gross Value of Output of these sectors and then the gross product from operation of Government Irrigation System is added to that. The deductible inputs are same as used at the State level viz. I) Seed, ii) Organic manure (Cattle and Buffalo dung), iii) Chemical Fertilizers iv) feed of livestock, v) Pesticides & Insecticides, vi) Diesel oil consumption vii) electricity, viii) Irrigation charges, ix) market chargeS, x) Repairs and Maintenance of fixed assets and other operational costs, and xi) Financial intermediation services, indirectly measured (FISIM)

14. To work out the value of these input items at the district level, the State level estimates arrived at independently under the Current series of State income estimates may be distributed to various district on the basis of certain proportions as indicated below:-

(i) Seed: The district-wise value of seed may be worked out as follows:

(a) in proportion to the products of district area under the crop and the district price of the product, where seed rate used in State Income Estimates is on the basis of quantum per hectare, and

(b) in proportion to the district value of output of the crop (evaluated at district price), where seed rates used is taken as some percentage of the value of output.

With this methodology, variation in seed rates used in different districts will be ignored but price differentials are accounted for.

(ii) Organic Manure: The district-wise estimates of value of output of dung manure as worked out in Animal Husbandry sector may be used.

(iii) Chemical Fertilizers: State level value may be distributed to districts in proportion to total quantity of chemical fertilizers distributed as obtained from the Agriculture Department.

(iv) Feed of livestock: District-wise value of roughage may be estimated by adopting the same methodology as followed for estimating the roughage for State Domestic Products. For estimating the quantity of concentrates consumed, the return of Cost of Cultivation Studies may be collected from the agricultural universities that are engaged in such studies in the State and analysed. In absence of such study results, the rates of concentrates as adopted for State level estimates for different types of animals and poultry may be used for working out district level estimates also.

(v) Pesticides and Insecticides: The State level value may be distributed to the districts in proportion to area treated by chemical pesticides in different districts. Efforts may be made to obtain the results of cost of Cultivation Studies in the State and the value of pesticides and insecticides per hectare may be worked out. The same may be used for district-wise estimates of value of pesticides and insecticides.

(vi) Diesel Oil Consumption: State level value of consumption of diesel oil by tractors and oil engines may be distributed to districts in proportion to the district weighted totals of number of tractors, oil engines/oil engine pump used for irrigation as per latest livestock census with weights appropriate for each State/district. If available, the capacity of engine may also be kept in consideration to estimate the consumption of diesel oil.

(vii) Electricity: The State level value may be distributed on the basis of district-wise number of private and Government electric tube-wells and energised pump-sets.

(viii) Irrigation Charges: The district-wise irrigation charges, as collected from the district administration (D.C.'s) may be used for this purpose. In the absence of such data, the State level value may be distributed to the districts in proportion to the area irrigated by Government canals.

(ix) Market Charges: The State level norms in respect of Agriculture (Proper) and Animal Husbandry sectors may be used for district income estimates also.

(x) Repair and Maintenance of fixed assets and operational cost: District-wise data on fixed assets as available from latest AIDIS/Livestock Census may be used.

Gross Product from Operation of Government Irrigation System

15. This should be added to the gross value of output of Agriculture after deducting the value of inputs. The State level value of contribution by Government Irrigation system may be distributed among the districts in proportion to the district-wise area irrigated by Government canals.

FORESTRY AND LOGGING

Major Forest Products

16. The district-wise value of output of timber may be worked out using the district-wise production and prices for different varieties. In case of firewood, (wherever NSSO results on consumption data are utilised) the district value of output may be obtained by allocating State level estimates to the district in proportion to district-wise rural population.

Minor Forest Products

17. The district-wise value of output is worked out using the district-wise production and prices of different varieties. In the absence of district-wise data the State level value of minor forest produce may be allocated to districts in proportion to the forest area in different districts.

18. Repairs, Maintenance and other Operational Costs: State level ratio may be utilised for working out district-wise estimates of repair, maintenance and other operational costs.

FISHING

19. In the case of Marine fishing, the district-wise value of output may be worked out by multiplying the district-wise production by corresponding district prices. Similar procedure may be followed in working out district-wise value of output of inland fish also. The district-wise production of marine and inland fish is likely to be available through district fishery officer. But, if the district-wise prices are not available, then district-wise value may be worked out using district-wise production and State level prices. To work out the value of subsistence fish and operational costs including repairs and maintenance, the State level norm/ratios may be used for district income estimates also. The value of output for prawns may be separately estimated.

MINING AND QUARRYING

20. For major minerals including petroleum (crude) and natural gas (utilised), the district-wise value of output as collected from Indian Bureau of Mines, Nagpur, may be used. District-wise value of production of coal can also be obtained from Coal India Ltd. and that of natural gas and crude oil from ONGC. For minor minerals, the district-wise value of output may be collected from the State Mines and Geology Department. If the data are not available, the value of output of minor minerals may be worked out in proportion to the royalty value. For working out input costs, the State level proportions may be adopted for district estimates also.

MANUFACTURING

Manufacturing (Registered)

21. The district-wise estimates of value added from registered manufacturing sector can be made available from Annual Survey of Industries (ASI) in respect of some less developed States/UTs, which are covered on hundred per cent basis. Some major States are also canvassing the ASI schedule for the part of the sample sector left out by the NSSO and hence district-wise information can easily be compiled for these States. In other cases, the State level value may be distributed in proportion to the district-wise number of workers available in the ASI frame. To work out FISIM, State level proportion to GVA may be adopted.

Manufacturing (Un-registered)

22. For household sector, district-wise projected working force may be used to distribute the State Gross value Added to districts and for non household sector, district-wise projected working force as per Economic Census results may be used. From, the total of GVA of household and non-household sectors, thus worked out, FISIM is to be deducted using the State level ratio of FISIM to GVA.

ELECTRICITY, GAS AND WATER SUPPLY

Electricity

23. The State level value added from this sub-sector may be distributed to districts in proportion to district-wise working force.

Gas

24. State level value added from bio-gas may be distributed according to number of Bio-Gas plants in each districts. For remaining gas sector, the State level estimates may be allocated to the districts on the basis of working force.

Water supply

25. State level value added may be allocated to districts in proportion to the district-wise salaries and wages collected from local bodies located in the district.

CONSTRUCTION

26. The estimates of State income from this sector may be allocated to the districts on the basis of working force for public (except local bodies) and private sector separately. In respect of local bodies, direct district-wise data may be utilised.

TRANSPORT, STORAGE AND COMMUNICATION

Railways

27. State level estimates, as provided by the CSO, may be allocated to districts in proportion to the working force engaged in Railways at district level.

Transport by other Means

Mechanised Road Transport

(i) Public Sector

28. The value added from this sub-sector at the State level may be allocated to districts on the basis of district-wise working force (public) in this activity.

(ii) Private Sector

29. The value added from private sector may be allocated to districts on the basis of district-wise private working force. District-wise private working force may be estimated as under:

30. District-wise working force in this activity may be first moved to other years on the basis of district-wise number of registered vehicles (obtained from Transport Commissioner) and from this, the public sector working force (district-wise) may be deducted to arrive at the district-wise private sector working force.

Water Transport

31. State level estimates may be allocated to the districts in proportion to the working force. Base year estimates may be moved with physical indicators such as cargo handled.

Air Transport

32. The State income from this sub-sector may be allocated to the districts on the basis of district-wise working force.

Non Mechanised road Transport and Un-Organised Transport

33. The State level estimates may be allocated to districts in proportion to gross value of output of commodity producing sectors.

STORAGE**Warehousing (State and Central)**

34. State level estimates may be allocated to districts on the basis of average storage capacity.

Cold Storage

35. State level estimates may be allocated on the basis of district-wise working force.

Storage not elsewhere classified:

36. State level estimates may be allocated to districts on the basis of working force.

COMMUNICATION

37. State level estimates may be allocated to districts in proportion to the working force.

TRADE, HOTELS AND RESTAURANTS

38. The domestic product relating to 'Trade, Hotels and Restaurants' may be estimated district-wise separately for public and private sectors. SDP relating to public sector may be allocated to districts on the basis of district-wise working force in the public sector. SDP relating to the private segment of the economy relating to this sector may be allocated by district in proportion to the gross value of output of commodity producing sectors in each district.

39. In case the estimates of SDP of this sector are not computed separately for public and private sectors, then the gross value added at State level may be allocated to district in proportion to the gross value of output of commodity producing sectors in each district.

BANKING AND INSURANCE

40. The State income estimates of this sector may be allocated to the districts on the basis of district-wise working force.

REAL ESTATE, OWNERSHIP OF DWELLINGS AND BUSINESS SERVICES**Real Estate and Business services**

41. State level estimates from these sub-sectors may be allocated to districts in proportion to the working force in these activities.

Ownership of Dwellings

42. State level estimates may be allocated to districts in proportion to number of dwellings (Rural/Urban) in each district based on census data.

PUBLIC ADMINISTRATION

43. The State income estimates of Central Government Administration, as provided by the CSO, and those of State Government administration may be distributed in proportion to the number of Centre/State Government employees in each district. In case of local bodies, district-wise data may be collected from local bodies and used.

OTHER SERVICES

Education, Research and Scientific Services

44. State level estimates may be allocated to districts on the basis of number of employees (Teaching and Non-Teaching) in each district.

Medical and Health Services

Public Sector

45. State level estimates may be allocated to districts on the basis of public sector working force in medical and health profession.

Private Sector

46. State level estimates may be allocated to the districts on the basis of private sector working force which may be obtained by deducting public sector working force from working force engaged in these activities. For subsequent years, the working force may be extrapolated on the basis of number of registered medical practitioners and registered nursing staff.

Legal Services

47. State level estimates may be allocated to the districts in proportion to district-wise number of advocates registered in Bar Council. In case the data from Bar Council is not available district-wise, working force engaged in legal services may be used for allocation purpose.

Sanitary Services

48. District-wise data (Rural/Urban) may be collected from local bodies and used.

Rest of Other Services

49. State level estimates may be allocated to the districts on the basis of working force.

Consumption of Fixed Capital:

50. Sector wise ratio of consumption of fixed capital to Gross value added may be adopted for the district level estimates.

ESTIMATES AT CONSTANT PRICES

51. The methodology for working out estimates at constant prices will be more or less the same as that for current prices in the sectors of Agriculture and Animal Husbandry, Forestry and Logging, Fishing, Mining and Quarrying, Manufacturing (unregistered), Construction, Real Estate, Ownership of dwellings and Business services and Trade, Hotels and Restaurants. In the sectors where estimates are worked out by 'Production approach' the current year production may be evaluated on the basis of base year prices to obtain the value of output at base year prices. In Mining and Quarrying sector, the district prices differentials may be introduced by multiplying the district-wise gross value added at current prices by the ratio between the wages of non-agricultural and rural labour for the base year and for current year. Depending on the availability of data this procedure may be adopted.

52. For the remaining sectors, the District Income estimates at constant prices may be worked out using the State level deflators of current to constant prices.