

# Preface

One of the mandates of the Central Statistical Organisation (CSO) is laying down norms and standards and evolving concepts, definitions, methodology and classification in relation to statistics. Even though CSO has been performing these mandates in many fields of statistics, the absence of proper documentation in this regard led to a decision to prepare statistical manuals in respect of 24 subjects detailing concepts, definition, classifications, data collection procedures, compilation of data, estimation procedures, dissemination and other relevant explanatory notes, including methodological framework in the statistical indicators/ statistics to make the manual a comprehensive reference book comparable to the manuals being produced by the UNSD time to time.

'National Accounts Statistics: Manual on Estimation of State and District Income' is aimed to provide to the compilers of State Domestic Product and District Domestic Product estimates, the source data and methods/ general guidelines to be adopted for preparing these estimates. The manual has been prepared in the National Accounts Division of the CSO under the guidance of Steering Committee under Director General, CSO, constituted for preparation of the manuals. I am thankful to Shri Ramesh Kolli, Additional Director General and his team of officers and staff for their hard work in preparing the manual. Thanks are also due to Shri Pratap Narayan and Shri R.P. Katyal who had earlier worked in the National Accounts Division in the CSO for their expert suggestions/comments on the draft which have been duly considered in its finalization.

I hope that the manual will serve as a useful reference document on the subject. Any suggestion to further improve its contents is most welcome.

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DG, CSO

# **NATIONAL ACCOUNTS STATISTICS: *MANUAL ON ESTIMATION OF STATE AND DISTRICT INCOME, 2008***

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## INTRODUCTION

1. The CSO brings out a publication, “National Accounts Statistics: Sources and Methods”, from time to time outlining the sources and methods used in the compilation of national accounts statistics for the country. Although the concepts, procedures and data sources used in the national accounts and the accounts prepared at the state level in the form of state domestic production (SDP) and the District Domestic Product (DDP) are similar (due to the proactive role played by the CSO in disseminating requisite data, guiding and training the states in the preparation of SDP and DDP estimates), there has been a long felt need for a separate manual on the estimation of SDP and DDP. Keeping this requirement in view, the National Accounts Division of the CSO has prepared this manual, which is intended to guide the compilers of state and district income estimates in the State Directorates of Economics and Statistics (State DESs) by providing them with the conceptual, methodological and source data related issues in the compilation of these estimates. The manual has been compiled by Shri Ramesh Kolli, Additional Director General with assistance from all the officers and staff of the National Accounts Division.

2. The estimates of State Domestic Product (SDP) and the District Domestic Product (DDP), which respectively are taken to represent state income and district income, are compiled by a combination of production and income approaches (concepts of these approaches are given in Chapter 2) and presented by the State DESs by economic activity, such as agriculture, forestry, fisheries, mining, manufacturing, electricity, construction and services. The SDP/DDP estimates are not presented by income aggregates of compensation of employees and gross operating surplus, or by expenditure aggregates of consumption expenditure, capital formation and net exports. The income originating approach is followed for preparing these estimates, which means that the SDP/DDP takes into account the unduplicated production of goods and services produced within the geographical boundary of State/District, rather than the income that accrues to the resident producers of the State/District.

3. Compilation of SDP/DDP is a painstaking effort, which requires extensive data on the economic activities carried out within the geographical boundaries of State/District. In order to ensure that SDP/DDP measures compiled are reliable, the compilers of these estimates aim to achieve the exhaustiveness of SDP/DDP measures, to the extent feasible. However, the data that is available at state/district level on various economic activities is not sufficient for exhaustively measuring the SDP/DDP. Therefore, the compilers of these estimates often have to resort to applying various rates and ratios or proxy indicators to assess the contribution of all economic activities in as exhaustive means as possible.

4. In this background, this manual aims to provide to the compilers of SDP/DDP estimates, the sources of data and methods/ general guidelines to be adopted for preparing these estimates. Broadly, the SDP/DDP represent at state/district level, what Gross Domestic Product (GDP) represents at national level. Therefore, the methodology of compiling SDP/DDP estimates would also be similar to that of GDP, with the exception to the constraints imposed by the data limitations. A comprehensive document on the compilation of GDP and national accounts in general, is available in the public domain, in the form of "National Accounts Statistics: Sources and Methods, 2007". This manual on SDP/DDP compilation, therefore, draws heavily from this publication.

5. The first chapter of this manual gives the basic concepts of National Accounts Aggregates. These concepts are needed to be understood by the SDP/DDP compilers, as the national accounts concepts are similar at every level of geographical regions. Although, at state and district level the expenditure GDP aggregates are not required to be compiled (or generally not possible), this Chapter includes, besides the definition of domestic product and production, the concepts of income and expenditure approaches to compiling domestic product, forms of income, categories of expenditure, government final consumption expenditure, gross capital formation, savings, private income, personal income, personal disposable income, national versus domestic concept, gross versus net concept and currents versus constant prices.

6. The second chapter deals, more specifically with the concepts of Gross Domestic Product, as SDP/DDP follow similar concepts of GDP. This Chapter provides details with respect to methodological issues in measuring output with production approach viz market output, output produced for own final use, other non-market output, intermediate consumption. It also discusses valuation of output, intermediate consumption and value added, basic and producer's prices, gross value added at basic prices, gross value added at producer's prices, gross value added at factor cost. It further discusses the methodological issues relating to income approach GDP and expenditure approach GDP.

7. The third chapter provides an overview of the historical background to the development of state and district income estimates. Besides, this chapter also contains a brief write-up on the conceptual issues and broad procedures of compilation of SDP/DDP estimates. The gist of recommendations made by the Regional Accounts Committee on the compilation of accounts at regional level, is given in Chapter 4.

8. The fifth and sixth chapters respectively deal with the sources and methods used in the compilation of estimates of SDP/DDP for each industrial activity. The methodology is discussed sector-wise, namely, agriculture and allied activities, forestry and logging, fishing, mining and quarrying, registered manufacturing, unregistered manufacturing, electricity gas and water supply, construction, trade hotel and

restaurants, transport storage and communication, real estate, ownership of dwellings, business services, legal services, public administration and other services.

9. In addition to the above 6 Chapters, the manual contains three Appendixes. The first appendix discusses the methodology with respect to preparation of estimates of certain economic activities which transcend the state boundaries, such as central government administration, railways, etc., due to which their economic contribution cannot be assigned to one particular state. This Chapter provides the manner in which the estimates of gross value added of such sectors are allocated to the States.

10. In the compilation of SDP/DDP estimates, the data on workforce and value added per worker (VAPW) provide important inputs. These workforce and VAPW estimates are necessary for segments of economy where it is not possible to compile the value added of an industry (particularly for the unorganized segments of the economy at national level and for the private segments of the state and district economies), directly as output *minus* inputs. For these segments, the estimates of value added in each activity or group of activities, are compiled as a product of (i) labour input as estimates of workforce and (ii) productivity of labour as estimates of value added per worker. The labour inputs are also used, in some cases, for allocation of national level estimates to state levels and from state levels to district levels, where direct data or suitable physical indicators are not available. Appendix 2 gives the details on the estimation of workforce and value added per worker at state and district level.

11. Appendix 3 provides the methodology for estimation of domestic capital formation at state level. It discusses the concepts of capital formation, types of assets and classification of assets and liabilities. Only few states are preparing the estimates of gross fixed capital formation, but several states compile estimates of capital formation for the public sector.

## BASIC CONCEPTS OF NATIONAL ACCOUNTS AGGREGATES

### Introduction

1.1 The basic concepts and definitions of the terms used in national accounts largely follow those given in the System of National Accounts (SNA) of the United Nations, World Bank, International Monetary Fund (IMF), Organisation for the Economic Cooperation and Development (OECD) and the European Union. The following paragraphs describe the major concepts used in National Accounts Statistics and the inter relationship particularly of those relating to national product, consumption, saving and capital formation.

### National Product

1.2 National product by definition is a measure in monetary terms of the volume of all goods and services produced by an economy during a given period of time, accounted without duplication. The measure has to be in value terms as the different units of production and different measures of services are not directly additive. In the case of a closed economy the measure amounts to domestic product. An important characteristic of this measure is its comprehensiveness. The measure covers all the goods and services produced by the residents of a country. Thus the goods cover all possible items produced, as for example, agricultural crops, livestock and livestock products, fish, forest products, mineral products, manufacturing of various consumer items for consumption, machinery, transport equipments, defence equipments etc., construction of buildings, roads, dams, bridges etc. The services similarly cover a wide spectrum including medical and educational services, defence services, financial services, transport services, trading services, domestic services, sanitary services, government services, etc.

1.3 All goods produced during the period have to be included whether they are marketed i.e., exchanged for money or bartered or produced for own use. For example, some of the products of agriculture, forestry and fishing are used for own consumption of producers and therefore an imputed value of these products are also to be included. Similarly, all services produced are required to be included, excepting those for own final consumption. However, exception to this rule of services output, are rental of buildings which are owned and occupied by the owners themselves and service produced by paid domestic servants. Own account construction activities are also similarly to be included.

1.4 Another important feature of the measure is that it is an unduplicated value of output or in other words only the value added at each stage of processing is taken into account while measuring the total, i.e., in the measurement of national output a distinction is made between "final" and "intermediate" products and unduplicated total is one that is confined to the value of the final products and excludes all intermediate products. To use a simple example, if the production process during a year involves the production of wheat, its milling into flour and the baking of bread which is sold to consumers then the value of national output should equal the final value of the bread and should not count the separate value of the wheat and flour

which have been used up in the course of producing bread. Thus the national product is not the total value of goods and services produced but only the value of the final product excluding the value of inputs of raw materials and services used in the process of production.

**National Product and National Income**

1.5 The national product measures all goods and services arising out of economic activity while national income is the sum of all incomes as a result of the economic activity. These two are synonymous. Since the production of goods and services is the result of the use of primary factors of inputs, namely, capital and labour, along with the raw materials, the process automatically generates income. This income is in the form of return to capital and labour used in production process. For example the total product originating in a firm making steel could be obtained by adding the total product and then deducting the intermediate product to obtain the value added. The value added of this firm consists of the income that accrued in the course of production, namely, wages and salaries and operating surplus. Thus the product of a firm must be income to someone whether it is their employees in the form of employment income or to the owners in the form of operating surplus. Hence, the unduplicated production is equivalent to the income which accrues to the factors of production. In other words national income of a country can also be viewed in terms of the money value of income flowing from the producing units to factors of production. National income is not simply an aggregate of all incomes. It includes only those incomes which are derived directly from the current production of goods and services called factor incomes. Other forms of income such as old age pensions, education grants, unemployment benefits, gifts etc., cannot be regarded as payments for current services to production. They are paid out of factor incomes and are called transfer incomes. Payments for which no goods or services are received in return are, therefore, termed as transfer payments. The national income, being the value of goods and services becoming available cannot include both factor incomes and transfer incomes.

**National Product and Expenditure**

1.6 The production within the economy over a given period of time is spent either for consumption of its members or for addition of fixed assets or for addition to the stock of existing productive assets within the country. Hence, production can also be measured by considering the expenditure of those who purchase the finished or final goods and services. The national expenditure is the sum of expenditure of all spending of institutional sectors viz., government, households, non-profit institutions serving households and enterprises. Here also, it is necessary to include only the expenditures on "final use" in order to avoid duplication i.e., one has to omit the network of intermediate sales of all products needed in further production. The expenditure on final goods and services may be purely for consumption purposes like consumption of food, clothing, shelter; services etc., or for capital formation such as addition to buildings, plant, machinery, transport equipment, etc. Some goods may not be immediately sold and may be kept aside as stocks. These goods which are added to stocks are also accounted for as final expenditure.

**Production/Income/Expenditure**

1.7 It may be noted from the above discussion that the national income of a country can be measured in three different ways, from the angle of production, from income generation and from final utilization. These three forms are circular in nature. It begins at the production stage where the productive units engage capital and labour and turn out goods and services, the total measure of which gives the national product. This production process generates a given amount of money income which is distributed by the productive units to the factors of production, namely, capital and labour. The measure of income this way indicates the share of national product distributed to the factors of production or in other words the national income by factor shares. The income thus received by the factors of production is then spent either by the labour in their capacity as households in terms of acquisition and consumption of goods and services or by the producers in acquiring more capital and thus increasing the physical assets of their production units. The national income by definition is the same whether measured at the point of production or at the point of income generation or at the point of final utilisation. In other words the total of net output, income flows and final expenditure will be identical. The significance of each arises from the fact that they reflect total operations of the economy at the levels of three basic economic functions, namely, production, distribution and disposition.

**Production**

1.8 Although national income can be measured in any one of the three alternative approaches but if a complete analysis of the economy is the object then it should be measured by all the three different approaches. For measurement of national income at the point of production, the method generally followed is to divide the whole economy into a given set of economic activities and to estimate the total value of output and the corresponding value of inputs of raw materials and services used for production and then arrive at the value added of each sector as a total value of output minus the value of inputs of raw materials and services. In the case of services, value added is measured in terms of the total amount of money paid in return for the services received minus the cost of inputs like expenditure on transport, advertisement, and other miscellaneous services.

**Forms of income**

1.9 As has already been pointed out the net value added available for each unit of production is equal to the amount of income generated by the unit in the process of production. This income is distributed between the two primary factor inputs, namely, capital and labour. In other words, income is distributed in the form of either capital income to the owner of the capital or labour income to the labour employed. The distinction between employment income and profits (operating surplus) cannot be made in the case of incomes of persons working on their own account. Such incomes are, therefore, separately classified as mixed income of the self employed.



1.10 The labour income takes the form of either wages and salaries including commission, pensionary benefits, bonus, etc., or supplementary contribution of the employers towards payments in kind.

1.11 Some portion of operating surplus is retained by the producer which remains undistributed and is partly used for further investment and balance is distributed. The distributed capital income is mainly in the form of dividends, interest and rent. The rent in the Indian context includes not only rent on land but also rent on buildings and structures. The capital income other than profit retained by enterprises distributed to the owners of capital who are either individuals or enterprises in the form of dividends. The mixed income generally accrues to the self-employed people who employ their own capital and labour for production. This income consists partly of profits of unincorporated enterprises and partly of labour income of the self employed. Thus the total income generated in the form of factor shares consists of (i) wages & salaries (ii) interest, (iii) rent, (iv) dividends, (v) undistributed profits, and (vi) mixed income of self employed.

### **Categories of expenditure**

1.12 The income available to the individuals in the form of labour income or capital income or to the productive units in the form of retained income is then spent. This utilisation of the income can take various forms, namely, (a) household consumption expenditure, (b) government consumption expenditure, and capital formation comprising fixed capital formation, and stock accumulation.

### **Household consumption expenditure**

1.13 The household consumption expenditure referred to as private final consumption expenditure (PFCE) in National Accounts Statistics (NAS), consists of expenditure by households (including non-profit institutions) on non-durable consumer goods and services and all durable goods except land and buildings.

1.14 The durable goods are defined as those whose life time are more than one year and consist of items such as furniture, radios, televisions, automobiles, etc. Purchase and construction of residential buildings are not treated as consumption expenditure of the households but are included in the gross capital formation. In the case of owner occupied buildings, the imputed rent is included in the final consumption expenditure. Similarly, the primary products of sectors like agriculture, forestry, fishing etc., which are produced for own consumption by the households will form part of consumption expenditure. Payments for domestic services which one household renders to another, such as services of maid servants, cooking, child nursing and gardening are also included under consumption. However, as in the production measurement, activities such as cooking meals, scrubbing floor and minding children undertaken by household members fall outside the production boundary and are, therefore, excluded from consumption expenditure as well.

### **Government final consumption expenditure**

1.15 The concept of government consumption expenditure has been debated by economists for a long time. The role of the government in the economy is essentially different from that of enterprises and households. To cite a few examples, the government offers services both to entrepreneurs and consumers and in most cases it receives no payment for that or even if it does receive payment, the same is likely to bear little or no relation to the value of the services to the user. In the course of organising collective services such as defence, justice, health and education, government purchases the services of its officials and also many non-durable goods and other services from other suppliers. Since these services are rendered free, these do not appear in the household consumer expenditure. These services are not only of economic value, but also create real final consumption value to the people. It is, therefore, necessary to reckon them in the national expenditure. Once it is agreed to include government services as part of national expenditure, it would be necessary to find methods for valuing the services. Since these collective services are not sold, they can be valued in money terms only by adding up the money spent by the government in buying these services of teachers, doctors, public administrative employees, the armed forces etc., together with the goods and other materials purchased. This total is the consumption expenditure of the government and it consists of purchase of non-durable goods and services by the government. By convention, expenditure on durable goods which are used for defence is also treated as part of consumption expenditure of the government.

### **Gross capital formation**

1.16 Gross capital formation consists of the acquisition of fixed assets and the accumulation of stocks. Fixed assets are physical productive assets, examples of which are buildings, civil works, machinery, vehicles etc. The stock accumulation is in the form of changes in stock of raw materials, fuels, finished goods and semi-finished goods awaiting completion. Thus gross capital formation is that part of country's total expenditure which is not consumed but added to the nation's fixed tangible assets and stocks.

### **Saving**

1.17 Saving represents the excess of current income over current expenditure of various sectors of the economy. It is the balancing item on the income and outlay accounts of the producing enterprises, households, government administration and other final consumers. For the closed economy savings equals capital formation during the year whereas for the open economy savings equals capital formation plus net capital inflow from abroad during the year.

### **Private Income**

1.18 Some of the national income accrues to the government in the form of property income of government departments and profits of government enterprises. The government also makes transfer payments to private sector in the form of grants, social security payments, gifts, etc. The government pays interest on national debt which accrues to the private sector. Private income is a measure of the income derived from national income by adding the sum of government transfer payments and interest on national debt and

subtracting the property income of government departments and profits of government enterprises.

1.19 Transfer payments result from transactions which do not give rise to the exchange of commodities or factor services. A payment of money is made without a corresponding flow of goods and services in the opposite direction. It is the general practice to consider in national accounts only payments which are in exchange for goods and services as contributing to output. So transfer payments are not shown in the major accounts as an addition to total product. The value of transfer payments to households is included in the income aggregate of private income.

### **Personal Income**

1.20 Personal income is a measure of the actual current income receipt of persons from all sources. It differs from private income in that it excludes the undistributed profits which accrue to Private Sector but are not received by persons. It also excludes the expenditure tax paid to government by the Private Corporate Sector. It is derived from private income by subtracting the savings of the private corporate sector and the corporation tax.

### **Personal Disposable Income**

1.21 Even the above subtractions are not sufficient to derive personal income which is actually available for spending. Disposable personal income is derived from personal income by subtracting the direct taxes paid by individuals and other compulsory payments made to the government. It is a measure of amount of the money in the hands of the individuals and available for their consumption or savings.

### **National versus Domestic Concept**

1.22 The discussion so far did not make any distinction between national or domestic income. The concept of national versus domestic arises because of the fact that the economy is not closed in the sense that it has transactions with the rest of the world in the form of exports and imports, gifts, loans, factor income flows etc.

1.23 National income or product is that income or product which accrues to the economic agents who are resident of the country. Most of the national income is derived from economic activity within the country. But some income arises due to the activities of the residents outside the country. Similarly, some of the product or income arising in the country may be due to the activities of the non-residents. The difference between these two flows is referred to as net factor income from abroad.

1.24 The measure of production arising out of the activities of economic agents within the country is termed as domestic product even if a part of that income accrues to non-residents. When adjustments are made to this product by deducting the income of non-residents within the country and adding the income of residents abroad, the national product is obtained. Hence, the difference between the national and domestic concept is the net

factor income from abroad and in a closed economy national and domestic incomes are synonymous.

1.25 If the desire is to measure the activity within the country, interest is centered on the location of the factors employed in production. The measure of output of factors located in the country irrespective of ownership will be the domestic product. The importance of the distinction between location and ownership lies in the simple fact that flows of factor income directed out of the country produces benefits elsewhere. The receivers of that income will be unlikely to spend it on the purchase of the output of the country from which it came. The money will be spent in the country of the residence of the receivers and it is to these countries that the benefits will accrue. In some countries these flows are relatively unimportant. In some other countries where a large part of the capital stock is foreign owned these flows may be relatively large. In such cases a significant part of domestic income might be part of national income of another country. In many countries there are also important examples of international flows of wage payments since migrant labour is very important in these countries.

1.26 The relation of the domestic to national income is perfectly straight forward in principle; the former is merely adjusted for net factor income from abroad.

### **Gross Versus Net Value Added**

1.27 The discussion thus far has been centered on the economic activity of the nation before any charges for consumption of fixed capital (CFC) or depreciation are deducted. The aggregates include as part of the value of current output, the value of capital services consumed in the production of output. It is desirable to have accounts which show the output net of capital consumption allowances. Thus the national income could be measured either as on a gross basis or on a net basis. The difference between the two is that in the gross estimates no deduction is made for CFC which takes place in the process of production, whereas in the net measure such allowances are made. Capital is one of the primary factors used in production and this results in the CFC and hence, a reduction in the economic life of the capital. In other words, the capital depreciates as a result of its use in the process of production. The CFC measures the replacement value of the part of the capital stock which has been used up in the production process during the year.

### **Factor Cost versus Market Prices**

1.28 The production and income approach measures the domestic product as the cost paid to the factors of production and is known as domestic product at factor cost. However, the various forms of final output when considered from the point of expenditure are valued at market prices i.e., the actual price which either the consumers or producers pay for purchase of goods and services whether for consumption or for investment. This measurement is called the expenditure at market prices. When valued in this way this measure will be different from the product or income measure at factor cost. The market value of the goods and services will include the indirect taxes like

excise duties, customs, sales tax etc., levied by the government on goods and services. Similarly, the price paid by the consumer will not include any subsidy which the government pays to the producer. Hence, the market value of final expenditure would exceed the total obtained at factor cost by the amount of indirect taxes reduced by the value of subsidies. Domestic or national product can, therefore, be measured either at market prices or at factor cost one differing from the other by the amount of net indirect taxes (indirect taxes less subsidies).

1.29 Indirect taxes are taxes assessed in respect of production, sale, purchase or use of goods and services of producers which they charge to the expenses. The main taxes in this category are excise duties, Value added tax, sales tax, import and export duties, entertainment tax etc. Their effect is to make the prices paid in a transaction higher from the actual receipts of the factor of production involved. Direct taxes do not have the same effect since they do not impinge directly on transaction but are levied directly on the income. Indirect taxes are, therefore, added to obtain estimates at market price from that at factor cost.

1.30 Subsidies include all grants on current account which industries recover from the government. As a matter of long-standing convention, subsidies are regarded as payments necessary to elicit factor services. Accordingly they are included in the sum of factor incomes. They must, therefore, be subtracted if the estimates are required at market prices.

### **Current versus Constant Prices**

1.31 National income regardless of the concept is obviously measured at prices prevailing during the period or in other words at current prices. When calculated over a number of years, the changes in national income would, therefore, include implicitly not only the effect of the changes in production but also the changes in prices. This estimate compared over the period would not, therefore, give a proper measure of the overall real increase in production of the country or the economic welfare of the people or growth of the economy. Therefore, it would be necessary to eliminate the effect of prices, or in other words to recompute the whole series at given prices of one particular base year. National income thus computed is termed as national income at constant prices or in real terms.

1.32 The national income in real terms provides a measure of the growth of the economy. When available by industry of origin, these estimates give a measure of the structural changes in the pattern of production in the country which is vital for economic analysis. The distribution of national income by factor shares measures the changes in the shares of either labour or capital or individual partly owning capital and partly contributing labour. This reflects not only the variation in the productivity of these groups but also changes in their respective ownership position. Finally, at the point of utilisation, the change in the shares of either consumption expenditure or capital formation give an idea of the common welfare of the people and changes therein as well as the extent by which the capital assets of the country are either increasing or decreasing.

1.33 There are several other terms which need to be defined in the context of national accounts. For ready reference the Glossary of Main Terms used in NAS given in this publication may be referred to.

## Economic performance indicators

Indicators	Interpretation
GDP rate of growth	The performance of the economy
GDP per capita	The level of economic development in comparison to other countries
Compensation of employees per work hour	Labour cost
Compensation of employees/gross value added	Income share of employees in GDP
Operating surplus/ gross value added	Income share of capital in GDP
Gross capital formation / GDP	Investment rate of the nation
Saving/GDP	Saving rate of the nation
Saving/gross fixed capital formation	Domestic funding of investment
Saving of an institutional sector/ total saving	Contribution of each sector to total saving
Saving of households/disposable income of households	Saving rate of households

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## GROSS DOMESTIC PRODUCT (GDP) - AN OVERVIEW

2.1 Domestic product is an indicator of overall production activity. The concept of GDP in the 1993 SNA framework has been briefly discussed in the following paragraphs.

2.2 There are three equivalent approaches to measure the GDP, namely the production, income, and expenditure. The production approach GDP measures the sum of value added of all economic activities within the country's territory (sum of output minus intermediate consumption) plus indirect taxes minus subsidies on products. The expenditure approach GDP depicts the final use (demand) of the output and comprises (i) Government Final Consumption Expenditure (GFCE) (ii) Private Final Consumption Expenditure (PFCE) (iii) Gross Fixed Capital Formation (GFCF), (iv) Change in Stocks (CIS), and (v) Net Export of Goods & Services. The income (value added) generated through the production activity is distributed between the two factors of production, namely, labour and capital, which receive respectively the salaries and the operating surplus/mixed income of self employed. Thus the income approach GDP is the sum of compensation of employees, gross operating surplus and gross mixed income plus taxes net of subsidies on production. In the National Accounts Statistics of India, the production approach GDP is considered firmer estimate; and the NAS presents the discrepancy with the expenditure approach GDP explicitly.

### Production approach GDP

2.3 GDP is a concept of value added. It is the sum of gross value added of all resident producer units (institutional sectors, or industries) plus that part (possibly the total) of taxes, less subsidies, on products which is not included in the valuation of output. Gross value added is the difference between output and intermediate consumption.

2.4 The underlying rationale behind the concept of GDP for the economy as a whole is that it should measure the total gross values added produced by all institutional units resident in the economy. However, while the concept of GDP is based on this principle, GDP as defined in the SNA may include not only the sum of the gross values added of all resident producers but also various taxes on products, depending upon the precise ways in which outputs, inputs and imports are valued.

2.5 Output: Output is a concept that applies to a producer unit - an establishment or enterprise – rather than a process of production. Output consists only of those goods and services, that are produced within an establishment that becomes available for use outside that establishment. When an enterprise contains more than one establishment, the output of the enterprise is the sum of the outputs of its component establishments.

2.6 The output of most goods or services in majority of the cases is recorded when their production is completed. However, when it takes a long time to produce a unit of output, it becomes necessary to recognize that

output is being produced continuously and to record it as "work-in-progress". For example, the production of certain agricultural goods or large durable goods such as ships or buildings may take months or years to complete. In such cases, it would distort economic reality to treat the output as if it were all produced at the moment of time when the process of production happens to terminate. In any case, whenever a process of production, however long or short, extends over two or more accounting periods, it is necessary to calculate the work-in-progress completed within each of the periods in order to be able to measure how much output is produced in each period.

2.7 Goods or services produced as outputs may be used in several different ways. Apart from certain service producers, such as financial intermediaries and wholesale and retail traders whose outputs have special characteristics, goods or services produced as outputs must be disposed of by their owners in one or more of the following ways during the period in which they are produced. Output may:

- be sold: only goods or services sold at economically significant prices are included here;
- be bartered in exchange for other goods, services or assets, provided to their employees as compensation in kind, or used for other payments in kind;
- enter the producer's inventories prior to their eventual sale, barter or other use: incomplete outputs enter the producer's inventories in the form of additions to work-in-progress;
- be supplied to another establishment belonging to the same enterprise for use, as intermediate inputs into the later's production;
- be retained by their owners for own final consumption or own gross fixed capital formation;
- be supplied free, or sold at prices that are not economically significant, to other institutional units, either individually or collectively.

2.8 A fundamental distinction is drawn between market output, output produced for own final use and other non-market output.

2.9 Market output: Market output is output that is sold at prices that are economically significant or otherwise disposed of on the market, or intended for sale or disposal on the market. Prices are said to be economically significant when they have a significant influence on the amounts the producers are willing to supply and on the amounts purchasers wish to buy. Apart from certain service industries for which special conventions are adopted, the value of the market output of a producer is given by the sum of the values of the following items for the period in question:

- (i) The total value of goods and services sold (at economically significant prices);
- (ii) The total value of goods or services bartered;



- (iii) The total value of goods or services used for payments in kind, including compensation in kind;
- (iv) The total value of goods or services supplied by one establishment to another belonging to the same market enterprise to be used as intermediate inputs;
- (v) The total value of changes in inventories of finished goods and work-in-progress intended for one or other of the above uses.

2.10 Output produced for own final use: Such output consists of goods or services that are retained for their own final use by the owners of the enterprises in which they are produced. As corporations have no final consumption, output for own final consumption is produced only by unincorporated enterprises: for example, agricultural goods produced and consumed by members of the same household. The output of domestic and personal services produced for own consumption within households is not included, although housing services produced for own consumption by owner-occupiers and services produced on own account by employing paid domestic staff are included under this heading.

2.11 Goods or services used for own gross fixed capital formation can be produced by any kind of enterprise, whether corporate or unincorporated. They include, for example, the special machine tools produced for their own use by engineering enterprises, or dwellings, or extensions to dwellings, produced by households. A wide range of construction activities may be undertaken for the purpose of own gross fixed capital formation in rural areas, including communal construction activities undertaken by groups of households.

2.12 The value of output produced for own final use is given by the sum of the values of the following items for the period in question:

- (i) The total value of goods and services produced by household enterprises and consumed by the same households;
- (ii) The total value of the fixed assets produced by an establishment that are retained within the same enterprise for use in future production (own-account gross fixed capital formation);
- (iii) The total value of changes in inventories of finished goods and work-in-progress intended for one or other of the above uses.

2.13 Additions to work-in-progress on structures intended for own use are treated as acquisitions of fixed assets by their producers. They are therefore recorded under (b) instead of (c) above.

2.14 Other non-market output: It consists of goods and individual or collective services produced by non-profit institutions serving households (NPISHs) or government that are supplied free, or at prices that are not economically significant, to other institutional units or the community as a whole. Such output may be produced for two reasons:

- (i) It may be technically impossible to make individuals pay for collective services because their consumption cannot be monitored or controlled. The pricing mechanism cannot be used when transactions costs are too high and there is market failure. The production of such services has to be organized collectively by government units and financed out of funds other than receipts from sales, namely taxation or other government incomes;
- (ii) Government units and NPISHs may also produce and supply goods or services to individual households for which they could charge but choose not to do so as a matter of social or economic policy. The most common examples are the provision of education or health services, free or at prices that are not economically significant, although other kinds of goods and services may also be supplied.

2.15 A price is said to be not economically significant when it has little or no influence on how much the producer is prepared to supply and is expected to have only a marginal influence on the quantities demanded. It is thus a price that is not quantitatively significant from the point of view of either supply or demand. Such prices are likely to be charged in order to raise some revenue or achieve some reduction in the excess demand that may occur when services are provided completely free, but they are not intended to eliminate such excess demand. Once a decision has been taken on administrative, social or political grounds about the total amount of a particular non-market good or service to be supplied, its price is deliberately fixed well below the equilibrium price that would clear the market. The difference between a price that is not economically significant and a zero price is, therefore, a matter of degree. The price merely deters those units whose demands are the least pressing without greatly reducing the total level of demand.

2.16 The value of the non-market output of a producer (other than output produced for own final use) is given by the sum of the values of the following items for the period in question:

- (i) The total value of goods and services supplied free, or at prices that are not economically significant, to other institutional units, either individually or collectively;
- (ii) The total value of goods or services supplied by one establishment to another belonging to the same non-market producer to be used as intermediate inputs;
- (iii) The total value of changes in inventories of finished goods and work-in-progress intended for one or another of the above uses.

2.17 As prices that are not economically significant may reflect neither relative production costs nor relative consumer preferences, they do not provide a suitable basis for valuing the outputs of goods or services concerned. The non-market output of goods or services sold at these prices is, therefore, valued in the same way as goods or services provided free, i.e.,

by their costs of production. Part of this output is purchased by households, the remainder constituting final consumption expenditures by government units or NPISHs.

2.18 Intermediate consumption: In the SNA, the intermediate inputs are recorded and valued at the time they enter the production process, while outputs are recorded and valued as they emerge from the process. Intermediate inputs are normally valued at purchaser's prices and outputs at basic prices, or alternatively at producer's prices if basic prices are not available. The increase between the value of the intermediate inputs and the value of the outputs is the gross value added against which the consumption of fixed capital, taxes on production (less subsidies) and compensation of employees must be charged. The positive or negative balance remaining is the net operating surplus or mixed income. The definition, measurement and valuation of outputs and inputs are, therefore, fundamental to the system. Intermediate consumption consists of the value of the goods and services consumed as inputs by a process of production, excluding fixed assets whose consumption is recorded as consumption of fixed capital. The goods or services may be either transformed or used up by the production process. Some inputs re-emerge after having been transformed and incorporated into the outputs; for example, grain may be transformed into flour which in turn may be transformed into bread. Other inputs are completely consumed or used up; for example, electricity and most services.

2.19 Intermediate consumption does not include expenditures by enterprises on valuables consisting of works of art, precious metals and stones and articles of jewellery fashioned out of them. Valuables are assets acquired as stores of value: they are not used up in production and do not deteriorate physically over time. Expenditures on valuables are recorded in the capital account. Intermediate consumption also does not include costs incurred by the gradual using up of fixed assets owned by the enterprise: the decline in their value during the accounting period is recorded as consumption of fixed capital. However, intermediate consumption does include the rentals paid on the use of fixed assets, whether equipment or buildings, that are leased from other institutional units, and also fees, commissions, royalties, etc., payable under licensing arrangements.

2.20 Intermediate consumption includes the value of all the goods or services used as inputs into ancillary activities such as purchasing, sales, marketing, accounting, data processing, transportation, storage, maintenance, security, etc. The goods and services consumed by these ancillary activities are not distinguished from those consumed by the principal (or secondary) activities of a producing establishment even though the levels at which ancillary activities are carried out do not usually vary proportionately with the level of the principal activity.

2.21 The intermediate consumption of a good or service is recorded at the time when the good or service enters the process of production, as distinct from the time it was acquired by the producer. In practice, the two times coincide for inputs of services, but not for goods, which may be acquired

some time in advance of their use in production. A good or service consumed as an intermediate input is normally valued at the purchaser's price prevailing at the time it enters the process of production; that is, at the price the producer would have to pay to replace it at the time it is used.

2.22 In practice, establishments do not usually record the actual use of goods in production directly. Instead, they keep records of purchases of materials and supplies intended to be used as inputs and also of any changes in the amounts of such goods held in inventory. An estimate of intermediate consumption during a given accounting period can then be derived by subtracting the value of changes in inventories of materials and supplies from the value of purchases made. Changes in inventories of materials and supplies are equal to entries less withdrawals and recurrent losses on goods held in inventory.

2.23 When goods or services produced within the same establishment are fed back as inputs into the production within the same establishment, they are not recorded as part of the intermediate consumption or the output of that establishment. On the other hand, deliveries of goods and services between different establishments belonging to the same enterprise are recorded as outputs by the producing establishments and must, therefore, be recorded as intermediate inputs by the receiving establishments.

2.24 The following types of goods and services provided to employees must be treated as part of intermediate consumption:

- (i) Tools or equipment used exclusively, or mainly, at work;
- (ii) Clothing or footwear of a kind which ordinary consumers do not choose to purchase or wear and which are worn exclusively, or mainly, at work; e.g., protective clothing, overalls or uniforms. However, uniforms or other special clothing which employees choose to wear extensively off-duty instead of ordinary clothing should be treated as remuneration in kind;
- (iii) Accommodation services at the place of work of a kind which cannot be used by the households to which the employees belong - barracks, cabins, dormitories, huts, etc.;
- (iv) Special meals or drinks necessitated by exceptional working conditions, or meals or drinks provided to servicemen or others while on active duty;
- (v) Transportation and hotel services provided while the employee is traveling on business;
- (vi) Changing facilities, washrooms, showers, baths, etc. necessitated by the nature of the work;
- (vii) First aid facilities, medical examinations or other health checks required because of the nature of the work.

2.25 Employees may sometimes be responsible for purchasing the kinds of goods or services listed above and be subsequently reimbursed in cash by the employer. Such cash reimbursements must be treated as intermediate expenditures by the employer and not as part of the employee's wages and salaries. The provision of other kinds of goods and services, such as meals, ordinary housing services, the services of vehicles or other durable consumer goods used extensively away from work, transportation to and from work, etc. should be treated as remuneration in kind.

2.26 Valuation of output, Intermediate Consumption and Value Added: More than one set of prices may be used to value outputs and inputs depending upon how taxes and subsidies on products, and also transport charges, are recorded. Moreover, value added taxes, (VAT), and similar deductible taxes may also be recorded in more than one way.

2.27 Basic and producers' prices: The SNA utilizes two kinds of output prices, namely, basic prices and producers' prices:

- (i) The basic price is the amount receivable by the producer from the purchaser for a unit of a good or service produced as output minus any tax payable, and plus any subsidy receivable, on that unit as a consequence of its production or sale. It excludes any transport charges invoiced separately by the producer;
- (ii) The producer's price is the amount receivable by the producer from the purchaser for a unit of a good or service produced as output minus any VAT, or similar deductible tax, invoiced to the purchaser. It excludes any transport charges invoiced separately by the producer.

2.28 The amounts charged by non-market producers when they sell output at prices that are not economically significant do not constitute basic or producers' prices as just defined. Prices that are not economically significant are not used to value the output sold at such prices: instead, such output is valued by its costs of production. Neither the producer's nor the basic price includes any amounts receivable in respect of VAT, or similar deductible tax, invoiced on the output sold. The difference between the two is that to obtain the basic price any other tax payable per unit of output is deducted from the producer's price while any subsidy receivable per unit of output is added. Both producers' and basic prices are actual transaction prices which can be directly observed and recorded. When output produced for own final consumption, or own gross fixed capital formation, is valued at basic prices, it is valued at the estimated basic prices that would be receivable by the producer if the output were to be sold on the market.

2.29 When output is recorded at basic prices, any tax on the product actually payable on the output is treated as if it were paid by the purchaser directly to the government instead of being an integral part of the price paid to the producer. Conversely, any subsidy on the product is treated as if it were received directly by the purchaser and not the producer. The basic price

measures the amount retained by the producer and is, therefore, the price most relevant for the producer's decision-taking.

2.30 Gross value added at basic prices: Gross value added at basic prices is defined as output valued at basic prices less intermediate consumption valued at purchasers' prices. Although the outputs and inputs are valued using different sets of prices, for brevity the value added is described by the prices used to value the outputs. From the point of view of the producer, purchasers' prices for inputs and basic prices for outputs represent the prices actually paid and received. Their use leads to a measure of gross value added which is particularly relevant for the producer.

2.31 Gross value added at producers' prices: It is defined as output valued at producers' prices less intermediate consumption valued at purchasers' prices. As already explained, in the absence of VAT, the total value of the intermediate inputs consumed is the same whether they are valued at producers' or at purchasers' prices, in which case this measure of gross value added is the same as one which uses producers' prices to value both inputs and outputs. It is an economically meaningful measure that is equivalent to the traditional measure of gross value added at market prices. However, in the presence of VAT, the producer's price excludes invoiced VAT, and it would be inappropriate to describe this measure as being at "market" prices.

2.32 Thus in both the cases measure of gross value added and that described in the previous section use purchasers' prices to value intermediate inputs. The difference between the two measures is entirely attributable to their differing treatments of taxes or subsidies on products payable on outputs (other than invoiced VAT). By definition, the value of output at producers' prices exceeds that at basic prices by the amount, if any, of the taxes, less subsidies, on the output so that the two associated measures of gross value added must differ by the same amount.

2.33 Gross value added at factor cost: It is not a concept used explicitly in the 1993 SNA. Nevertheless, it can easily be derived from either of the measures of gross value added presented above by subtracting the value of any taxes, less subsidies, on production payable out of gross value added as defined. For example, the only taxes on production remaining to be paid out of gross value added at basic prices consist of "other taxes on production". These consist mostly of current taxes (or subsidies) on the labour or capital employed in the enterprise, such as payroll taxes or current taxes on vehicles or buildings. Gross value added at factor cost can, therefore, be derived from gross value added at basic prices by subtracting "other taxes, less subsidies, on production".

2.34 The conceptual difficulty with gross value added at factor cost is that there is no observable vector of prices such that gross value added at factor cost is obtained directly by multiplying the price vector by the vector of quantities of inputs and outputs that defines the production process. By definition, "other taxes or subsidies on production" are not taxes or subsidies on products that can be eliminated from the input and output prices. Thus,

despite its traditional name, gross value added at factor cost is not strictly a measure of value added.

2.35 Gross value added at factor cost is essentially a measure of income and not output. It represents the amount remaining for distribution out of gross value added, however defined, after the payment of all taxes on production and the receipt of all subsidies on production. It makes no difference which measure of gross value added is used because the measures considered above differ only in respect of the amounts of the taxes or subsidies on production which remain payable out of gross value added

2.36 Claims on gross value added, other than payments of taxes, less subsidies, to government used to be described as "factor incomes". While the concept of factor income is no longer used in the 1993 SNA, gross value added at factor cost could be interpreted as measuring the value of the fund out of which so-called "factor incomes" can be paid: it follows that it is equal to the total value of the "factor" incomes generated by production.

### **Income Approach GDP**

2.37 GDP can also be obtained by adding together the income components that make up value added. GDP by income approach covers only the incomes generated within the domestic economy.

2.38 Components of value added: In principle, GDP can be computed by adding together the components of value added and taxes less subsidies on products. Value added includes:

- (i) *Compensation of employees*: Compensation of employees is the total remuneration in cash or in kind payable by employers to employees for the work done. Direct social transfers from employers to their employees or retired employees and their family, such as payments for sickness, educational grants and pensions that do not set up an independent fund, are also imputed to compensation of employees;
- (ii) *Other taxes less subsidies on production*: Other taxes less subsidies on production are taxes payable by employers to carry out production, irrespective of sales or profitability. They may be payable as license fees or as taxes on the ownership or use of land, buildings or other assets used in production or on the labour employed or on the compensation of employees paid. They are not taxes paid on values of sales or produced outputs, which are called taxes on products;
- (iii) *Consumption of fixed capital*: Consumption of fixed capital is the cost of fixed assets used up in production in the accounting period;
- (iv) *Gross operating surplus*: Gross operating surplus is the residual obtained by deducting the above components from value added.

Thus, gross operating surplus includes interest payable to lenders of financial assets, or rent payable to rentiers of non-produced assets, such as land and sub-soil assets.

### **Expenditure Approach GDP**

2.39 Household final consumption expenditure: consists of expenditure incurred by resident households on consumption goods or services. Final consumption expenditure excludes expenditure on fixed assets in the form of dwellings or on valuables. Dwellings are goods used by their owners to produce housing services. Expenditure on dwellings by households, therefore, constitutes gross fixed capital formation. When dwellings are rented by their owners, rentals are recorded as output of housing services by owners and final consumption expenditure by tenants. When dwellings are occupied by their owners, the imputed value of the housing services enters into both the output and final consumption expenditure of the owners. Valuables are expensive durable goods that do not deteriorate over time, are not used up in consumption or production, and are acquired primarily as stores of value. They consist mainly of works of art, precious stones and metals and jewellery fashioned out of such stones and metals. Valuables are held in the expectation that their prices, relative to those of other goods and services, will tend to increase over time, or at least not decline. Although the owners of valuables may derive satisfaction from possessing them, they are not used up in the way that household consumption goods, including consumer durables, are used up over time.

2.40 Consumption expenditures incurred by general government and NPISHs: The treatment of consumption expenditures incurred by general government and non-profit institutions serving households (NPISHs) serving households is the same. Expenditures on a wide range of consumption goods and services are incurred by general government or by NPISHs, either on collective services or on selected individual goods or services. The government expenditures are financed principally out of taxation or other government revenues while those of the NPISHs are financed principally out of subscriptions, contributions or donations or property income. Expenditures on the outputs of non-market producers that are provided free, or at prices that are not economically significant, to individual households or the community account for most of the final consumption expenditure by governments and NPISHs. It is important to distinguish between expenditures made by general government or NPISHs on the outputs of non-market producers - i.e., the goods, individual or collective services they actually produce - and the intermediate expenditures and other costs incurred by non-market producers owned by general government or NPISHs in the course of producing those goods or services. The distinction between the inputs to, and outputs from, non-market processes of production needs to be emphasized because the final consumption expenditure made by general government or NPISHs must be incurred on the outputs. The values of these expenditures are equal to the imputed values of the non-market outputs less the values of any receipts from sales. These receipts may be derived from sales of some goods or services at prices that are not economically significant



or from sales of a few goods or services at prices that are economically significant (sales of secondary market output).

2.41 Saving: Saving is the balancing item in the use of income account. Saving represents that part of disposable income that is not spent on final consumption goods and services. It may be positive or negative depending on whether disposable income exceeds final consumption expenditure, or vice versa. Assuming that saving is positive, the unspent income must be used to acquire assets or reduce liabilities. In so far as unspent income is not used deliberately to acquire various financial or non-financial assets, or to reduce liabilities, it must materialize as an increase in cash, itself a financial asset. If saving is negative, some financial or non-financial assets must have been liquidated, cash balances run down or some liabilities increased. Thus, saving provides the link between the current accounts of the System and the subsequent accumulation accounts. If saving is zero, i.e., if final consumption expenditure equals disposable income, the institutional unit is not obliged to liquidate any assets or change any of its liabilities. Therefore, disposable income can, therefore, be interpreted as the maximum amount that an institutional unit can afford to spend on final consumption goods and services in the accounting period without having to reduce its cash, liquidate other assets or increase its liabilities. Non-financial and financial corporations have no final consumption expenditure or actual final consumption. Their net saving is equal to their net disposable.

2.42 Gross capital formation is measured by the total value of the gross fixed capital formation, changes in inventories and acquisitions less disposals of valuables. Gross fixed capital formation is measured by the total value of a producer's acquisitions, less disposals, of fixed assets during the accounting period plus certain additions to the value of non-produced assets realised by the productive activity of institutional units. Fixed assets are tangible or intangible assets produced as outputs from processes of production that are themselves used repeatedly or continuously in other processes of production for more than one year. There is substantial diversity in the different types of gross fixed capital formation that may take place. The following main types may be distinguished:

- (a) Acquisitions, less disposals, of new or existing tangible fixed assets, subdivided by type of asset into:
  - (i) Dwellings;
  - (ii) Other buildings and structures;
  - (iii) Machinery and equipment;
  - (iv) Cultivated assets - trees and livestock that are used repeatedly or continuously to produce products such as fruit, rubber, milk, etc.
- (b) Acquisitions, less disposals, of new and existing intangible fixed assets, sub-divided by type of asset into:
  - (i) Mineral exploration;
  - (ii) Computer software;
  - (iii) Entertainment, literary or artistic originals;
  - (iv) Other intangible fixed assets;

- (c) Major improvements to tangible non-produced assets, including land;
- (d) Costs associated with the transfers of ownership of non-produced assets.

2.43 Given the general explanations of the previous section, the main identities connecting the aggregates of the SNA 1993 are summarized in this section: GDP at market prices is defined from the expenditure side as:

Household final consumption expenditure + NPI final consumption expenditure + Government final consumption expenditure + Gross fixed capital formation + Acquisition less disposals of valuables + Changes in inventories + Exports (f.o.b.) – Imports (f.o.b.)

### **Volume measures**

2.44 The SNA emphasizes calculation at constant prices, that is, use of the system(s) of prices which prevailed in a past period(s). The changes over time in the current values of flows of goods and services and of many kinds of assets can be decomposed into changes in the prices of these goods and services or assets and changes in their volumes. Flows or stocks at constant prices take into account the changes in the price of each item covered. They are said to be in volume terms. However, many flows or stocks do not have price and quantity dimensions of their own. Their current values may be deflated by taking into account the change in the prices of some relevant basket of goods and services

### **Gross and net concept**

2.45 Gross domestic product (GDP) at market prices represents the final result of the production activity of resident producer units.

2.46 GDP is also equal to the sum of the final uses of goods and services (all uses except intermediate consumption) measured in purchasers' prices, less the value of imports of goods and services.

2.47 Finally, GDP is also equal to the sum of primary incomes distributed by resident producer units.

2.48 Net domestic product (NDP) is obtained by deducting the consumption of fixed capital from GDP.

## CONCEPTS AND DEFINITIONS OF STATE AND DISTRICT DOMESTIC PRODUCT

### Introduction

3.1 The state accounts statistics are an extension of the system of national accounts to the regional level. These comprise various accounts indicating the flows of all transactions within a time period between the economic agents constituting the state economy and their stocks. They include items like total output of the economy, the intermediate expenditure, state domestic product, factor incomes, consumption expenditure, capital formation, capital stocks, consumption of fixed capital, etc. The most important aggregate of the state accounts is the state domestic product (SDP). At district level, the maximum that the State DESs can compile at present, given the data availability position, is the district domestic product (DDP).

3.2 State Income (Net State Domestic Product/NSDP) and District Income (Net District Domestic Product/NDDP) is defined in exactly the similar manner as the net domestic product for the country, i.e. it is equal to the income generated by the production of goods and services within the geographical boundaries of a State or a district, as the case may be. This is arrived at by netting the gross state/district domestic product estimates (GSDP/GDDP) by the consumption of fixed capital (CFC).

3.3 The SDP/DDP at factor cost is regarded as the most important single economic indicator to measure the growth and pattern of economic development of a state or a district. The per capita NSDP and the per capita NDDP, respectively represent the welfare and level of living of the normal residents of a state and district. These measures also provide an idea of regional disparities. The indicators like per capita state income are now frequently used by the Planning Commission (PC) and Finance Commission (FC) for devolution of a part of plan resources and distribution of proceeds central taxes to different states.

### Concepts and Definitions

3.4 The estimates of State Income can conceptually be prepared by adopting two approaches, namely, income originating and income accruing.

#### *Income originating approach*

3.5 In the Income originating approach, the measurement corresponds to income originating to the factors of production physically located within the geographical boundaries of state and represents net value of goods and services produced within the state. It is the income originating as a result of the utilization of the physical assets and the labour force in the region, even though some of the income might flow to residents outside the region. The State DESs presently compile estimates of SDP/DDP following the income originating approach, due to lack of requisite data needed for compiling these estimates by following the income accruing approach. Thus the current concept of compiling the GSDP/NSDP is similar to that of compiling the GDP/NDP of the entire economy i.e., measuring the volume in monetary

terms, the total value of goods and services produced within the geographical boundary of the state.

### ***Income accruing approach***

3.6 The income accruing approach relates to the income accruing to the normal residents of a state. In other words, it is the income received by the residents of a region, even though some of it might have accrued outside the region. Since this measures the income that becomes available to the residents of a state, it provides a better measure of the welfare of the residents of the region. However, for compiling the State Domestic Product (SDP) estimates by income accruing approach one needs data on flows of factor incomes to/from the boundaries of state i.e. on inter-state flows as well as flows to/from abroad. But in an open economy like that of a state in this country, it is very doubtful whether such an estimate can be prepared unless special effort is made for the collection of this data.

### **Methods of estimating income**

3.7 There are three methods used in the measurement of income. The first known as production (or value added) method based on the value that has been added in the process of production. The second known as income method also arises from the first in that the production process generates income, which is paid to the factors of production. Again, the production within the economy for a given period of time is meant either for the consumption within the economy or for the addition to the existing stock of goods or for exports to the rest of the world. This provides us with a third method of measurement of income known as expenditure method. Thus the three methods of estimation of income are circular in nature in the sense that it begins at the production process where the productive units engage labourers and capital and produce goods and services, the total measure of which gives the state product. This production process generates a given amount of money income, which is distributed by the productive units to the factors of production, or in other words, the state income by factor shares. The income thus received by the factors of production is then spent either by the labour in their capacity as households in terms of acquisition and consumption of goods and services, or by the producers in acquiring more capital and increasing the physical assets of their productive units. The income by definition is same whether measured at the point of production or at the point of income generation or at the point of final utilisation. The income can thus be measured through any one of the alternative methods but if a complete analysis of the economy is the objective, then it should be measured by all the three different methods simultaneously and compared.

3.8 For measurement of income at the point of production (measuring income by production method), it is important to remember that the value added by production is to be counted without duplication, i.e. not the total value of commodities and services produced over a given period of time but only the value of the final products excluding the value of inputs of all raw materials and services used in the process of production. At the same time, the coverage of the outputs should be comprehensive enough to include all commodities and services even to the extent of including imputed values of

products for own consumption or the imputed rent of owner occupied houses or the services produced with paid domestic servants for own final consumption. The method to be followed for the purpose is to divide the economy into a given set of industrial sectors and to estimate the total value of inputs of raw materials and services used for production and then estimate the value added by the sector as the total value of output minus the value of inputs of raw materials and services (intermediate consumption). The price to be used for evaluating production is the price received by the producer or price paid at the first point of transaction. Thus, for example, for agricultural products those are the prices received by the producers at the first point of transaction i.e. primary market, and for industrial products it refers to the prices received by the producing units at the factory site through sale of the commodities produced. The estimate of product of a state over a given period of time is thus the sum of total of value added (value of output minus value of inputs of raw materials and services) for all industrial sectors of the economy. In the case of services, the value added is measured in terms of the total amount of money paid in return for the services received minus the cost of inputs in the form of items like transport, advertisement, bank charges, etc. The state income thus estimated is termed as 'state domestic product at factor cost'. This method of measurement of state income (or value added) is termed as Production Method. Similar is the concept in the case of district domestic product at factor cost.

3.9 The net value added available for each unit of production is equal to the amount of total income generated by the unit in the process of production. This income is distributed between the two primary factor inputs, viz., capital and labour. In other words the income is distributed in the form of either capital income (return on capital) to the owner of capital or labour income (wages etc.) to the labour employed or as mixed income to individuals who are partly owners of capital and partly work as self employed labour for production in their own enterprises. Some income is also retained by the producers for further investment and some are set aside for payment either later or in a different form. Examples of the later are employer's contribution to social security, pension and other welfare funds and pension payments while the former is the income retained by the producers as undistributed profit to be used for increasing the capital assets. The labour income takes the form of either wages or salaries (including commission, bonus, etc.) or supplementary contribution of the employers or payments in kind. The distributed capital income on the other hand, is mainly in the form of dividends, interest on bonds, mortgages etc., and rent on land. The capital incomes other than profit retained by enterprises are distributed to the owners of capital who are either individuals or enterprises in the form of dividends. The mixed income generally accrues to the self-employed people who employ their own capital and labour for production. This income consists partly of profits of the un-incorporated enterprises and partly of labour income of self-employed (in cash or in kind) and is retained by owners in exchange of services rendered. Thus, the total income generated in the form of factor shares consists of (i) wages and salaries etc., (ii) interest, (iii) rent, (iv) dividends, (v) undistributed profits and (vi) mixed income of self employed.

This method of measurement of income is known as Income Method or Income generation method.

3.10 The income available to the individuals in the form of labour income or capital income or the income retained by the productive units is then spent. This utilisation of the income can take various forms viz. (a) household consumption expenditure, (b) government consumption expenditure, (c) fixed capital formation, (d) stock accumulation and (e) net exports. Thus the third alternative of measurement of income or value added is obtained through the items of expenditure enumerated above. This method is known as Expenditure Method.

3.11 The household consumption expenditure consists of expenditure by the households (including non-profit institutions) on non-durable consumer goods and services and all durable goods excepting land and building. The coverage of the government consumption expenditure is the same except for the fact that by convention, expenditure on durable goods which are used in defence are also treated as part of consumption expenditure of the government. The fixed capital formation consists of expenditure on the acquisition of capital goods in the form of building, machinery and equipment, transport equipment, etc. The stock accumulation is in the form of changes in stock of raw materials, finished and semi-finished goods held by the producing units including the government during the year. The two items together i.e. fixed capital formation and change in stocks are termed Gross Capital Formation. It will be noticed that all durable goods purchased by the households other than land and buildings are considered as their consumption expenditure but the expenditure on land and buildings is treated as capital expenditure. Thus the motor vehicles purchased by households (individual) are treated as consumption expenditure while the same if purchased by the enterprises is treated as fixed capital formation.

3.12 The state and district income estimated by any of the above three methods should in principal yield the same results.

3.13 However, given the data availability position, it is not possible to compile SDP/DDP estimates by all the three approaches. The States follow a combination of production and income approaches to compile the SDP/DDP estimates. No attempt is made to compile the SDP/DDP estimates by expenditure approach.

### **Gross/Net Value Added**

3.14 A few other points also need to be taken into account while estimating the state product at factor cost. Firstly, capital is one of the primary factors used in production and it results in the consumption of fixed capital in the process of production and hence as reduction in the economic life of the capital, or in other words the capital depreciates as a result of its use in the process of production. The estimates of value added without any adjustments for the capital depreciation/consumption referred to above is termed as gross value added. If an adjustment is made for capital depreciation/consumption the estimate of net value added is obtained. The

estimation of depreciation provision or the amount of inputs of capital in the form of consumption of capital in the process of production is complicated as the value of assets may get depleted fast due to technological changes and also because the quantity of stock of assets changes every year. The general practice is to estimate depreciation or consumption of fixed capital during a year on a straight-line basis (known as perpetual inventory method (PIM)) with reference to the expected economic life of different types of fixed capital. This method is followed at national level.

3.15 However, the PIM procedure for estimating CFC is not possible at state level or district level, due to the non-availability of data on capital stock in the state/district. Therefore, the CSO estimates the CFC at state level using various proxy indicators and provides them to the State DESs. The State DESs on their part allocate the state level CFC estimates to the District on the basis of domestic product estimates.

### **Factor Cost and Market Prices**

3.16 Production and the income method measures domestic product at the cost paid to the factor of production and is known as domestic product at factor cost. However, at the point of expenditure, the value of the product is normally at market prices i.e. at the actual prices which either the consumers or the producers pay for purchase of goods and services, whether for consumption or for capital formation. This measurement of domestic product through the expenditure side is known as domestic product at market prices. This market value of the final expenditure would exceed the total obtained at factor cost by the amount of indirect taxes levied by the Government less the value of subsidies given by the Government to producers. The domestic product can, therefore, be measured either at factor cost or at market prices, one differing from the other by the amount of net indirect taxes (i.e. indirect taxes less subsidies). However, the State DESs are presently measuring the SDP and DDP only at factor cost, in the absence of compilation of SDP/DDP by the expenditure method.

### **Current vis-à-vis Constant Prices**

3.17 The income regardless of the concept used is obviously measured at prices prevailing during the year or in other words at current prices. When calculated over a number of years the changes in national income would, therefore, include implicitly not only the effect of the changes in production but also the changes in prices. This estimate compared over the period would not, therefore, give a proper measure of the overall increase, in real terms, in production of the country or the economic welfare of the people or growth of the economy. Therefore, it would be necessary to eliminate the effect of prices, or in other words to recompile the whole series at given prices of one particular base year. The income thus computed is termed as 'income/product/expenditure at constant prices' or in real term.

3.18 The income in real terms provides a measure of the growth of the economy. When available by industry of origin, these estimates give a measure of the structural changes in the pattern of production in the state which is vital for a proper economic analysis and planning. The distribution of



state income by factor shares measure the changes in the shares of either labour or capital or individuals partly owning capital and partly contributing labour. This reflects not only the variations in the productivity of these groups but also changes in their respective ownership position. Finally, at the point of utilisation the changes in the shares of either consumption expenditure by individuals and households or capital formation in the public and private sectors give an idea of the economic welfare of the people and changes therein as well as the extent by which the capital assets of the state are either increasing or decreasing.

### **Per Capita Income**

Per Capita State Income is obtained by dividing the NSDP (State Income) by mid-year projected population of the state and is in contrast to the Per Capita National Income which is obtained by dividing the Net national Product (NNP) by the mid-year population of the country. Thus compilation of Per Capita State Income is based on income originating approach whereas compilation of Per Capita National Income is based on income accruing approach. Similarly the per capita district income is obtained by dividing the NDDP (District Income) by mid-year projected population of the district

### **Broad compilation procedures**

3.19 The general methodology for compiling the estimates of state income is to first compile the estimates at disaggregated level for each economic activity and then aggregating them for the whole region/state. The estimates for commodity producing sectors like agriculture, forestry, fishing, mining & quarrying, manufacturing, etc. are prepared using the production approach i.e. measuring the value of output and deducting there from the cost of material inputs used in the process of production. In the services sectors (non-public segment) like trade, transport, hotels & restaurants etc., the estimates are prepared by income approach, specifically, by multiplying the value added per worker by the number of workers, for the benchmark estimates and extrapolating these benchmark estimates with suitable indicators for the annual estimates. The information on value added per worker is obtained from the relevant Enterprise Surveys conducted for the purpose. The estimates of workforce are obtained using the results of large-scale sample surveys on employment & unemployment conducted by National Sample Survey Organisation (NSSO) and decennial population census carried out in the country by the Office of Registrar General of India (RGI) and Census Commissioner. In the case of DDP, the estimates for commodity producing sectors and for public sector, are generally compiled on the basis of data available at district level. For other private sector segments, the workforce data is used to allocate state level estimates across the districts.

3.20 In the preparation of state income estimates, certain activities cut across state boundaries, and thus their economic contribution cannot be assigned to any one state directly. Such activities are Railways, Communications, Banking & Insurance and Central Government Administration, and are known as the Supra-regional sectors of the economy. The estimates for these supra regional activities are compiled for the



economy as a whole and allocated to the states on the basis of relevant indicators. In the case of railways, the indicators are based on the track length and passenger/goods carried where as in other supra regional sectors it is the number of employees posted/allocated in the state. Certain activities like, defence, para military, border security force, high seas drilling etc. are still kept outside the purview of the state income estimation.

3.21 The estimates of CFC are compiled at the national level using the estimates of asset wise Net Fixed Capital Stock (NFCS) and average life of asset, following the procedure of perpetual inventory method (PIM). The national level estimates of CFC are allocated to states using appropriate indicators. For example, in the case of agriculture sector, the indicators of (i) public part, (ii) plantation and (iii) private part are the (a) capital assets and capital outlay of irrigation departments, (b) area under crops and (c) fixed assets of cultivator households (from AIDIS), respectively. In the case of forestry and logging, fishing, mining & quarrying, and construction sectors, the indicators are the respective sectors' estimates of GSDP. For electricity, gas & water supply sector, the indicator is the fixed assets, and for trade, transport by other means and other services, the indicators are the state-wise fixed assets of respective services, as available from NSS 57th Round survey. For the manufacturing (registered) and manufacturing (unregistered) sectors, the indicators are state-wise fixed assets data available from the ASI and NSS 56th Round survey, respectively.

## RECOMMENDATIONS OF THE REGIONAL ACCOUNTS COMMITTEE

### Introduction

4.1 The system of regional accounts helps in providing an integrated database for compilation of income and other macroeconomic aggregates for taking important decisions at a level smaller than the country. Further, regional accounting helps us to understand in nutshell the innumerable transactions taking place in the regional economy right from the production of goods and services to their final disposal. Though, a region can be northern, southern, part of the country, or it can be a state or province or it can be a district or even tehsil or panchayat, but for the development of regional accounts in India, regions have been considered as co-terminus with the geographical boundaries of the states and sub-regions as districts. Attempts were made, before independence and after independence, by research workers and research organisations to compile the regional level estimates of income by the method of allocation or by direct estimation on the basis of the data collected at the local level or by a combination of the two different approaches depending upon the availability of data.

4.2 In India, the work on compilation of official estimates of state income started as early as in 1948-49 in the states of Bihar, Uttar Pradesh and West Bengal but the first estimates on state income for the year 1948-49 were published for the erstwhile Bombay State in January 1949 followed by the estimates of Uttar Pradesh and Bihar. Uttar Pradesh was the first state to publish its state income estimates both at current and constant prices as well as with rural and urban break-up. On the recommendations of National Income Committee (NIC) in early fifties, a few other states including Madhya Pradesh, Assam and West Bengal also came out with their first estimates on state income. Method of compilation of these estimates has been more or less uniform like, value added (Production Approach) for commodity producing sectors and Income Approach for other sectors. Following these initiatives, at the Fifth Joint Conference of Central and State statisticians held at Jaipur in 1956, it was recommended that all states should make efforts to prepare their state income estimates, broadly following the method recommended by the NIC for the preparation of such estimates at all-India level. At the same conference, it was also suggested that at the first instance, states might prepare estimates only for commodity producing sectors and publish them accordingly along with the concepts, definition and methodology. Then, at the Preliminary Conference on Research in National Income in 1957, it was recommended to constitute a Working Group consisting of the workers engaged in the state income estimation from central and state statistical organisations and other agencies to review the work done on the subject in different states, and establish standard concepts, definitions and method of estimation of state income, keeping in view the nature of statistics/data available in each state. The Working Group, so established by the Central Statistical Organisation (CSO), studied the estimates prepared by different states at that time, and gave recommendations for improvement in the procedure and to locate new

sources of data. It recommended 'farm management studies' for improvement of the data on input structure of the agriculture sector and collection of basic data in sectors like unregistered manufacturing, construction, trade, transport by means other than railways and other services. The Working Group also suggested standard methodologies for estimation of state income for nearly all the sectors of the economy. Most of the states followed the standard methodologies for the six commodity producing sectors, viz. agriculture, animal husbandry, forestry, fishing, mining & quarrying and manufacturing (registered). However, due to unsatisfactory data position in many states, only a few states prepared estimates for other sectors following the standard methodology. The issue of regional accounting and preparation of regional macro-economic aggregates was also discussed in depth at the Mahabaleshwar seminar of Indian Association for Research in National Income & Wealth (IARNIW) held in 1971.

4.3 On the recommendations of the First & Second Conference of Central and State Statistical Organisations (COCSSO) held at Bhopal in September 1971 and in New Delhi in February 1975, two Working Groups on Regional Level Statistics were constituted who while submitting their reports recommended development of a strong infrastructure for collection of statistics at District and lower level statistical organisations.

4.4 As a follow-up of the recommendations of the COCSSO, the Government of India in May 1972 set up a Committee on Regional Accounts (RAC) with the following terms of reference:

- to consider and advise on the levels (state, district or other regions) at which accounts should be prepared;
- to devise a system of regional accounts and standard supporting and supplementary tables for adoption by all the states;
- to suggest measures for building up regional accounts in the country taking into consideration the availability of data and requirements of Central and State Governments; and
- to examine the concepts, definitions, and classifications for preparation of regional accounts and to lay down guidelines.

4.5 The Committee submitted its First Report to the Government in November 1974, and the Second/Final Report in September 1976. In its report, the Committee recommended a System of Regional Accounts (SRA), which consists of consolidated accounts for the region, accounts for the household sector and accounts relating to the public sector. It also described the concepts, coverage and method of estimation of various aggregates appearing in the Accounts and Standard Tables. Further the report dealt with the major gaps in the data system and made recommendations for collection of essential statistics required for satisfactory measurement of regional income and related aggregates and construction of the recommended system of Regional Accounts. The Committee felt that an accounting frame-work for the states could be recommended but there

was little point in recommending one for regions smaller than states, like district.

4.6 The committee in its recommendations had also suggested compilation of state level input-output tables, district level estimates for, at least, commodity producing sectors and comparable estimates based on purchasing power parity of the rupee in different states on the lines of the United Nations project on International Comparison of National Accounts aggregates to remove the price differentials in different regional estimates.

4.7 The RAC in its First Report recommended a set of Standard Tables for recording and presenting information for the states and possibly for other geographical regions/areas smaller than the country. During its first report, the Committee did not present a set of regional accounts primarily because the regional accounts raised some conceptual as well as data problems which were different from those connected with the preparation of accounts at the national level and had to be resolved prior to the preparation of regional accounts. The main problem, which the Committee identified during its earlier deliberations, were in respect of savings, change in stocks and external trade and finances. The Committee had felt that without the availability of relevant data and the clarification of the conceptual problems involved it would be futile to recommend a system of accounts at the regional level.

4.8 The standard tables recommended by the Committee in its first report covered all aspects of economic transactions other than those mentioned above. The Committee had recommended the preparation of these tables at the regional level with the hope that this exercise would generate sufficient interest at the regional level in the form of collection of data and preparation of fresh estimates and the time would then be ripe for considering the system of regional accounts, which could be recommended for adoption. In its first report, the committee also published the results of an exercise undertaken by the State/UT Directorates of Economics & Statistics (DESS), Maharashtra for filling up the recommended tables with data pertaining to Maharashtra. Later, the Committee recommended a set of regional accounts in its final report submitted to the Government of India in September 1976.

4.9 The SRA recommendations in the final report of the Committee consisted of a set of three consolidated accounts for each region relating to (i) production, (ii) income and outlay, and (iii) capital finance; two accounts giving the transactions of the households (defined to include un-incorporated enterprises) and the population in the form of income, outlay and expenditure; and the public sector accounts separately for administrative departments, departmental enterprises and non-departmental enterprises. No system of accounts is complete without the supporting tables which give further details on the transactions covered in the accounts.

4.10 Summary of recommendations of the Committee on Regional Accounts have been reproduced in Annex-4.1.

4.11 With the progress of time, the work on estimation of state income has improved and expanded in different states. At present, practically all the States and Union Territories (UTs) of India compute state income estimates and are preparing district level estimates as well. These estimates are prepared by the State Income Units of the respective State Directorates of Economics and Statistics (DESSs). The Central Statistical Organisation assists the States in the preparation of these estimates by rendering advice on conceptual and methodological issues.

## RECOMMENDATIONS OF COMMITTEE ON REGIONAL ACCOUNTS

A4.1 The Committee emphasized that improvement of estimates at the regional level and filling up data gaps for the purpose would automatically lead to improvement of the estimates at the national level. It would, therefore be desirable that co-coordinated efforts are made to improve the data position in all the states simultaneously so that the fruits of such labour can also benefit and improve the estimates prepared at the centre.

A4.2 The reliability of the estimates can be broadly grouped into three main categories according to data base:

- where data are collected every year (e.g. production of principal crops, mining, registered factories, etc.)
- where 'bench-mark' estimates can be worked out reasonably satisfactorily every few years and the estimates for the intervening years can be worked out by moving the bench mark estimates by means of appropriate indicators of physical output and prices (e.g. livestock products, unregistered manufacturing, construction, trade, services etc.) and
- where national totals are allocated among states by the use of some meaningful indicators (e.g. banking, insurance, railways, central government administration. etc.).

A4.3 The improvement in the quality of estimates will have to be brought about by improving the data base and priorities will have to be assigned in the task so that a coordinated and planned performance of data improvement can be taken up in accordance with the importance of the sectors or sub-sectors where the reliability of estimates is at present weak. It is recognised that all the three types of estimates (a), (b) and (c) mentioned above may have to continue for quite some time and in the case of some sub-sectors no change may be possible in the foreseeable future. However, even here, improvements will be necessary. For instance, in regard to estimates listed under (a) above, time-lags can be reduced to a minimum; in regard to those under (b), better 'bench-mark' period estimates can be made and their frequencies might be increased. Also the appropriateness of the indicators used may be improved, whereas for the estimates under (c), allocation methods may need improvement.

A4.4 It may be, that, in course of time, some of the sectoral estimates of (b) type may have to be upgraded to (a) type estimates and wherever possible, this type of improvement will have to be brought about. One would, for instance, desire that, considering their importance, the estimates of income from construction, or registered trade establishments are worked out through (a) type data base. These factors will have to be taken into account while working out the priorities in the programme of improving the data base.

A4.5 Each regional economy may be divided broadly into (i) public sector and (ii) the private sector. The latter can be further classified into (i) private

organised sector and (ii) private unorganised sector. The private organised sector can be defined to include those enterprises or establishments owned by non-government economic agents, which are registered or covered under one or the other of the widely applied Acts. It is assumed that, in the manufacturing sector, establishments which are registered under the Indian Factories Act belong to the organised sector. In the trade sector, such establishments or business which are registered under the Sales Tax Act (which are prevalent in almost all the states in one form or another) and in the mining sector, mines registered under the Mineral Conservation and Development Rules may be considered as falling under the organised sector. The rest of the economic entities or establishments can be considered as falling under the unorganised sector. The division is purely one of convenience since the establishments classified as 'organised' enable one to set up a frame for sampling or a frame for identification of the establishments and have, generally speaking, better records and readily available annual accounts.

A4.6 The problems of data improvement are, however, not necessarily related to the organised or unorganised parts of any given sector. For instance, income estimates from registered trade rest today on weak data base, whereas agriculture which definitionally belongs to the unorganised part of the private sector has much better data base at least for the principal crops. But, by and large, the unorganised parts of the economy will need much better data base than the one they have now.

A4.7 The specific steps to be taken for improving the data base in each sector or sub-sector for estimating regional incomes, expenditures, etc., are recommended here. It must, however, be underlined that the Committee has recommended a set of accounts and supporting tables which would involve compilation of additional information. Saving of the region, mixed income of the self-employed in the region and income due to free or reduced cost services furnished by government, private non-profit bodies and by industries, are some instances. Estimation of such additional items increases the magnitude of the task on hand. Here also, priorities will have to be assigned to the construction of accounts and tables. It may be that Account 5 on total consumption and income of the population will have to be given low priority. Another feature of the regional accounts and tables is the conceptual framework which one will have to grasp before the work can be started, and the figures, properly understood and interpreted.

### **Agriculture and livestock**

A4.8 Regular annual estimates of yield rates based on crop cutting experiments are available only for the principal crops. We recommend that crop cutting experiments may be extended to cover all important minor crops in each state. This list of such minor crops may differ between regions. In the case of unspecified crops, other products and by-products, we feel that surveys should be undertaken at least once in three years to estimate the yield rates and input structure apart from conducting type studies at shorter intervals.

A4.9 Data on livestock population become available once in five years through quinquennial livestock censuses. Yield rates of various livestock products are available only from occasional or ad-hoc surveys conducted by IARS or DMI and are not uniform between states in terms of reference period, etc. There is a requirement of annual estimates of yield rates for providing figures or estimates of livestock products year by year. The Committee recommends that a set of annual surveys be undertaken furnishing estimates of livestock numbers and yield rate of major livestock products in all the states. Surveys may be conducted less frequently for estimating the average yield rates of various other items of livestock products including the subsequent processed products as well as the input structure of different products. The NSSO survey on livestock and livestock products undertaken in the 30th Round if repeated at regular intervals would meet the latter requirement.

A4.10 For agricultural and livestock products, it is necessary to collect prices for more items and from more markets, the selection of markets being reviewed periodically. Collection of prices of livestock products, particularly in rural areas, should be intensified. For livestock products, producer prices are usually not available and in order to obtain the estimates of gross output at producer prices, adjustments for trade and transport margins become necessary. This could be avoided by collecting prices regularly from producers.

A4.11 Data on intermediate consumption in respect of agricultural crops and livestock products are inadequate. Recently a comprehensive survey of studying the cost of cultivation or principal crops has been launched by the Ministry of Agriculture on a continuing basis and the requisite data are to be collected for different crops by rotation. The results in respect of individual crops as and when available should be put to use. Each state should examine the crops which are important to their economy and left out of this programme, and organise surveys to collect for such crops data on intermediate consumption and consumption of fixed capital. All such surveys on cost of cultivation or livestock should collect data on fixed capital formation as well.

### **Forestry and logging**

A4.12 Output of major forest products by varieties and out-turn and prices of minor forest products have to be collected on a regular basis by state forest departments and the time-lag in the availability of data should be reduced. Studies may be conducted, say once in five years, to estimate the unauthorized/recorded production. Surveys to collect data on intermediate consumption, consumption of fixed capital as well as fixed capital formation need be conducted at least once in five years.

### **Fishing**

A4.13 Surveys to estimate the catch of inland fishing and subsistent fishing may be conducted by all the states through the collecting agencies in the states. Wherever two sets of estimates of production are available (e.g. CMFRI, Mandapam and state agency), efforts should be made to bring



about reconciliation to the extent possible. This is essential as often widely divergent figures are reported. It is also necessary to get data on inputs, repair and maintenance, consumption of fixed capital and addition to capital during the year for both inland and marine fishing. Such information may be collected periodically at least once in five years. For the evaluation of output at 'producer prices' wholesale prices have to be adjusted for trade and transport margins. Attempt therefore should be made to collect producer prices at least from a small sample.

**Mining and quarrying**

A4.14 Data on output of all minor minerals as well as the details about intermediate consumption and consumption of fixed capital are not available. Information on inputs and consumption of fixed capital has to be collected in the case of the two major products as well, viz., coal and petroleum. The IBM or state departments of mining and geology may collect such information annually.

**Other organised sectors**

A4.15 For manufacturing, while ASI data are available to the states, both for the census and the sample sectors, it is necessary that the states develop their own index number series for industrial production and prices similar to the All-India series. This would provide an appropriate indicator to the states to move the latest available estimates based on ASI data to obtain current year estimates on a provisional basis.

A4.16 Although a part of the trade sector belongs to the organised part, hardly any data are available. Available estimates of various aggregates like the value added, capital formation, total turnover and input costs, etc., are very weak. It is necessary that the establishments registered under Sales Tax Act is used as a frame and the turnover figures, also collected in this context, are used to stratify the various establishments covered under the Act. It is generally observed that a very small proportion of the trading establishments account for a large proportion of the total turnover. From the sampling point of view this is a great advantage. It should therefore be possible to organise an all-India survey of distributive trade at the interval of every five years through an appropriate agency. The state statistical agencies will need to co-operate in this matter by updating the frame, and also maintaining turnover figures on an annual basis for estimating figures of value added, etc. for inter-survey years. Similar surveys should also be undertaken for organised transport and professions. Registration under the appropriate act and similar other provisions may supply the appropriate frames.

A4.17 For construction, the feasible approach would be through the agencies making outlays rather than from institutions like construction companies. For example, in manufacturing, the ASI returns should provide the necessary information.

**Unorganised sector**

A4.18 In the case of manufacturing, construction, transport, trade, hotels, etc., and services, some information on the organised/ corporate components will be available.

A4.19 In the case of the unorganised components of these sectors, it would be necessary to collect comprehensive information on various aspects for a bench-mark year. These bench-mark data are to be supplemented by current data on major indicators of trends of each of the transactions/macro-aggregates for each of the activities on an annual basis for estimation for the intervening years. Till now it has not been possible to organise collection of annual data in these sectors.

A4.20 As the Committee has observed country-wide periodic censuses/ surveys covering all these economic activities simultaneously will help in obtaining the bench-mark information. It is understood that the CSO has already initiated action for conducting the first economic census in the country to be followed by sample surveys by types of activities. Considering the magnitude of the sectors to be covered, the collection of data has been planned in two stages. The first stage consists of listing of all establishments, both household and non household, collecting information on some basic characteristics at the listing stage. The sample surveys at the second stage would provide detailed information on inputs, outputs, employment capital formation, sources of finances, factor incomes, etc., on individual economic activities. The project would be comprehensive to the extent of covering all non-agricultural establishments in the unorganised sector and activities like wholesale and retail trade barring public and private corporate enterprises. The Committee hopes that the scheme will be expeditiously implemented and thus the major data gap in these sectors filled to a large extent.

A4.21 It is also important to ensure that both household and non-household enterprises are covered in the course of data collection both for the census as well as the sample surveys. In other words, the household and non-household surveys should be tied up in such a way that the same set of economic activities are covered at the same time in the household and non-household sectors and the complete results for any particular economic activity are obtained for the same period. Such economic censuses and surveys should be repeated periodically so that adequate bench-mark information relating to the unorganised sectors of the economy flows continuously.

A4.22 Obviously, however, this programme will not provide the annual output indicators, and these can best be obtained by freezing a fraction of the NSSO and the Economic Census samples and canvassing the same would provide estimates of a limited set of variables that could serve as surrogates of gross output for the unorganised sector. Once there is an agreement about this plan the Committee feels confident that the CSO in consultation with the SSBs could work out the relevant variable or their surrogates.

A4.23 It will be observed that all private activities except construction have been covered above. The analysis of balance sheets and annual accounts is not likely to prove useful for state level estimates in these sectors. The best way to estimate value added, capital formation etc. is to use information available from the ASI for organised manufacturing. For other establishments covered under sales tax registration, shop establishments, etc. It should be possible to obtain regularly information on output, input etc. For construction activity the most satisfactory answer for data on output, capital formation etc., may be organisation of sample surveys on the basis of area sampling and details available from ASI etc. For non-registered manufacturing as well as other non-registered establishments which are not so covered, it will be necessary to organise large scale sample surveys at least once in five years giving details of output, input, capital formation etc. The estimates for inter-survey years should be built up with suitable indicators based on information on important inputs.

A4.24 In the municipal areas, there is usually a system of approving building plans and issuing commencement and/or completion certificates. These records also provide a suitable frame for conducting sample surveys in urban areas. In the rural areas, surveys will be necessary to estimate the various aggregates related to the construction sector. These surveys can cover households and unorganised factories, trading establishments, etc., in the private sector.

### **Public sector**

A4.25 For the public sector, the most outstanding gap in information is with respect to local authorities. Detailed information on income and expenditure of local authorities needs to be collected regularly on an annual basis. The number of local bodies within a region is likely to be large depending upon its size and tiers of local administration. However, the collection of data alone will not suffice and economic analysis of the details would be necessary. The task of analysis would require considerable resources and the problem is enhanced as the presentation of the budget is not uniform and does not provide information in sufficient details. The Committee therefore feels that a uniform system of presentation and classification of accounts of the local bodies is necessary as in the case of state government budgets. The question of collection of the minimum necessary information in a specially devised form for the purpose might facilitate the collection of relevant data as well as their analysis.

A4.26 At present CSO, besides analysing the central government budgets, is also engaged in the analysis of budgets of all state governments and local bodies and accounts of non-departmental enterprises for the preparation of the public sector accounts. Once all the state governments undertake the analysis of the budgets of administrative departments and non-departmental commercial undertakings falling within their jurisdiction within a specified time schedule following uniform classificatory system, the CSO can make use of these results for consolidation thus avoiding the present duplication of work. The CSO can, in turn, concentrate in preparing more detailed analysis of the corresponding counterparts at the centre providing the detailed break-

up of various aggregates of the central government, the administrative departments as well as departmental and non-departmental enterprises located in the various states.

**Private final consumption expenditure**

A4.27 According to the present long-term programmes of the NSSO, the household consumer expenditure surveys are to be carried out once every five years. The major gaps in the data system in this respect would therefore be relating to the annual indicators which would be needed to carry forward the bench-mark estimates of private consumption expenditure which would be built up in the basis of the NSS data. The SSBs may have to make special efforts in carrying out surveys on a smaller scale in order to build up indicators of consumption of at least the major commodities or built up series of net availability of such commodities to the households for current consumption. However, if the NSSO uses a frozen sample recommended by the Committee, the sample could throw annual estimates of size distribution of an important segment of household consumption. Also surveys should be organised to obtain size distribution of income suitably defined.

**Capital formation**

A4.28 Wherever a producing sector is studied in detail through a census/survey, the Committee recommends that the query should cover all capital outlays of the enterprise. This has been mentioned in some of the above sections also, but this specific mention should be considered as the general recommendation of the Committee for all producing sectors.

**Problems of inter-state comparability**

A4.29 In the past, the Planning Commission, the Finance Commission and the Ministry of Finance have been handicapped in the use of SDP estimates, not merely, due to conceptual and methodological non-comparability between the estimates prepared by SSBs but also due to the price differentials that exist between the states. The conceptual and methodological problems have received good deal of attention and have been resolved to some extent. But the problem of differential prices and its effect on the inter-state comparability has not yet received the attention it deserves. The United Nations project on International Comparison of National Accounts aggregates and purchasing power of currencies is devoted to the problem corresponding to price differentials between various countries and the associated question of comparability of per capita incomes. The method used is suitable for a realistic inter-state comparison. India happens to be a participating country of this Project. In view of this, the Committee recommends that the CSO should pursue the project, already initiated, to study the purchasing power parities of the rupee in different states for a more meaningful comparison of domestic product between states. The Committee feels that to pursue this point, it would be desirable to have final outlays on consumption and capital formation by states at intervals more frequent than five year.

**The co-coordinating function of the CSO**

A4.30 The SSBs and the CSO in the past have played distinctive roles in the development of regional income studies in the various states. The CSO assisted by a Working Group on State Income which included several Directors of SSBs evolved standard methodologies whose adoption by SSBs has helped in achieving comparability in the estimates prepared by individual states. However, the present expanded work on the subject, as recommended by the Committee in its two Reports, would call for much more important role to be played by CSO and SSBs mainly because of the broader coverage and scope of the work involved. The methodologies suggested, though, broadly conforming to the standard methodologies adopted earlier provide enough flexibility for the states to use better available data. This will call for examination of the methodologies from the point of view of uniformity of concepts as well as representativeness of the data used at the state level. Moreover, the preparation of regional accounts is an entirely new experience for the state. Estimation of the aggregates like capital formation, consumption expenditure and household income is likely to present both conceptual and methodological problems and some SSBs may require guidance from the CSO at least in the initial stages. The preparation of SRA and the supporting tables will also necessitate collection of fresh data through sample surveys and type studies at the local level and unless these are enthusiastically pursued by SSBs and co-coordinated by the CSO by providing guidelines at the technical level as well as ensuring their simultaneous implementation, it is unlikely that comparable estimates for all the states will become available soon.

A4.31 It would be clear from the report that for a large number of items of the accounts and tables the sources of data lie beyond the ambit of the SSBs. Apart from this some of the estimates to be entered in these accounts are to be based on notional calculations and certain uniformity in these calculations is necessary so that their allocation to all states add up to what in aggregate was allocated initially. This points, therefore, to the necessity of a central agency securing the necessary data, making the calculation of allocation and communicating them to the state. The CSO would thus have to take up this additional role if the SRA is to be put into practice. Without its active participation in this endeavour the states would not be able to prepare the accounts.

Source: *Final report of the Committee on Regional Accounts, Central Statistical Organisation, Department of Statistics, Ministry of Planning, Government of India, September, 1976.*

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## METHODOLOGY FOR COMPILING STATE DOMESTIC PRODUCT

5.1 The estimates of State Domestic Product (SDP) are compiled through a combination of production and income approaches, depending on the data availability at state level. The expenditure approach SDP estimates are not compiled, as detailed data required for such compilations, particularly on the inter-state movement of goods and services and exports and imports, are not available at state level.

5.2 The general methodology for compiling the estimates of state income is to first compile the estimates of domestic product at disaggregated level for each economic activity and then aggregating them for the whole state. While compiling the estimates of SDP for each economic activity, either the production approach or the income approach or a combination of the two approaches is adopted, depending upon the data availability at state level. The estimates for commodity producing sectors like agriculture, forestry, fishing, mining & quarrying, manufacturing, etc. are prepared through the production approach i.e. measuring the value of output and deducting therefrom the cost of material inputs used in the process of production. In the services sectors (non-public segment) like trade, transport, hotels & restaurants etc., the estimates are prepared by income approach, specifically, by multiplying the value added per worker by the number of workers, for the benchmark estimates and extrapolating these benchmark estimates with suitable indicators for the annual estimates. The information on value added per worker is obtained from the relevant Enterprise Surveys conducted for the purpose. The estimates of workforce are obtained using the results of large-scale sample surveys on employment & unemployment conducted by National Sample Survey Organisation (NSSO) and decennial population census carried out in the country by the Office of Registrar General of India (RGI) and Census Commissioner.

5.3 In the preparation of state income estimates, certain activities cut across state boundaries, and thus their economic contribution cannot be assigned to any one state directly. Such activities are Railways, Communications, Banking & Insurance and Central Government Administration, and are known as the Supra-regional sectors of the economy. The estimates for these supra regional activities are compiled for the economy as a whole and allocated to the states on the basis of relevant indicators.

5.4 The estimates of CFC are compiled at the national level using the estimates of asset wise Net Fixed Capital Stock (NFCS) and average life of asset, following the procedure of perpetual inventory method (PIM). The national level estimates of CFC are allocated to states using appropriate indicators.

5.5 For most of the commodity producing sectors, viz. Agriculture and allied activities, forestry and logging, fishing, mining and quarrying and

registered manufacturing, the state level data are available and all-India estimates are, in fact, prepared as aggregate of state level estimates. For other sectors, including the supra-regional sectors, estimates are prepared at national level, using the data available at national level. The following paragraphs give, in brief, the methodology for preparation of state-wise estimates of SDP from various economic activities.

### **Agriculture and Allied activities**

#### ***Agriculture (Proper)***

5.6 This activity comprises agriculture proper, livestock and livestock products and operation of irrigation system. The economic activities included in agriculture proper are (i) growing of field crops, fruits, nuts, seeds and vegetables, (ii) management of tea, coffee and rubber plantations, (iii) agricultural and horticultural services on a fee or on contract basis such as harvesting, baling and thrashing, preparation of tobacco for marketing, pest control, spraying, pruning, picking and packing and (iv) ancillary activities of cultivators such as gur making, transportation of own produce to primary markets, activities yielding rental income from farm buildings and farm machinery. Livestock and livestock products include breeding and rearing of animals and poultry besides private veterinary services, production of milk, slaughtering, preparation and dressing of meat, production of raw hides and skins, eggs, dung, raw wool, honey and silk worm cocoons etc. Operation of irrigation system comprises supply of water through various Government channels to the agricultural producers. Agriculture and livestock activities go together as it is not always feasible to segregate the various inputs like livestock feed, repairs and maintenance costs, CFC etc., into those used in agricultural and livestock production. However, using the norms available from Input Output Transaction Tables (IOTT), separate estimates of GDP of livestock sector are compiled at national level.

5.7 **Agriculture Output:** The estimates of GSDP for this activity are compiled by the production method except for the operation of government irrigation system, for which the income method is followed. As mentioned earlier, the value of output is worked out for agriculture and livestock separately but the value-added estimates are prepared for the combined activity. The value of output of each crop is obtained as a product of area, yield and price; or production and price as the case may be.

5.8 The estimates of area and output of principal crops are provided by the State Directorates of Agriculture/State Directorates of Economics and Statistics (DES), depending upon whichever agency is declared as the State Agricultural Statistics Authority (SASA). In respect of horticultural crops, the information on area and output is taken from the State Directorates of Horticulture/SASAs/National Horticulture Board (NHB), depending upon the data availability. The information on area and production in respect of floriculture is obtained from the office of Horticulture Departments or NHB. In the case of sugarcane, output excluding the quantity converted into gur by the cane growers, is estimated and output from gur is evaluated separately. The estimates of output for miscellaneous and unspecified crops are

obtained by applying the appropriate average value of Yield Per Hectare (YPH), and the area under the crop. The value of by-products, viz., stalks, straw, etc. are estimated by applying the YPH as available from the cost of cultivation studies (CCS). For estimating the value of output of crops, fruits, vegetables etc. in foreyard/backyard of houses, the information available in the Report "Operational Land Holdings and Livestock Holding Survey, 1991-92, NSSO (48th round)" is used. Using the results of this survey, it is estimated that the total area under kitchen garden works out to be 0.22 per cent of the total rural area operated at all-India level. The same norm of 0.22 per cent of the rural area operated is used in the states. For deriving the value of output of crops in foreyard/backyard, the YPH of fruits and vegetables crops is used.

5.9 For those crops for which production data is available, valuation of crop output is done by multiplying the quantities of production with the corresponding producers' prices. The sources of data used and the method of preparation of estimates of value of output are given as under:

- The estimates of outturn for principal crops are based on the results of the crop estimation surveys conducted annually by the State Government Agencies. These are compiled and published annually by the State Agriculture Statistics Authorities (SASAs) in the form of Season and Crop Reports. For evaluation purposes of these crops, the producers' prices corresponding to average wholesale prices ruling in the primary markets during the peak marketing periods are adopted. The wholesale prices are collected by the agriculture produce marketing committees of State Agriculture Departments or by the DESAg under the market intelligence scheme of DESAg. For averaging the weekly wholesale prices available from the selected primary markets, the following procedures are adopted.
- Arithmetic averaging of the prices at the various centers within a district is done to get the weekly district prices, for each crop
- Average price for a district is worked out as the arithmetic average over the 'peak marketing period' of weekly prices obtained as above.
- State average price is obtained as a weighted average of the district wise prices, weights being the district-wise production of the corresponding crops.

5.10 The earlier practice of evaluating rice (including bran and husk) after deducting the rice milling charges therefrom, to obtain the value of paddy has been dispensed away with. The value of paddy is now worked out directly. This has been done because of the prevailing practice of the farmers to dispose of paddy as such, and also since the corresponding prices of paddy in the primary markets are now available regularly.

5.11 Growing of trees on farmland and village common land hitherto in the agriculture sector, now forms part of the forestry sector. In respect of coffee, rubber and opium, the statistics of production and prices are obtained from the Coffee Board, Rubber Board and Central Bureau of Narcotics, respectively. In case of tea, the estimates of output available from Tea



Board relate to production of processed tea, instead of raw tealeaves. The production of tea leaves has been estimated as 4.44 times the processed tea, the source of which is the Tea Board.

5.12 In respect of unspecified and miscellaneous crop and crop groups viz. (a) other cereals, (b) other oil seeds, (c) other sugars, (d) other fibres, (e) dyes and tanning material, (f) other drugs and narcotics, (g) other condiments and spices, (h) other fruits and vegetables and (i) miscellaneous crops (fodder, grass, misc. food and non food crops), the out turn estimates are not directly available for all these crops. To the extent possible, data on related crops are utilized. The value of output in respect of these crop groups is estimated by utilising area estimates under these crop groups as available from the annual publication, 'Land Utilisation Statistics (LUS)' of state agencies. By applying an appropriate value of yield per hectare to the total estimated area under each of these groups/crop groups, the estimates of value of output are obtained.

5.13 For estimating the value of by-products, viz. straw and stalks of various crops, annual data on value of yield per hectare as available from the cost of cultivation studies coordinated by the Ministry of Agriculture, are adopted.

5.14 In respect of fruits and vegetables crops, a complete data base, state-wise, is published annually in the publication "Indian Horticulture Data Base" of National Horticulture Board (NHB), Ministry of Agriculture. It is being used in addition to existing data sources since 1993-94 for estimating the value of output of fruits and vegetables crops and their prices. In the earlier series, the estimates of area production of fruits and vegetables for crops other than those covered under Principal Crops and those covered under the Plan Scheme "Estimates of Yield of Fruits, Vegetables and other Minor Crops" made available by the SASAs were used.

5.15 Floriculture activity has been taken into account separately for the first time in 1993-94 series of national and state accounts. Data on area production and prices of flowers are available annually state wise in the annual publication i.e. "Indian Horticulture Data Base" of National Horticulture Board (NHB), Ministry of Agriculture. Production of crops in foreyard/backyard of houses was included in the value of output of agriculture sector for the first time in the National Accounts in the 1993-94 series. The information available in the report "Operational Land Holdings in India, 1991-92, Salient Features" March 1997 and Livestock Holdings, 1991-92, NSS (48th Round) has been used to estimate the total area under the kitchen garden.

5.16 Estimates at constant prices are compiled by using the base year prices for valuing the production of crops. For miscellaneous crops, the constant price estimates relate to the value per hectare in the base year.

### **Livestock**

5.17 The Livestock sector for the purpose of estimation of value of output has been divided into 7 broad groups. The groups are:

- Milk
- Meat
- Eggs
- Wool
- Dung
- Silk Worm cocoons and Honey
- Increment in stock

5.18 Evaluation of Livestock production is done by multiplying the quantities of production by the corresponding producers prices. The source of data used in the preparation of the value of output is as under:

- The Animal Husbandry Directorates of the State governments conduct every year, the Integrated Sample Survey (ISS), covering milk, egg, meat and wool. Through these surveys the yield estimates of these products are available. The data on livestock population is estimated using the results of five-yearly livestock censuses. Using the projected livestock population and the yield estimates from the ISS, the estimates of production of livestock products is compiled by the State agencies.
- Meat group comprises of Meat (Beef, mutton, pork including edible offals and glands and poultry meat), meat products (fats, heads, legs) and by-products comprises hides (cattle and buffalos hides), skins (goat & sheep skin) and other products (guts, blood, bones, horns, hoofs, tail stump, useless meat and oesophagus). The annual meat production estimates are directly compiled by the State DESs from the data relating to prices and production received, from State Animal Husbandry Departments and State DESs. The State's Animal Husbandry Departments furnish data on number of slaughtered animals and production of meat. The latest Indian Livestock Census results are used to generate annual data on population of various categories of Livestock. Out of total meat production 7.08% is transferred to Manufacturing sector as input and the remaining 92.92% is taken as Gross Value of output under meat.

5.19 The estimates of other meat products and by-products are based on number of slaughtered animals and fallen animals wherever applicable and the corresponding yield rates. The basic data relating to yield rates of edible offals, fats and other by-products (viz. guts, oesophagus, tail stumps, useless meat, blood, bones, horns and hoofs) are based on the studies conducted by the CSO and some States in 2005. The outturn estimates are worked out for each category of animals by applying the state-wise average yield rates on the estimated annual number of slaughtered animals. Hides and skins are obtained from a) animals slaughtered for production of meat and b) animals fallen due to natural death. Estimates of the number of animals fallen are estimated by the Animal Husbandry departments on the basis of the movements in the estimated population of animals. The

estimates of poultry meat are prepared using the information on utilization of eggs and chicken survived. These data are collected through ISS in some of the states. Indian Agricultural Statistics Research Institute (IASRI) and some of the State Animal Husbandry departments have also conducted poultry surveys and collected these data. Poultry meat is estimated in terms of number of adult fowls & chickens slaughtered.

5.20 The estimates of camel hair, goat hair and pig bristles are prepared on the basis of information on yield per animal available from the studies conducted by the CSO and some States in 2005. The benchmark estimates of hair and bristles are carried forward using relevant category of population.

5.21 The estimates of production of dung are prepared on the basis of information available through ISS. Dung is used as manure as well as fuel. The utilization rates of dung for a) dung used as manure and b) dung used as fuel are based on the studies conducted by some of the States.

5.22 The annual outturn of estimates of silkworm cocoons by types (viz. mulberry, tasar, ericot and muga) obtained from Central Silk Board and Khadi and Village Industries Commission (KVIC) respectively on regular basis, provide the requisite information on these items.

5.23 The annual net increase in the population in each state is estimated respectively for each category of livestock on the basis of livestock population projections. The population is projected on the basis of intercensal population growth of animals. The latest Livestock Census results are used for this purpose.

5.24 The prices of livestock products are collected and maintained by the State DESs. The state-wise prices are worked out as the simple average of all available price observations. Estimates at constant prices are compiled by using the base year prices for valuing the production of various livestock products.

### ***Inputs***

5.25 Seed: Seed rates are supplied to the states by the CSO based on the cost of cultivation studies (CCS) conducted by the Directorate of Economics & Statistics, Ministry of Agriculture, Government of India, through the Agricultural Universities.

5.26 Fertiliser/Manure: The estimates of consumption of chemical fertilisers in different States are available from the data on dispatches to different States published by the Fertiliser Association of India (FAI). The estimates of organic manure (which is the same as the output of dung manure included under the livestock output) are made using the data provided by the 5-yearly Livestock Census (ILC) in respect of bovine and ovine population and the evacuation rates derived from the annual Integrated Sample Survey (ISS).

5.27 Feed of livestock: The entire value of cane trash, fodder and grass and 95 per cent of value of stalks and straw are considered as value of feed. The estimates of concentrates, salt and medicine are based on the results of NSSO surveys. The estimates of feed of livestock are supplied to states by CSO.

5.28 Irrigation Charges: The information on receipts from water rates which include payments made by the agricultural producers to the government in lieu of water supplied to them from Government owned canals and other means of irrigation is culled out from the State Government budget documents. Similar information in respect of irrigation system from Government tube wells operated by District Panchayats and State Water Resources Development Corporation Ltd. is also used while estimating the value of irrigation charges.

5.29 Market charges: Estimates of market charges paid by agricultural producers for various commodities are prepared by the CSO and are made available to states. These are estimated using the data available from the survey on market margins on major crops, which is conducted by the DESAg, at the time of revising the base year of national accounts series. The rate of market charges to total value of output is derived from these studies and is applied on the value of output at State and Central level, each year till the rate is revised again at the time of next base year. Presently, this rate is 2.358%

5.30 Electricity: Electricity supplied to agriculture sector is taken as input, information for which is available from the Annual Accounts of State Electricity Boards.

5.31 Diesel Oil: The estimates are prepared by DES based on consumption of diesel oil per engine and per tractor as collected through the cost of cultivation studies. The data on number of diesel engines and tractors, at State level, is available from the Indian Livestock Census (ILC) and the State Transport Departments.

5.32 Repairs and Maintenance: The estimates are prepared by CSO using the results of 'All India Debt & Investment Surveys' and supplied to states.

5.33 FISIM: The imputed bank charges or financial intermediary services indirectly measured (FISIM) for the agriculture sector are taken in proportion to the GSDP of this sector, and the data is supplied to the states by the CSO.

### **Forestry and Logging**

5.34 The economic activities considered in this activity include (i) forestry (e.g., planting and conservation of forests, gathering of forest products, charcoal burning carried out in the forests), (ii) logging (e.g., felling and rough cutting of trees, hewing or rough shaping of poles, blocks etc.) and transportation of forest products to the sale depots/assembly centers and, (iii) farmyard wood (industrial wood and fuel wood collected by the primary

producers from trees outside regular forests). The forest products are classified into two broad groups viz., (a) major products comprising industrial wood (timber, round wood, match and pulpwood) and fuel wood (firewood and charcoal wood) and (b) minor products comprising a large number of heterogeneous items such as bamboo, fodder, lac, sandalwood, honey, resin, gum, tendu leaves etc.

5.35 Estimates of GSDP are prepared following the production method. Gross value of output is estimated separately for (a) Industrial wood, (b) Fuel wood and (c) minor forest products. Estimates of industrial wood are based on data received from the office of the Principal Chief Conservator of Forest (PCCF) in the state for recorded production. Since the value of unrecorded production is not available regularly, 10% of the value of recorded production is taken as the value of unrecorded production. For evaluating the value of output of industrial wood, prices as available from forest sale depots and supplied by PCCF are used. The value of fuel wood is estimated from the consumption side using the results of NSSO consumption expenditure surveys during the previous two quinquennial rounds. The estimates so derived are reduced by the actual value of agriculture by-product, namely, cotton sticks, arhar sticks, jute sticks and bagasse, which is taken into account in the agriculture activity (to avoid double counting) since these by-products are consumed as fuel by the households. These estimates are then inflated by 6 per cent to account for consumption of fuel wood by the industries and on funerals. Estimates of minor forest products are based on data directly available from the office of the PCCF. In the absence of information on inputs, 10 per cent of the value of output is taken as inputs. The estimates of value of output at constant prices are obtained by multiplying the current year production with the base year prices.

### **Fishing**

5.36 The activities covered in the fishing 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.

5.37 Estimates of GSDP of this activity are prepared by following the production method. Gross value of output is estimated from output and prices of inland, marine fish (including deep sea fishing) and prawns/shrimps (sold in raw form), sun dried fish, salted fish, frozen and smoking fish as furnished by the State Commissionerate/Directorate of Fisheries. Estimates of subsistence fishing are also included in the GSDP of the state, which is estimated at 12.5% of the value of output of inland fish. The estimates of value of output at constant prices are obtained by multiplying the current year production with the base year prices. The value of inputs and operational costs is taken as 22.5%, 10%, 22.5%, 1% and 1% of the value of output for the items, marine fish, inland fish, prawns, subsistence fish and salted fish respectively, as supplied by the CSO.

### **Mining and Quarrying**

5.38 The economic activities covered in this activity comprise extraction of minerals which occur in nature as solids, liquids or gases; underground and surface mines, quarries and oil wells, with all supplementary operations for dressing and beneficiating ores and other crude minerals such as crushing, screening, washing, cleaning, grading, milling, floatation, melting, pelletising, topping and other preparations needed to render the material marketable. All these activities are covered to the extent they are carried on at the mine site or upto the first point of sale. Production of rock salt is included, as also the production of salt obtained by evaporation of water from sea, lakes, etc. However, large expenditures on preparing mining sites, prospecting and boring activities are not included here as they are included under the 'construction' industry.

5.39 Estimates of GSDP in this industry are compiled following the production method by calculating the value of output of each mineral in the state and deducting there from the value of corresponding inputs. State wise and mineral wise data on output (production & prices) of all minerals (except minor minerals, crude petroleum & natural gas) are obtained from the publication of Indian Bureau of Mines (IBM), Nagpur. Production in respect of minor minerals is collected from State Directorate of Geology and Mining. The production data in respect of crude petroleum & natural gas, as obtained from the Ministry of Petroleum and Natural Gas, are supplied by the CSO to the states. The deductible rates (i.e. inputs) in respect of all minerals, except minor minerals and fuel minerals are obtained from IBM. Input rates for minor minerals are based on NSSO survey or IBM. In case of fuel minerals, input rates for lignite and petroleum, as obtained from Neyveli Lignite Corporation and Oil and Natural Gas Corporation (ONGC), are supplied by the CSO. In the past, the input structure of coal was taken from the Office of Coal Controller, Government of India (CCI). It was, however, observed that the information on value of output and input structure of coal, as available from the CCI, does not account for ancillary activities like washeries and also the actual data on output including coal washeries, input, etc. are directly available in the Annual Accounts of Coal India Limited and its subsidiaries. Therefore, since the 1993-94 series, the national level estimates of value added from coal are compiled on the basis of data as available from the Coal India Limited and its subsidiaries. The national level estimates of coal thus prepared are allocated among states on the basis of state-wise data on output of coal, as published by the IBM, and supplied to states. This procedure ensures that the actual price realized per tonne of coal production includes subsidiary activities of the coal companies. This obviously is different from the pit-head prices used earlier to value the production of coal. The estimates of value of output at constant prices are obtained by multiplying the production with the base year prices.

### **Manufacturing (registered)**

5.40 Manufacturing process, in general, is defined as any process for making, altering, repairing, finishing, packing, oiling, washing, cleaning, breaking up, demolishing or otherwise treating or adapting any article or

substance with a view to its use, sale, transport, delivery or disposal. Railway workshops are included under manufacturing and not under railways. Conversion of sugarcane into indigenous gur, slaughtering of animals and dressing of meat carried out by farmers and individuals are excluded from the scope of manufacturing activities, as these are included under agriculture and allied activities. Production in defence establishments is included under manufacturing. Since the 1999-2000 series, the repairing services have been excluded from manufacturing industry and moved to trade activity.

5.41 For the purposes of estimation of GSDP, the entire manufacturing activities are classified into two broad segments, namely, manufacturing - 'registered' and 'unregistered'. The registered manufacturing segment covers all manufacturing factories registered under sections 2m(i) and 2m(ii) of the Indian Factories Act, 1948 which respectively refer to the factories employing 10 or more workers and using power or those employing 20 or more workers but not using power on any day of the preceding 12 months and bidi and cigar establishments registered under Bidi and Cigar Workers (Condition of Employment) Act, 1966 and employing 10 or more workers using power or 20 or more workers and not using power.

5.42 A 'factory' or an 'establishment', in the context of registered manufacturing, is defined as any premises including the precincts thereof (i) whereon 10 or more workers are working or were working on any day of the preceding 12 months, and in any part of which a manufacturing process is carried on with the aid of power or is ordinarily so carried on or (ii) whereon 20 or more workers are working or were working on any day of the preceding 12 months, and in any part of which a manufacturing process is being carried on without the aid of power or is ordinarily so carried on - but does not include a mine subject to the operation of the Mines and Minerals (Regulation and Development) Act, 1957 or a railway running shed.

5.43 Estimates of GSDP for registered manufacturing are prepared by following the production method. The industry-wise estimates (these are compilation categories in the 1999-2000 series) are prepared on the basis of results of Annual Survey of Industries (ASI). Earlier, estimates of value added published in ASI Summary Results were not adjusted for non-responding factories, therefore, adjustments were made for this in the national accounts. for the non-responding units. From the year 1995-96 onwards, however, ASI results are published after adjusting for non-response.

5.44 Since the repairs of Locomotives and other rail road equipment (NIC-1987 industry group 597) is not adequately captured under ASI, the same is now taken from the budget documents of Railways at the national level and apportioned among the States by the CSO using appropriate indicators.

5.45 For the years for which ASI results are not available, the growth observed in the Index of Industrial Production (IIP) or the State IIP is used. These estimates undergo changes as soon as ASI results become available.

For estimating the GVA at constant prices, the current price estimates are deflated using an appropriate wholesale price index, at each of the compilation category levels.

### **Manufacturing (unregistered)**

5.46 The unregistered manufacturing segment - being complementary to registered manufacturing segment - covers all those units which are not covered under registered manufacturing segment. In other words, unregistered manufacturing segment covers all the manufacturing, processing, repair & maintenance services units employing less than 10 workers (using power) or less than 20 workers (not using power). It, by implication, also covers own account enterprises (OAE) engaged in the manufacturing activities. Estimates for manufacturing (unregistered) are first compiled for the base year and are extrapolated to later years using relevant indicators, like the IIP.

### **5.47 Estimates for the base year 1999-2000**

- (i) The estimates of GSDP from manufacturing (Unregistered) for the base year are compiled using the workforce approach i.e. multiplying the workforce engaged in manufacturing unregistered by the value added per worker (VAPW). Since the 1993-94 series, the estimates for the base year have been compiled separately for the units belonging to the Small Scale Industries (SSI) sector and other units in the unorganized manufacturing. The estimates for the units belonging to SSI sector have been compiled by using the estimates of VAPW based on the state-wise results of Third All-India Census on SSI Units, 2001-02 published by Development Commissioner, Small Scale Industries (DCSSI) and the corresponding workforce. The estimates of VAPW, at 2001-02 prices, have been duly deflated for the base year 1999-2000 using WPI, after subtracting the SSI units covered under ASI, as explained below.
- (ii) Development Commissioner's, Small Scale Industries (DCSSI) Survey report provides the number of workers employed in the year 2001-02 by SSI at two digit level of NIC code of manufacturing units. The ASI provides only the aggregate employment in SSI sector. In order to obtain the two digit level employment of SSI (minus ASI), the total employment of ASI in SSI is first distributed at two-digit level in the same proportion as the total employment of SSI at two-digit level and then subtracting the two digit level employment of ASI in SSI from the two digit level total employment of SSI. This two digit level employment in SSI (minus ASI) at two digit level has been duly extrapolated to 1999-2000 status using the inter survey growth rate of the working force of 56th (2000-01) of NSSO. GVA contribution of SSI in unregistered manufacturing, at 1999-2000 prices is obtained while following the above method.



- (iii) The estimates of unregistered manufacturing other than the one relating to SSI mentioned above have been compiled by using the information on GVA per worker from the follow-up surveys of Economic Census conducted by NSSO from time to time for Directory Manufacturing Establishments (DMEs) Non-Directory Manufacturing Establishments (NDMEs) and Own Account Enterprises (OAEs). The GVA of 56th round (2000-01) of NSSO are suitably deflated to 1999-2000. The estimates of workforce for this portion of unregistered manufacturing, i.e. for the units neither belonging to ASI nor to SSI, has been obtained from the total work force on manufacturing activities by excluding the number relating to ASI and SSI (non-ASI) segments. To obtain this at two digit level of DME, NDME and OAE for rural and urban separately, the total workforce on manufacturing excluding ASI excluding SSI obtained above is distributed on pro-rata basis in the ratio of employment as estimated by 56th round of NSSO survey of un-organized manufacturing industry.

5.48 Estimates for subsequent years:

- (i) Estimates for subsequent years are first worked out at constant prices and the constant price estimates are then inflated by relevant price indices to obtain the current price estimates for the corresponding years. The estimates at constant prices for the subsequent years are worked out by moving forward the industry wise estimates for the year 1999-2000 with the help of IIP/State IIP.
- (ii) Industry group wise estimates at current prices are obtained by inflating the constant price estimates with the corresponding Wholesale Price Index (WPI), which at compilation category level is the same as the one which has been used to deflate the current price estimates of registered manufacturing industry.

### **Electricity, Gas and Water Supply**

5.49 The economic activities relating to generation, transmission and distribution of electric energy are covered under the electricity sub-sector, the manufacture of gas in gas works including gobar gas and distribution through mains to household, industrial, commercial and other users are covered under the gas sub-sector and the activities associated with collection, purification and distribution of water excluding the operation of irrigation system are covered under water supply sub-sector. The production of LPG has been included under manufacturing and only supply of gas through pipelines, where it can not be alienated from the activity of its manufacturing is included in the gas sub-sector.

5.50 **Electricity:** The GSDP estimates in this sub-sector are prepared using the income method. The estimates are based on the analysis of annual accounts of State Electricity Boards and other electricity undertakings located in the State. The value added estimates of central undertakings, viz.

National Thermal Power Corporation, National Hydro Power Corporation and Power Grid Corporation made available by the CSO are also added.

5.51 **Gas**: The Gas sub-sector comprises Gobar Gas and other Gas. The estimates of Gobar Gas are compiled using data available from the Ministry of Non-Conventional Energy Sources and Khadi & Village Industries Commission (KVIC). In the absence of input structure, the gross value of output of Gobar Gas is treated as value added, on the assumption that the value of Gobar used in manufacturing of Gas also results in equivalent value of by products in the form of indigenous fertilizers (manure). The estimates of GSDP in respect of Gobar Gas are prepared on the basis of value of production per plant (estimated on the basis of KVIC data) multiplied by total number of plants installed up to the current year, as furnished by Ministry of Non-Conventional Energy Sources. The estimates of GSDP in respect of 'other gas' compiled by the CSO, using the data supplied by Gas Authority of India Limited, are also added.

5.52 **Water Supply**: The estimates of SDP for water supply are compiled for the public and private sectors separately following the income method.

- (i) **Public sector**: The estimates of public sector in respect of State Government are culled out from the Budget documents where as those for Local Bodies are based on the information obtained from District Panchayats, Municipalities Corporations and State Water Supply & Sewerage Boards.
- (ii) **Private sector**: The estimates of private sector are prepared separately for rural and urban areas using NSS workforce and average compensation of municipal workers engaged in Water Supply services. The average compensation of all the 5 type of municipalities i.e. with population (i) 5 lakhs and above, (ii) 1 lakh up to 5 lakhs, (iii) 75000 to 1 lakh, (iv) 50000 to 75000, and (v) below 50000, are used for urban areas whereas the average compensation of the smallest municipality (below 50000) are used for rural areas. The smallest slab of municipalities is taken as the proxy for rural segment on the assumption that these municipalities are close to the rural areas. The private sector workforce is obtained after subtracting the public sector workforce, as obtained from the state Directorate of Employment & Training (DE&T), from the corresponding total workforce of the water supply services. This exercise is done for the base year only. However, for subsequent years the workforce is projected using the growth observed in employment of municipal workers of water supply.

### **Construction**

5.53 The construction activity as per the International Standard Industrial Classification (ISIC) adopted in the System of National Accounts (SNA) consists of contract construction by general builders, civil engineering contractors and special trade contractors. Also included is own account construction carried out by independent units of enterprises or other

organisations, which are not part of the construction industry proper. But, owing to the problems of availability of data separately for units carrying out construction work, construction industry, for the purpose of estimating domestic product, is taken to include the whole of construction activity (contractual as well as own account) including construction work connected with planting and cultivating of new forests, plantations and orchards. Thus the scope of the industry is wider than that outlined in the NIC, 1998. Due to lack of data, demolition activities have, however, been excluded.

5.54 The estimates of value added from construction activity are prepared independently for the following categories by adopting expenditure method, i.e. by taking into account the expenditures made on construction.

- (i) Public sector covering (1) state government administrative departments, local bodies, all state departmental enterprises both of states and local bodies; (2) central government administrative departments and departmental enterprises other than railways and communication and repair and maintenance expenditure in respect of Defence Services; (3) railways, (4) communications; (5) non-departmental commercial undertakings excluding air and water transport, banking and insurance (only capital expenditure).
- (ii) Household Sector covering (1) Rural residential buildings, (2) Urban residential buildings, (5) Rural non-residential buildings, (4) Urban non-residential buildings, and (5) Rural and urban other construction works in the household sector.
- (iii) Residual comprising of construction undertaken by private corporate sector, other private un-incorporated enterprises and private non-profit institutions including quasi corporate bodies, besides part of public sector namely, air and water transport, banking and insurance, public non-profit institutions including quasi-Government bodies, repair and maintenance expenditure in respect of Defence Services and the entire repair and maintenance expenditure in respect of non-departmental commercial undertakings.

5.55 The data on expenditure on new construction and repair and maintenance of the state government administrative departments and their departmental enterprises are directly available from the analysis of the relevant budget documents. In case of local bodies, the data are directly collected from the local bodies in the state whereas the data on capital expenditure for Non Departmental Commercial Undertakings (NDCUs) are made available to states by the CSO. The data on expenditure on new construction and repair and maintenance of the Central Government Administrative Departments (except for Defence Services), local bodies and their departmental enterprises except railways and communication, as available from the analysis of the central budget documents, are prepared by the CSO and made available to the States. Also, for railways and communication, the estimates are prepared by the CSO and made available to states.

5.56 The state-wise estimates of expenditure on new construction and repairs and maintenance in rural and urban residential buildings are available in the latest All India Debt & Investment Survey (AIDIS). These estimates of expenditure on new construction and repairs & maintenance as available from this publication are moved to later years with the help of geometric growth rate of rural and urban census dwellings based on 1991 and 2001 Population Census data. Price changes are superimposed with the help of the index of cost of construction of rural/urban buildings to obtain the estimates at current prices.

5.57 The state-wise estimates of new construction and repairs and maintenance in respect of rural non-residential buildings, urban non residential buildings and other construction works are also available from the aforesaid reports of AIDIS. The estimates available from AIDIS are moved to later years with the help of weighted index of value of output from 'agriculture excluding livestock' and 'registered manufacturing'. The estimates of gross value of output from residual category are prepared by CSO and made available to states. The estimates of 'residual category' are allocated to the states by the CSO on the basis of state-level data on workforce estimates, cement dispatches and steel dispatches.

### **Trade, Hotels and Restaurants**

5.58 The Trade sector includes wholesale and retail trade in all commodities whether produced domestically, imported or exported. It covers activities of purchase and selling agents, brokers and auctioneers. Wholesale trade covers units, which resell without transformation, new and used goods generally to the retailer and industries, commercial establishments, institutional and professional users or to other wholesalers. Retail trade covers units, which mainly resell without transformation new and used goods for personal or household consumption. This sector, now, also comprises of maintenance and repair of motor vehicles and repair of personal household goods. As per NIC 1998 classification, this sector consists of following five categories:

- Maintenance and repair of motor vehicles (502+50404);
- Sale of motor vehicles (50-502-50404);
- Whole sale trade except of motor vehicles + Auctioning activities (51+74991);
- Repair of personal household goods (526); and
- Retail trade (except motor vehicles) (52-526).

5.59 The hotels and restaurants sector covers services rendered by hotels and other lodging places, restaurants, cafes and other eating and drinking places. As per NIC 1998 classification, it consists of following two categories:

- Hotels, camping sites etc (NIC 98 code-551); and
- Restaurants, bars and canteens (NIC 98 code-552).

5.60 The estimates of GSDP for this segment of activities are prepared separately for public, private organised and private un-organised parts.

- (i) Public Sector: The estimates of GSDP for public part in the Centre are prepared by the CSO, whereas the part relating to state governments are prepared by the State DESs on the basis of analysis of the budget documents of central/state/local governments and annual accounts of NDCUs. The CSO allocates the central part of value added to the states.
- (ii) Private organised segment: Estimates for private organised part are first prepared at national level using RBI studies of company finances of a sample of companies and information available from NABARD on cooperative societies. Then, the national level GVA estimates are allocated among states in proportion to respective workforce obtained from Directorate General of Employment & Training (DGE&T). These estimates are prepared by the CSO and made available to states.
- (iii) Private un-organised segment: The Base Year (1999-2000) estimates of private un-organised sector of Trade, Hotels and Restaurants have been prepared as a product of GVA per worker and work force. For trade sector, the workforce estimates have been prepared using the results of NSS 55th round survey on Employment – Unemployment (WPRs) conducted by NSSO in 1999-2000 along with the data on population from the Population Census 2001. The value added per worker used for the new series is that of all enterprises category available in informal sector survey conducted in NSS 55th round (1999-2000), as no fresh survey on trade sector was conducted by the NSSO. In the case of hotels and restaurants, the VAPW is taken from Enterprise survey conducted during 57th round (2001-02) of NSS. For the base year, the estimates from private un-organised sector of trade and hotels and restaurants are prepared separately. For subsequent years, the base year estimates of trade, hotels & restaurants are moved with the help of Index of State Gross Trading Income (GTI) of commodity producing sectors, which is computed both at current and constant prices. The GTI is computed using the marketable surplus of the commodities produced and the trade margins in respect of these commodities. In view of the volatility in the estimates of GTI, another recommended method for moving forward the base year estimates is the sales tax/VAT realized from the trading establishments, which is at current prices. For constant prices, a suitable deflator is applied, when sales tax data is used as the indicator.

5.61 For the estimates at constant prices, the current price estimates of public and private corporate sector are deflated by the wholesale price index. For the unorganized sector, base year GSDP estimates are extrapolated with the help of GTI at constant prices.

### **Transport, Storage and Communication**

5.62 The economic activities covered in this sector are (i) transport by railways, (ii) transport by other means, namely, road transport (mechanised and non-mechanised), water transport (coastal, ocean and inland), air transport and services incidental to transport, (iii) storage, and (iv) communication services rendered by Post & Tele-communication Departments and Overseas Communication Services. The budget documents of the railways and communication services which are integral part of Central Government budget documents include allied activities which according to standard industrial classification should belong to respective sectors. Following this principle, railway workshops and railway manufacturing establishments like Chittaranjan Locomotive Works, Integral Coach Factory, Diesel Locomotive Works and Wheel & Axle Plant are excluded from railway transport and included under the 'manufacturing' activities. Construction activity of the railways is also excluded and taken into account in the 'construction' sector. Expenditure on education, medical & health services are also excluded here and included in 'other services'. Similarly, the activities relating to post office savings bank, postal life insurance and telecommunication workshops are excluded from communication and included in 'banking', 'insurance' and 'manufacturing' sectors respectively. Estimates of GSDP for railways and communications are considered as part of supra-regional sectors and estimates for these sectors are provided by the CSO to the States. The methodology for compiling the estimates for other activities under this group is discussed below.

#### **Transport by other means:**

5.63 Mechanised road transport (Public sector): The estimates of GSDP for this segment are obtained through economic analysis of annual reports/accounts for non-departmental transport undertakings in the state.

5.64 Mechanised road transport (Private sector): The state-wise estimates of GVA at current prices are prepared activity-wise by multiplying work force with GVA per worker separately for the rural and urban areas for each year. The total State-wise work force data for the current years are obtained by extrapolating the base year (1999-2000) workforce estimates for the three categories (6021, 60221 and 60231 of NIC of 1998) of mechanised road transport with the indicator of number of vehicles registered in the state. The Gross Value Added per worker for the respective categories for 1999-2000 has been taken from the Enterprise Survey of NSS 57th Round (2001-02), for rural and urban areas separately. Gross Value Added per worker available from this survey are moved to other years with the help of State Consumer Price Index for Urban Non Manual Employees (CPI UNME) for urban areas and State CPI of Agricultural Laborers (CPIAL) for rural areas respectively. The constant price estimates are obtained by deflating the current price estimates of GVA with CPI (UNME)/CPI (AL), respectively for urban and rural areas.

5.65 Non Mechanised Transport: GVA estimate has been prepared by multiplying the workforce (duly adjusted for public sector) with GVA per worker available from the Enterprise Survey 2001-02 results for the

respective NIC codes. In the new series, the GVA per worker has been taken from the Enterprise Survey of NSS 57th round (2001-02). The Work force estimates have been prepared using the results of NSS 55th round survey on Employment- Unemployment (WPRs) 1999-2000 along with the data on population from the Population Census 2001.

5.66 The economic activities of Airport Authority were included under Air transport sub-sector in the 1993-94 series. This has now been shifted to the sub-sector 'service incidental to transport'. Similarly, supporting service to water transport which was part of water transport, has been shifted to 'service incidental to transport' in the new series. The estimates of Non Mechanised transport and Service incidental have been moved to further years with the help of Index of Commodity Producing sectors.

5.67 **Water transport**: The estimates of GSDP for organised inland water transport in respect of a state are prepared by respective DESs by analysing the annual accounts of state inland water transport companies. The all-India estimates of gross value added from the shipping companies in public and private segments are prepared by the CSO and allocated to the States using suitable indicators. Similarly, the state-wise estimates of gross value added from ports and pilotages are also prepared by the CSO by analysing relevant reports/budget documents and made available to the States. The state-wise estimates of gross value added generated from lighthouses and ships handled by the Centre and Dredging Corporation of India and Inland Water Authority too are prepared by the CSO and made available to the states.

5.68 **Air Transport** : The gross value added for this part is being estimated by CSO at national level and apportioned to the states based on relevant indicators. The estimates thus prepared by CSO are made available to the states.

### **Storage**

5.69 The estimates in respect of public warehousing (other than Central Warehousing Corp.) are based on the analysis of annual accounts of state warehousing corporation. These are prepared by the CSO and made available to states. The value added from Central Warehousing Corporation are also prepared by the CSO and allocated to the states in proportion to the average capacity of central warehousing in various states. The state warehousing corporations' estimates are prepared by State DESs. The estimates of GDP from storage n.e.c. are allocated to different states by the CSO in proportion to the number of workers as in the base year.

### **Real Estate, Ownership of Dwellings, Business Services and Legal Services**

5.70 The economic activities covered in this sector are (1) Real Estate Services (activities of all types of dealers such as operators, developers and agents connected with real estate). (2) Renting of machinery and equipment without operator and of personal and household goods (3) Computer and

related activities (4) Accounting, book Keeping and related activities (5) Legal Services (6) Scientific Research and development and (7) Ownership of dwellings (occupied residential houses).

5.71 In the 1999-2000 NAS series, research and scientific services have been included under real estate ownership of dwellings and business services sector, whereas the same was part of “Other Services” sector in the old series. The major data sources for estimating the GVA of this sector are National Sample Survey 55th Round Survey on Employment and Un-Employment –1999-2000 and Population Census 2001 for information on residential houses in Rural and Urban areas. The estimates of Value Added Per Worker (VAPW) from NSS 57th Round and the estimates of workforce from NSS 55th Round, separately for Rural/Urban/Organised/Un-organised sectors have been used to estimate the Gross Value Added from Real Estate, Renting of Machinery & Equipment without operator, personal households computer and related activities of Un-organised sector, Legal Services, Accounting & Book Keeping and Research & Development.

5.72 **Real Estate Services:** (activities of all types of dealers such as operators, developers and agents connected with real estate). The estimates of these services have been prepared for the base year by using NSSO’s workforce and value added per worker of Enterprise Survey, separately for rural and urban areas. For subsequent years, the estimates of workforce have been worked out by using the inter survey exponential growth rate of quinquennial employment and unemployment surveys as observed between 50th round 1993-94 and 55th round 1999-2000 of NSSO and value added per worker have been moved to subsequent years using the Index of CPI (AL) for rural and CPI (IW) for urban areas.

5.73 **Renting of machinery and equipment without operator and of personal and household goods:-** The estimates of these services have been prepared by using NSSO’s workforce and value added per worker of Enterprise Survey, separately for rural and urban areas in the base year. For subsequent years, the estimates of workforce have been prepared by using the inter survey exponential growth rate of quinquennial employment and unemployment surveys as observed and value added per worker have been moved to subsequent years by using the Index of CPI(AL) for rural sector and CPI(IW) for urban sector.

5.74 **Computer and related activities:** The activities covered under this compilation category are hardware consultancy, software consultancy & supply, data processing, database activities, maintenance & repair of office/accounting/computing machinery and other computer related activities. The estimates of GVA are compiled separately for organised and un-organised sectors.

5.75 GVA estimates for organised sector are prepared using NASSCOM data of output of software services and GVA to output ratio obtained from the analysis of available annual reports of software companies on year to year basis. These are allocated to States on the basis of workforce at state level.



5.76 The estimates of GVA for the year 1999-2000 for un-organised sector have been prepared by using the labour input method based on GVAPW estimates of ES 2001-02 and the labour input estimates from EUS 1999-2000 of NSS 55th Round, separately for rural and urban areas.

5.77 For subsequent years, the estimates of labour input in the unorganized sector are prepared using the growth observed in the organized sector. The value added per worker of rural and urban areas are projected to subsequent years with the index of CPI (AL) and CPI (IW) respectively.

5.78 **Accounting, book Keeping and related activities:** The estimates of these services have been prepared by using NSSO workforce and value added per worker of Enterprise Survey, separately for rural and urban areas in the base year. For subsequent years, the estimates of workforce have been worked out by using the inter survey exponential growth rate of quinquennial employment and unemployment surveys as observed and value added per worker have been moved to subsequent years by using the Index of CPI (AL) for rural sector and CPI (IW) for urban sector.

5.79 **Legal Services:** The estimates of these services have been prepared by using NSSO workforce and value added per worker of Enterprise Survey, separately for rural and urban areas in the base year. For subsequent years, the estimates of workforce have been worked out by using the inter survey exponential growth rate and value added per worker have been moved to subsequent years by using the Index of CPIAL for rural sector and CPIIW for urban sector.

5.80 **Research and development, market research and public opinion polling, business & management consultancy, architectural, engineering & other technical activities, advertising and business activities n.e.c. excluding auctioning (NIC-98 codes 73, 7413, 7414, 742, 743, 749(-)74991):** This compilation category is obtained by re-grouping the activities under business services and other services. In the 1993-94 series, the estimates of Research & scientific services (NIC-87 code 922) were included under 'other services'. In NIC-98, this activity is classified under code 73, which is under 'business services'. In 1999-2000 series of NAS, the estimates of this activity are included under 'business services' only. Similarly, the GVA estimates of 'press agency activities' falling under NIC-87 code 897 were being compiled, though not exclusively, under the category of 'business services' in 1993-94 series. Now, this activity falls under 'news agency activities', which is classified under NIC-98 code 922. The GVA estimates from this category are included under 'other services' in the new series. Thus, the comparison of GVA estimates of 'business services' in the 1993-94 series, and 1999-2000 series, has to be done keeping in view these changes in grouping.

5.81 The estimates of GVA for this compilation category have been prepared for organized & un-organised and rural /urban areas for the base year 1999-2000 by using VAPW estimates of NSS Enterprise Survey of

2001-02 and the labour input estimates from EUS 1999-2000 of NSS 55th Round.

5.82 For subsequent years, the estimates of labour input are prepared using the inter-survey growth rates in the workforce. The value added per worker of rural and urban areas are projected to subsequent years with the index of CPI (AL) and CPI (IW) respectively.

5.83 Ownership of Dwellings: In the production boundary of national accounts, only two categories of services produced by households for own final consumption are included, namely,

- Services of owner-occupied dwellings: Owner-occupiers are deemed to own household unincorporated enterprises that produce housing services for their own consumption; and
- Domestic services produced by employing paid staff: Households are deemed to own household unincorporated enterprises in which they employ paid staff – servants, cooks, gardeners, etc. – to produce services for their own consumption.

5.84 The activities mentioned under (a) above are included under 'ownership of dwellings'. The economic activities covered in this sector are ownership of dwellings (occupied residential houses) including imputed value of owner occupied dwellings also. Services rendered by non-residential buildings are considered to be a subsidiary activity of the industries, which occupy the buildings and therefore, are not included in this sector.

5.85 The data available on dwellings from the Population Census and the data on rent from the NSS Consumer Expenditure Surveys are the principal sources for estimating the GVA of 'ownership of dwellings'. The number of census dwellings in the base year (1999-2000) in urban and rural areas has been arrived at by adjusting 2001 figures for the mid-year 1999-2000 using the rate of growth between 1991 and 2001. The number of census houses so arrived has been multiplied by the average rent per household, information on which is obtained from results of NSS 55th (1999-2000) Round survey. This has been done separately for rural and urban areas to estimate the gross rental in the country. From this estimated gross rental, the cost of repair and maintenance is subtracted, separately for rural and urban areas, to obtain the GVA estimates for rural and urban areas.

5.86 For subsequent years, estimates of census residential houses are prepared using the inter-censal average compound growth rate, separately for rural and urban areas. The rent per household is moved to subsequent years with the index of house rent. In case of urban areas the house rent sub-group in the CPI (UNME) is used. In the absence of any suitable indicator for the rural areas on rent, half the growth rate of urban index is used.

## Public Administration

5.87 Gross Value Added (GVA) is estimated by the “Income Approach”. The compensation of employees is the only factor income, as operating surplus of administrative departments is treated as nil, being the provider of non-market services. The economic analysis of the budgets of State and local authorities provides the estimates for administrative departments from which the public administration estimates are derived by making use of Government expenditure under various purpose categories. The estimates of value added in respect of Central Government Administration, being a supra-regional activity, are prepared by the CSO by undertaking the analysis of Central Government Budget documents and are supplied to states. The estimates relating to State Government are prepared by respective states by undertaking an economic analysis of the State Government budget documents. The estimates of income in respect of local authorities are based on the information on compensation of employees obtained by the DESs in respect of the local authorities. These are added to the state-wise estimates of Central Government Administration to obtain the state-wise estimates of public administration.

### **Other Services**

5.88 The economic activities covered under this sector are (i) Coaching and Tuition (NIC-98 codes 80903 and 80904), (ii) Education excluding Coaching and Tuition (NIC-98 code 80 (-) 80903 (-) 80904), (iii) Human health activities including veterinary activities, (iv) Sewage and refuse disposal, sanitation activities (NIC-98, code-90), (v) Activities of membership organisations (+) social work (NIC-98, Code 91+853), (vi) Recreational cultural and sporting activities (NIC-98, Code-92), (vii) Washing and cleaning of textiles and fur products (NIC-98, code-9301), (viii) Hair Dressing and other Beauty Treatment (NIC-98, code-9302), (ix) Funeral and related activities (NIC-98 code 9303+9309), (x) Pvt. households with employed person (NIC-98, code-95), (xi) Custom Tailoring (NIC-98, Code-18105), and (xii) Extra Territorial organisations and Bodies (NIC-98, Code 99).

5.89 The sources of data include:

- (i) Employment and Unemployment survey data of NSS 55th Round and population census, 2001 estimates of work force;
- (ii) Value added per worker from Enterprise Survey, NSS 57th Round;
- (iii) Budget documents for data relating to activities of these services covered under government;
- (iv) Annual reports/accounts of corporations
- (v) Consumer Price Index for Agriculture labour-CPI(AL), Consumer Price Index for industrial workers-CPI(IW).

5.90 All the activities are broadly grouped under three segments, namely, public sector, private organized sector and private unorganized sector. While the estimates of GVA in respect of activities covered under public sector are compiled by analyzing the budget documents and annual reports of the concerned units, those of private organised and private unorganized

segments are prepared generally following the labour input method and benchmark-indicator procedures.

5.91 Generally, the GVA estimates for non-public sector segments are prepared separately for organized and unorganized segments. Initially estimates are prepared for a benchmark year (usually the base of current national accounts series), and for subsequent years, the benchmark year's GVA estimates are extrapolated with suitable physical and price indicators. The benchmark year's GVA estimates are prepared as a product of estimated workforce engaged in the economic activity and the estimated value added per worker (VAPW), separately for organized and unorganized segments. For the current NAS series (base year 1999-2000), the workforce estimates are from the NSS 55th Round (1999-2000) survey results (for details, please refer to the Chapter on workforce estimates), and the estimates of VAPW are from the results NSS 57th Round (2001-02). As mentioned, the GVA estimates for the base year are prepared separately for rural/urban areas and also separately for organized/ unorganized segments. It may be mentioned that the NSS 57th Round survey results provide the data separately for corporate sector and unorganized sector.

5.92 For subsequent years, the estimates of workforce in the activity are generally prepared using the inter survey average compound growth rate of quinquennial Employment & Unemployment surveys as observed between 1993-94 and 1999-2000 of NSS 50th and NSS 55th Round survey results. The value added per worker of rural and urban areas and organized and unorganized segments, are projected to subsequent years with the CPI (AL) and CPI (IW) respectively. The GVA estimates are compiled as product of workforce and VAPW for the respect rural/urban/organized and unorganized segments. Specific procedures followed for estimating the GVA of various economic activities in the sector is given below:

5.93 **Coaching and Tuition (NIC-98 codes 80903 and 80904)**: The activities covered under this compilation category are the activities of coaching centres and individuals providing tuitions. All these activities are taken in the unorganized segment. The estimates of GVA for coaching & tuition activities have been prepared for the year 1999-2000 by using the VAPW of rural/ urban areas from the results of NSS Enterprise Survey 2001-02 of 57th Round, and the labour input estimates based on the results of EUS 1999-2000 of the 55th Round, as outlined in paragraph 5.91. For subsequent years, the estimates at current prices are prepared using the trends in consumption expenditure of these items by households, as revealed by the NSS surveys on consumer expenditure.

5.94 **Education excluding Coaching and Tuition (NIC-98 code 80 (-) 80903 (-) 80904)**: The activities covered under this compilation category are the activities of private education institutions, excluding those of coaching centres and individuals providing tuitions. GVA estimates for this category are prepared separately for recognized and non-recognized institutions. The GVA for the public sector institutions is taken to be equivalent to the budget expenditure on salaries and wages of teaching and non-teaching staff of

educational services, data obtained from the analysis of the budget documents on year-to-year basis plus consumption of fixed capital. The GVA estimates for Private Recognized institutions have been prepared by using VAPW estimates of from NSS 57th Round Enterprise survey (ES) 2001-02 (corporate sector part) and the DGE&T data on workers. The GVA estimates for the year 1999-2000 for private non-recognised institutions have been compiled separately for rural and urban areas by the procedure outlined in paragraph 5.91. For subsequent years, the method is same as indicated at paragraph 5.92 above.

**5.95 Human health activities + Veterinary activities (NIC-98 code-851+852):** The activities covered under this compilation category are the activities of human health and veterinary services. The estimates of GVA in human health and veterinary services are prepared separately for public, private organised and private unorganised sectors. The GVA for the public sector is taken to be equivalent to the budget expenditure on salaries and wages of medical personnel obtained from the analysis of the budget documents on year-to-year basis plus consumption of fixed capital. The GVA for private organised sector is prepared using number of workers from DGE&T, and VAPW of corporate sector estimated from NSS 57th Round Survey results. In case of unorganised segment, the labour input estimates are obtained by subtracting the public + private organised sector number of workers from the total labour input. So obtained labour input is distributed into rural and urban areas and multiplied with respective VAPW of NSS 57th Round ES 2001-02 separately for rural and urban areas in the base year. For subsequent years, the method is same as indicated above.

**5.96 Sewage and refuse disposal, sanitation activities (NIC-98, code-90):** The activities covered in this category are sewage and refuse disposal, sanitation and similar activities. The estimates of GVA are prepared separately for public and private sectors. Public sector estimates are the sum of budget expenditure on salaries and wages of activities falling under NIC 900 covered under government plus consumption of fixed capital. For the private sector, estimates are prepared separately for rural and urban areas using NSS labour input and average compensation of municipal workers engaged in sanitary services. The average compensation of all the 5 types of municipalities i.e. (i) 5 lakhs and above, (ii) 1 lakh upto 5 lakhs, (iii) 75000 to 1 lakh (iv) 50000 to 75000 and (v) below 50000 are used for urban areas. The average compensation of the smallest municipality is used for rural areas as the proxy. The private sector labour input is obtained after subtracting the public sector number of workers, from the corresponding total labour input of the sanitary services. These private sector Labour input estimates are divided into Rural & Urban. Thus obtained labour input estimates are multiplied with VAPW of sanitary workers (data obtained from municipal returns through DESs) to get the GVA estimates for the base year. For subsequent years the estimates of labour input are prepared using the inter-survey workforce growth rate. The value added per worker of rural and urban sectors is projected to subsequent years with the CPI(AL) and CPI (IW) respectively.

**5.97 Activities of membership organisations (+) social work (NIC-98, Code 91+853):** Activities of business and employers organizations (includes activities of industry associations, chambers of commerce and similar federations) and Activities of professional organisations (includes the activities of associations of writers, painters, lawyers, doctors, journalists and other similar organizations); Activities of trade unions includes activities of associations whose members are mainly employees, including government employees, interested chiefly in the representation of their views concerning their work situation; Activities of other membership organizations, Activities of religious organisations (includes the activities of religious organisations or individuals who provide services directly to worshippers), Activities of political organizations; Activities of other membership organizations n.e.c. (includes rotary clubs, student associations, war veterans' associations, book clubs, philatelic clubs, associations of minority groups, and the activities of other similar associations / organisations not elsewhere classified); Social work with accommodation includes the activities of orphanages, children boarding homes and hostels, residential nurseries, juvenile correction homes, homes for the aged, homes for physically or mentally handicapped etc.; Social work without accommodation includes a variety of social, counseling, welfare, refugee, referral and similar services to individuals and families in their homes or elsewhere. They may be carried out by government offices or by private charitable organisations. Examples include day-care centres for children (crèches), day care activities for the handicapped; welfare and guidance activities for the children etc]. The GVA estimates for the base year (1999-2000) for these services have been prepared by using NSS 57th Round (2001-02) survey estimate of VAPW and 55th Round EUS and RGI data on estimated Labour Input, separately for rural/urban/organized/ unorganized segments. For subsequent years, the estimates of labour input are prepared using the inter survey average compound growth rate of quinquennial Employment & Unemployment surveys of NSS during 1993-94 and 1999-2000. The value added per worker of rural and urban areas are projected to subsequent years with the CPI (AL) and CPI (IW) respectively.

**5.98 Recreational cultural and sporting activities (NIC-98, Code-92):** The activities covered in this category are recreational cultural and sporting activities. The GVA estimates for these activities for the base year 1999-2000 have been prepared separately for public and private sectors. Public sector estimates are obtained by analyzing the report of the Prasar Bharati Broadcasting Corporation. Labour input estimates for private segment are obtained by subtracting public sector workers as obtained from DGE&T from the total labour input. Thus obtained private sector labour input estimates are divided into rural/urban X organized/unorganised. These labour input estimates have been multiplied with VAPW of 57th Round (adjusted for the base year 1999-2000 with suitable indicators) of NSS to get the estimates of GVA in the base year. For subsequent years, the method is same as indicated above.

**5.99 Washing and cleaning of textiles and fur products (NIC-98, code-9301):** The activities covered in this category are washing and dry-cleaning

of textile and fur products including laundry collection and delivery; repair and minor alteration of garments when done in connection with cleaning and carpet and rug shampooing and drapery and curtain cleaning in clients' premises. As per NIC-87 (code-961) the activities covered in this category are laundry, cleaning and dyeing services. The GVA estimates for base year (1999-2000) from these services have been prepared using NSS 57th Round (2001-02) survey estimates of VAPW and labour input, separately for rural areas. For subsequent years, the method is same as indicated above.

**5.100 Hair Dressing and other Beauty Treatment (NIC-98, code-9302):**

The activities covered in this category are hairdressing and other beauty treatment including facial massage, manicure & pedicure and make-up. The GVA estimates for the base year (1999-2000) from these services have been prepared using NSS 57th Round (2001-02) survey estimates of VAPW and labour input, separately for rural and urban areas. For subsequent years, the method is same as indicated above.

**5.101 Custom Tailoring (NIC-98, Code-18105):** The GVA estimates from these services are prepared using NSSO 56th Round data on VAPW and estimates of workers, separately for rural and urban areas in the base year. For subsequent years, the method is same as indicated above.

**5.102 Other activities (NIC 98, code 9303+9309):** The activities covered in this category are funeral and related activities (NIC-98, code-9303) (such as operation and maintenance of cremation/burial grounds and maintenance of graves and mausoleums) and other service activities n.e.c.(NIC-98, code-9309) (including activities related to physical well being and comfort such as delivered by sauna and steam baths, reducing and slandering salons, massage salons, rest rooms etc). Also, included are astrological and spiritualists' activities; activities of the marriage bureaus, shoe shiners, porters, valet car parkers etc. The GVA estimates for the base year (1999-2000) from these services have been prepared using the estimated VAPW from the results of NSS 57th Round (2001-02) survey and labour input, separately for rural and urban areas. For subsequent years, the method is same as indicated above.

**5.103 Pvt. households with employed person (NIC-98, code-95):** The activities covered in this category are private households with employed persons (Includes the activities of private households employing all kinds of domestic personnel such as maids, cooks, gardeners, gatekeepers, secretaries, governess, baby sitters etc.). Data on private households with employed persons was not collected in the NSS 57th Round Enterprise Survey, as it was not found to be feasible to identify such households as enterprises. The value added generated by this activity included wages paid to the 'employed persons'. In the present series an attempt has been made to workout Value Added Per Worker based on wage data collected in the 55th Round Employment Unemployment Survey. The total weekly earnings of the workers falling under this category have been divided by the number of workers to arrive at weekly wages/salaries. The GVA estimates from these services are prepared using average weekly wage per unit of LI

(adjusted for annual wages) separately for rural and urban areas in the base year. The GVA estimates for the base year (1999-2000) from these services have been prepared as a product of workforce and average weekly wage per unit of LI (adjusted for annual wages) separately for rural and urban areas in the base year. For subsequent years, the method is same as indicated above.

**5.104 Extra Territorial Organisations and Bodies (NIC-98, Code 99):**

The activities covered in this category (NIC-98, Code 99) are extra territorial organisations and bodies (includes the activities of international organizations such as United Nations and its agencies, regional bodies etc., IMF, World Bank, European Commission, etc.). The estimates of these services are prepared using NSS 55th Round labour input and thrice the value added per worker of Public Administration and defence (as a proxy) separately for rural and urban areas. For subsequent years, the method is same as indicated above.

5.105 The estimates at constant prices for rural and urban in respect of private recognised and unrecognised education, private organised and unorganised Human health activity + Veterinary activities, private Sewage and refuse disposal, sanitation and similar activities, Activities of membership organisations (+) social work with accommodation, Recreational cultural and sporting activities, Washing and cleaning of textiles and fur products, Hair Dressing and other Beauty Treatment, Custom Tailoring, Funeral and related activities, private households with employed person and Extra Territorial Organisations and Bodies, are obtained by deflating the current price estimates with CPI(AL) and CPI(IW) respectively. In the case of public part of educational services, public part of Human health activity + Veterinary activities, public part Sewage and refuse disposal, sanitation and similar activities and T.V. & Radio broadcasting under public sector, the estimates at current prices are deflated by the CPI(IW) to derive the estimates at constant prices.

**Estimates at Constant Prices**

5.106 The methodology for estimating SDP at constant prices for different sectors is as follows:

- (i) **Agriculture & Allied Activities, Forestry & Logging, Fishing and Mining & Quarrying:** The GSDP estimates at constant prices are worked out by evaluating the current year production/output at the base year (1999-2000) prices and by using the deductible/input rates as applicable to the current price estimates.
- (ii) **Manufacturing –Registered:** The Industry group wise estimates at current prices are deflated with the corresponding Wholesale Price Index (WPI) to arrive at the estimates at constant prices. In the absence of state-wise WPI, the all-India WPI is being used as the deflator.



- (iii) **Manufacturing –Unregistered**: In the case of this Industry group, the estimates are prepared firstly at constant prices, by moving the previous year's 2-digit level data with the growth observed in the corresponding 2-digit industry group in the IIP or state level IIP.
- (iv) **Electricity**: The estimates of GSDP at constant prices are worked out by moving the base year estimates with the quantum index of production of electricity.
- (v) **Gas**: The estimates of GSDP at constant prices are worked out by moving the base year estimates of GSDP with the help of quantum index, number or quantity of gas produced, separately for gobar gas and other gas.
- (vi) **Water Supply**: The current year estimates are deflated with the help of consumer price index number for industrial workers CPI (IW) to arrive at the estimates at constant prices.
- (vii) **Construction**: The estimates of GSDP at constant prices (excluding household sector) are prepared by deflating the estimates at current prices using the consumer price index for agricultural labourers CPI (AL).
- (viii) **Trade, Hotels and Restaurants**: The current price estimates in respect of public and private organised segments are deflated with WPI (All-India), whereas the estimates in respect of private unorganised part for the base year (1993-94) are moved with the help of the index of Gross Trading Income (GTI) of commodity producing sectors at constant prices.
- (ix) **Transport**: The estimates at constant prices in respect of different transport services are prepared by extrapolating the base year estimates with appropriate indicators viz. changes in employment, workforce, cargo handled in major ports, etc.
- (x) **Real estate, business services and legal services**: The estimates at constant prices are prepared by using the estimates of workforce of current year and VAPW of base year 1993-94. In case of ownership of dwellings, the base year estimates are moved with the growth rate of the residential dwellings.
- (xi) **Public Administration**: The current price estimates are deflated with the help of index of Consumer Price Index for Industrial Workers, CPI (IW), to arrive at the constant prices estimates of the respective year.
- (xii) **Other Services**: The estimates at constant prices in respect of private recognised and unrecognised education, private organised and unorganised medical and health services, private sanitary services, un-organised research and scientific services,

International and extra territorial bodies, personal services, religious and other community services, services n.e.c. and recreation and entertainment services ( other than T.V. and radio under public sector) are obtained by moving the base year estimates with the growth index of work force of corresponding services. In case of public part of educational services, organised part of research & scientific services, public part of medical & health including veterinary services, public part of sanitary and T.V. & Radio broadcasting under public sector, the estimates at current prices are deflated by the CPI (IW) to derive the estimates GSDP at constant prices.

## SOURCES AND METHODS IN TABULAR FORM

Item	Source of data	Assumption/method of estimation	
		At current prices	At constant (1999-2000) prices
<b>1. Agriculture, including livestock</b>			
<b>(a) Value of output – (1) Major and minor crops</b>			
(i) Major crops (25) (paddy, wheat, jowar, bajra, maize, ragi, barley, small millets, gram, tur, other kharif pulses, other rabi pulses, groundnut, sesamum, rapeseed & mustard, linseed, castorseed, safflower, nigerseed, soyabean, sunflower, cotton, jute, mesta and sugarcane)	<ul style="list-style-type: none"><li>Directorate of Economics and Statistics, Ministry of Agriculture (DESAg) for production</li><li>State Directorates of Economics (DES) and Statistics for prices</li></ul>	Value of output = production * current year price	Value of output = production * base year price
(ii) Minor crops (17) (potato, onion, banana, tapioca, sweet potato, pepper, ginger, garlic, chillies, turmeric, arecanut, coriander, cardamom, sunhemp, tobacco, guarseed and coconut).	- same as above-	- same as above-	- same as above-
(iii) small millets (includes korra, vargu, samai, cheena, kodan and kutki, sawan, trumba, kangani, kudroo, sewal, phoolan, grim, navane, harake, save, bargu, sanva, rala, kakun, basara, bhadli, banti, vari, buck wheat)	<ul style="list-style-type: none"><li>DESAg for production</li></ul>	- same as above- Price =75% of weighted average price of jowar, bajra, barley, maize and ragi	- same as above- Price =75% of weighted average base year price of jowar, bajra, barley, maize and ragi
(iv) other pulses	<ul style="list-style-type: none"><li>DESAg for area (ha) under the crops</li></ul>	- same as above- Price = 0.85* weighted average price of arhar, urad, moong, masur and horsegram	- same as above- Price = 0.85* weighted average price of arhar, urad, moong, masur and horsegram
<b>(2) Commercial Crops</b>			
(i) tea	<ul style="list-style-type: none"><li>Tea Board for production of processed tea</li><li>State DESs for prices</li></ul>	Value of output = production * current year price Production of raw tea = processed tea / 0.225	Same as in current prices, price adopted is the base year price
(ii) coffee	<ul style="list-style-type: none"><li>Coffee Board for production and prices</li></ul>	Value of output = production * current year price	Value of output = production * base year price
(iii) rubber	<ul style="list-style-type: none"><li>Rubber Board for production</li><li>State DESs for prices</li></ul>	Value of output = production * current year price	Value of output = production * base year price
(iv) cashewnuts and cocoa	<ul style="list-style-type: none"><li>Directorate of Cashew nut and Cocoa Development for production and prices</li></ul>	Value of output = production * current year price	Value of output = production * base year price
(v) horticulture crops (other than those covered in the minor crops (banana, onion, potato, sweet potato and tapioca)	<ul style="list-style-type: none"><li>National Horticulture Board (NHB) for production</li><li>State DESs for prices</li></ul>	Value of output = production * current year price	Value of output = production * base year price
(vi) opium	<ul style="list-style-type: none"><li>Central Bureau of Narcotics for production and prices</li></ul>	Value of output = production * current year price	Value of output = production * base year price
(vii) arecanut	<ul style="list-style-type: none"><li>Directorate of Arecanut and Spices Development for production and prices</li></ul>	Value of output = production * current year price	Value of output = production * base year price
(viii) flowers (separately for cut flowers and sticks)	<ul style="list-style-type: none"><li>National Horticulture Board (NHB) for production</li><li>State DESs for prices</li></ul>	Value of output = production * current year price	Value of output = production * base year price

Item	Source of data	Assumption/method of estimation	
		At current prices	At constant (1999-2000) prices
(3) Miscellaneous Crops			
(i) other cereals	◆ DESAg for area (ha) under the crops	Value of output = area * value per hectare Value per hectare = weighted average of value per hectare of the crops, jowar, bajra, barley, maize, ragi	Value of output = area * value per hectare Value per hectare = weighted average of value per hectare of crops, jowar, bajra, barley, maize, ragi in the base year
(ii) other sugars (excluding palmyra)	◆ DESAg for area (ha) under the crops	Value of output = area * value per hectare Value per hectare = 0.90* value per hectare of the crop, sugarcane	Value of output = area * value per hectare Value per hectare = 0.90* value per hectare of the crop, sugarcane in base year
(iii) other oilseeds(excluding taramira)	◆ DESAg for area (ha) under the crops	Value of output = area * value per hectare Value per hectare = 0.85* weighted average of value per hectare of the crops, linseed, sesamum, castorseed, niger seed and safflower	Value of output = area * value per hectare Value per hectare = 0.85* weighted average of value per hectare of the crops, linseed, sesamum, castorseed, niger seed and safflower in the base year
(iv) other fibres	◆ DESAg for area (ha) under the crops	Value of output = area * value per hectare Value per hectare = 0.90* weighted average of value per hectare of the crops, sanhemp and mesta	Value of output = area * value per hectare Value per hectare = 0.90* weighted average of value per hectare of the crops, sanhemp and mesta in the base year
(v) other drugs and narcotics	◆ DESAg for area (ha) under the crops	Value of output = area * value per hectare Value per hectare = 0.90* weighted average of value per hectare of the crops, opium (Madhya Pradesh, Rajasthan and Uttar Pradesh) and tobacco and tobacco stem (all other states)	Value of output = area * value per hectare Value per hectare = 0.90* weighted average of value per hectare of the crops, opium (Madhya Pradesh, Rajasthan and Uttar Pradesh) and tobacco (all other states) in the base year
(vi) other condiments and spices	◆ DESAg for area (ha) under the crops	Value of output = area * value per hectare Value per hectare = 0.90* weighted average of value per hectare of the crops, dry chillies, dry ginger, turmeric and garlic	Value of output = area * value per hectare Value per hectare = 0.90* weighted average of value per hectare of the crops, dry chillies, dry ginger, turmeric and garlic in the base year
(vii) other fruits and vegetables	◆ NHB for Production	Value of output = production * Current year price Price = weighted average price of all fruits and vegetable crops for which separate data is available	Value of output = production * Base year price Price = weighted average base year price of all fruits and vegetable crops for which separate data is available
(viii) other pulses	◆ DESAg for area (ha) under the crops	Value of output = area * value per hectare Value per hectare = 0.85* weighted average of value per hectare of the crops, arhar, urad, moong, masur and horsegram	Value of output = area * value per hectare Value per hectare = 0.85* weighted average of value per hectare of the crops, arhar, urad, moong, masur and horsegram in the base year
(ix) Tobacco stem	◆ DESAg for area (ha) under the crops	Production= some % of tobacco production Price=50% of the price of tobacco Value of output = production * Current year price	Production=some % of tobacco production Price=50% of the price of tobacco in the base year Value of output = production *base year price
(x) Toddy	◆ NSS Report of 55 <sup>th</sup> round (No 461) on Consumption of some important commodities in India ◆ Census data - rural/urban population	Value of output= estimate at constant price * WPI (non-food articles)	Value of output= value consumption of toddy per annum per person in the base year * current population
(xi) fodder	◆ DESAg for area (ha) under fodder crops(land use statistics) ◆ State DESs for prices	Value of output = production *current year price Production =irrigated area under fodder crops * 50 MT+ un irrigated area under fodder crops *25MT	Value of output = production * base year price Production =irrigated area under fodder crops * 50 MT+ un irrigated area under fodder crops *25MT
(xii) grass	◆ DESAg for area (ha) under the crops ◆ State DESs for prices ◆ Old NSS results for yield	Value of output = production * Current year price Production = total area (4* area under permanent pastures +1* miscellaneous tree crops + 2* culturable waste + 2* fallow lands + 1* net area	Value of output = production * base year price

Item	Source of data	Assumption/method of estimation	
		At current prices	At constant (1999-2000) prices
		sown) * fixed yield rates (state-wise)	
(xi) mulberry	♦ State DESs for area (ha) and value per hectare	Value of output = area * Value per hectare	Value of output = area * Value per hectare in the base year
(xii) miscellaneous food and non-food crops	♦ State DESs for area (ha) and value per hectare	Value of output = area * Value per hectare	Value of output = area * Value per hectare in the base year
<b>(4) By products</b>			
Paddy straw, wheat straw, bajra straw, barley straw, jowar straw, maize straw, ragi straw, gram straw, moong straw, arhar sticks, urad straw, groundnut straw, cotton sticks, jute sticks, sugarcane trash, poppy seed	♦ DESAg for area (ha) ♦ cost of cultivation studies for Value per hectare	Value of output = area * Value per hectare	Value of output = area * Value per hectare in the base year
<b>(5) Other products</b>			
(i) gur	♦ State DESs for prices	Value of output = production * current year price Production of gur = about 0.1 * sugar cane used for gur making (derived as a residual from total sugarcane production of that part which is used for chewing, for seed, crushed by factories and in unregistered manufacturing, estimates made available by the Dte. of Sugar, Ministry of Consumer Affairs, Food and Public Distribution)	Value of output = production * base year price
(ii) bagasse	♦ State DESs for prices	Value of output = production * current year price Production of bagasse = 35% * sugar cane used for gur making	Value of output = production * base year price
(iii) kitchen garden	♦ Results of NSSO survey on landholdings for area (ha) under kitchen garden	Value of output = 0.21% of net sown area * value of output per hectare of other fruits and vegetables	Value of output = area under kitchen garden * value of output per hectare of other fruits and vegetable, in base year
<b>(6) Livestock products</b>			
(i) milk, eggs and wool	♦ Integrated Sample Survey (ISS) conducted by the Department of Animal Husbandry and Dairying (DAHD) for production ♦ State DESs for prices	Value of output = production * current year price	Value of output = production * base year price
(ii) Camel milk	♦ -do-	Value of output = value of yield per camel in the current year * population	Value of output = value of yield per camel in the base year * population
(iii) Goat milk, buffalo milk and duck eggs not estimated in some states by ISS	♦ -do-	Value of output = production * current year price Production = annual yield per animal/duck * population	Value of output = production * base year price
(ii) meat (unregistered meat if not included is to be estimated on the basis of the rates prevalent in the neighbouring states)	♦ State DESs for production and prices	Value of output = production (after adjusting for the quantity produced by the manufacturing sector) * current year price	Value of output = production (after adjusting for the quantity produced by the manufacturing sector) * base year price
(iii) fats	♦ State DESs for no. of animals slaughtered and prices ♦ Directorate of Marketing Inspection (DMI) reports for mortality rates,	Value of output = no. of animals slaughtered and fallen * yield rate * current year price	Value of output = no. of animals slaughtered and fallen * yield rate * base year price

Item	Source of data	Assumption/method of estimation	
		At current prices	At constant (1999-2000) prices
	♦ National Accounts Division (NAD) for rates and ratios		
(iv) heads and legs	♦ State DESs for no. of animals slaughtered and fallen and prices ♦ NAD for rates and ratios	Value of output = no. of animals slaughtered and fallen * yield rate * current year price	Value of output = no. of animals slaughtered and fallen * yield rate * base year price
(v) edible offals and glands	♦ State DESs for no. of animals slaughtered and fallen and prices ♦ NAD for rates and ratios	Value of output = no. of animals slaughtered and fallen (cattle, buffalo, goats, sheep and pigs)* yield rate * current year price	Value of output = no. of animals slaughtered and fallen * yield rate * base year price
(vi) poultry meat	♦ Indian livestock census for population ♦ State DESs for prices	value of output is estimated separately for four components (a) chicken and ducklings killed, (b) adult fowls killed, (c) adult ducks killed and (d) other poultry killed multiplied by the respective prices (a)chickens & ducklings killed = total poultry of current year (chicks survived + 50% of hens & cock population + 50 % of ducks & drakes population + population of chickens, ducklings, 37.5 % of other poultry ) - total poultry of next year (population of hens + cocks + ducks + drakes + chickens + other poultry), where chicks survived = 1/3 rd of eggs kept for hatching (eggs kept for hatching = fixed ratio * total egg production); (b) adult fowls killed = 50% of population of hens & cocks; (c) adult ducks killed = 50% of population of ducks & drakes (d) other poultry = 37.5 % of other poultry	Same procedure as adopted for the current price estimates, but the prices used are the respective base year prices
(vii) meat by products - guts, blood, oesophagus, useless meat	♦ State DESs for no. of animals slaughtered and prices ♦ NAD for rates and ratios	Value of output = no. of animals slaughtered (cattle, buffalo, goats, sheep and pigs)* yield rate * current year price	Value of output = no. of animals slaughtered (cattle, buffalo, goats, sheep and pigs)* yield rate * base year price
(viii) meat by products – bones, horns, hoofs, tail stumps	♦ State DESs for no. of animals slaughtered & fallen and prices ♦ NAD for rates and ratios	Value of output = no. of animals slaughtered and fallen (cattle, buffalo, goats, sheep and pigs) * yield rate * current year price	Value of output = no. of animals slaughtered and fallen (cattle, buffalo, goats, sheep and pigs) * yield rate * base year price
(ix) cattle/buffalo hides	♦ State DESs for no. of animals slaughtered & fallen and prices	Value of output = no. of animals slaughtered and fallen (cattle/buffalo) * current year price	Value of output = no. of animals slaughtered and fallen (cattle/buffalo) * base year price
(x) goat/sheep skin	♦ State DESs for no. of animals slaughtered & fallen and prices	Value of output = no. of animals slaughtered and fallen ( goat/sheep) * current year price	Value of output = no. of animals slaughtered and fallen ( goat/sheep) * base year price
(xi) camel/goat/pig hair	♦ Livestock Census for population ♦ DMI reports & NAD for yield rates ♦ State DESs for prices	Value of output = yield rate * population of camel/goat/pig * current year price	Value of output = yield rate * population of camel/goat/pig * base year price
(xii) dung (a) dung cakes (b) dung manure (c) dung used for other purposes	♦ ISS for yield rates of dung ♦ ILC for population ♦ State DESs for prices and conversion rates	Quantity output of dung = population of cattle and buffalo * yield rate; (a) dung cakes ~ value of output = 0.4 * utilisation rate for estimating dung used for making cakes * dung production * current year price (b) dung manure ~ value of output = utilisation rate for estimating dung used for manure purpose * dung production * current year price, (c) dung used for	Same procedure as adopted for the current price estimates, but the prices used are the respective base year prices

Item	Source of data	Assumption/method of estimation	
		At current prices	At constant (1999-2000) prices
		other purposes; value of output = utilisation rate for estimating dung used for other purposes * dung production * current year price	
(xiii) other products – silk – ere, tassar, muga and honey and bee wax	♦ Central silk board for production and prices of silk and KVIC for production and prices of honey	Value of output = quantity * price	Value of output = quantity * base year price
(xiv) increment in livestock	♦ Indian Livestock Census for population ♦ State DESs for prices	Value of output = additions to livestock population during the year * price	Value of output = additions to livestock population during the year * price
<b>(7) Irrigation System</b>			
(i) operation of irrigation system	♦ Budget documents of state governments	Gross value added = compensation of employees + operating surplus + consumption of fixed capital	Benchmark estimates are moved with index of area irrigated
<b>(b) Inputs – (1) seed</b>			
(i) paddy, wheat, jowar, bajra, barley, maize, ragi, small millets, gram, arhar, urad, moong, masoor, linseed, sesamum, Linseed Sesamum, Groundnut, Rapeseed & Mustard, Castor, Sugarcane, Black Pepper, Turmeric, Potato	♦ DESAg through cost of cultivation studies ♦ State DESs for prices	Value of inputs = seed rate * area * current year price	Value of inputs = seed rate * area * base year price
(ii) other cereals, other condiments & spices, coconut, miscellaneous food crops	♦ DMI studies for value of seed inputs per hectare ♦ Ministry of Industry for WPI	Value of inputs = area * value of seed inputs per hectare of Base year estimate * relevant wholesale price index (WPI)	Value of inputs = area * value of seed inputs per hectare of Base year estimate
(iii) misc. non-food crops, tapioca, fodder, guar seed, cotton, dry chillies, other vegetables & dry ginger	♦ State DESs for seed rates	Value of inputs = seed rate * area * current year price	Value of inputs = seed rate * area * base year price
(2) pesticides	♦ Pesticides Association of India for despatches ♦ Dte. of Quarantine & Plant Protection for state-wise consumption	Total despatches at current year prices distributed to various states on the basis of state-wise consumption figures	Total despatches at base year prices distributed to various states on the basis of state-wise consumption figures
(3) repair and maintenance	♦ All India Debt and Investment Survey (AIDIS), 1991-92	Benchmark estimates moved with the estimates of capital stock of farm business	Benchmark estimates prepared using AIDIS, 91-92 results
(4) operational costs for livestock	♦ State DESs	0.25 * value of output of poultry meat, silk, wool, hides and increment in livestock	0.25 * value of output of poultry meat, silk, wool, hides and increment in livestock at base year prices
(5) electricity	♦ Central Electricity Authority for consumption of electricity and prices	Value of electricity inputs = electricity consumption * current year price	Value of electricity inputs = electricity consumption * base year price
(6) chemical fertilisers	♦ Fertiliser Association of India for despatches and prices	Value of inputs = quantity despatched * current year price	Value of inputs = quantity despatched * base year price
(7) diesel oil	♦ DESAg for consumption (in value terms) per diesel engine and per tractor ♦ State DESs for no. of diesel engines and tractors	Value of inputs = no. of diesel engines/tractors * consumption in value terms per diesel engine/tractor in the current year	Value of inputs = no. of diesel engines/tractors * consumption in value terms per diesel engine/tractor in the base year
(8) irrigation charges	♦ State DESs for irrigation charges	Compiled from the Budget documents	Base year estimate moved with area irrigated through government sources

Item	Source of data	Assumption/method of estimation	
		At current prices	At constant (1999-2000) prices
(9) market charges for crops	◆ Benchmark survey conducted by the DESAg for determining the market charges	Market charges = .0238 * value of output at current prices (which is derived from the survey)	Market charges = .0238 * value of output at base year prices (which is derived from the survey)
(10) feed of livestock (i) roughages	◆ Output estimates of certain crops	Value of roughages = value of output of fodder, grass, cane trash + .95 *(value of output of straw and stalks), at current year prices	Value of output of roughages = value of output of fodder, grass, cane trash + 0.95 *(value of output of straw and stalks), at base year prices
(ii) concentrates	◆ Indian Livestock Census for prices ◆ NSSO results on consumption rates	Value of concentrates = Consumption rates of different categories of animals of different items * population of these categories * Weighted average price of different items	Value of concentrates = Consumption rates of different categories of animals of different items * population of these categories * Weighted average base year price of different items
<b>2. Forestry</b>			
<b>Value of output</b> (1) Industrial wood (i) recorded	◆ State forest departments (SFD) for production ◆ State DESs for prices	Value of output = production * current year price	Value of output = production * base year price
(ii) unrecorded	◆ Expert Committee	Value of output = 0.1 * value of output of recorded production	Value of output = 0.1 * value of output of recorded production
(2) fuelwood	◆ NSS Consumer Expenditure Surveys, 55 <sup>th</sup> round (1999-00) and 50 <sup>th</sup> rounds (1993-94) for rates of consumption of firewood & chips by the households, moved for the current year ◆ Office of the Registrar General of India for population projections ◆ Enterprise Survey results for consumption of firewood & chips by the industries ◆ State DESs for prices	Total production of fuelwood = rates of consumption per person * population (separately for rural and urban) – agricultural by products used as fuelwood (output of certain byproducts in the agriculture sector) Total value of output = 1.06 * production of fuelwood estimated above * current year price (the addition of 6 per cent is to account for the consumption of fuelwood by non-households, namely, the enterprises, which is derived from the data of enterprise surveys for the benchmark year)	Same procedure as adopted for the current price estimates, but the prices used are the respective base year prices
(3) minor forest products	◆ SFDs for value of output ◆ Ministry of Industry for Wholesale Price Index (WPI)	Value of output estimates are directly furnished by the SFDs	value of output at current prices deflated by the relevant WPI
<b>Inputs of forestry sector</b>	◆ Adhoc norms	Value of inputs = 0.1 * total value of output	Value of inputs = 0.1 * total value of output
<b>3. Fishing</b>			
<b>Value of output</b> (1) marine fish, inland fish and prawns	◆ State Fisheries Departments for production and disposals ◆ State DESs for prices	Value of output = fish sold in raw form * prices (separately for marine, inland and prawns) + fish sold as salted and dried * prices + frozen fish * price	Same procedure as adopted for the current price estimates, but the prices used are the respective base year prices
(2) subsistence fish	◆ State DESs and the state fisheries departments	Value of output = .125 * production of inland fish * price (for the states for which the production of subsistence fish is not included in the production of inland fish)	Value of output = .125 * production of inland fish * base year price
<b>inputs</b> (1) marine fish and prawns	◆ State DESs and the state fisheries departments	Value of inputs = 0.225 * value of output of total production of marine fish and prawns	Value of inputs = .225 * value of output of total production of marine fish and prawns at base year prices
(2) inland fish	◆ State DESs and the state fisheries	Value of inputs = 0.1 * value of output of total	Value of inputs = 0.1 * value of output of total production



Item	Source of data	Assumption/method of estimation	
		At current prices	At constant (1999-2000) prices
	departments	production of inland fish	of inland fish at base year prices
(3) fish salting	♦ State DESs and the state fisheries departments	Value of inputs = 0.01 * value of output of salted fish	Value of inputs = 0.01 * value of output of salted fish at base year prices
<b>4. Mining and Quarrying</b>			
(1) coal	♦ Annual Reports of Coal India Ltd. & its subsidiaries for value of Output Inputs & GVA ♦ Coal Directory of India published by Office of Coal Controller	♦ Value of output input and GVA of Public is determined by analysing the annual reports ♦ Share of public sector in total production is worked out. Utilising the said share public sector estimates are duly adjusted to arrive at total estimates.	♦ Value of output = production * base year price (derived from the base year total value of output divided by total prodn.) ♦ Value of material inputs is derived using the input-output ratio at current prices ♦ Input rates pertaining to public sector are utilised.
(2) lignite	♦ Indian Bureau of Mines for production and prices ♦ Neyveli Lignite Corporation for inputs	♦ Value of output = production * current year price ♦ Value of material inputs are directly available	♦ Value of output = production * Base year price ♦ Value of material inputs are directly available
(3) crude petroleum and natural gas	♦ ONGC and OIL for production, prices and inputs	♦ Value of output = production * current year price ♦ Value of material inputs are directly available	♦ Value of output = production * Base year price ♦ Value of material inputs are directly available
(4) other major minerals	♦ Indian Bureau of Mines for production, prices and inputs(except Salt) ♦ Salt Commissioner's Office	♦ Value of output = production * current year price ♦ Input rates are directly available from IBM ♦ In respect of salt input rates of minor minerals are used	♦ Value of output = production * Base year price ♦ Input rates are directly available from IBM
(5) minor minerals	♦ State Geological Departments for value of output ♦ IBM for input rates	♦ Value of output estimates are directly available at current year price ♦ Input rates are directly available	♦ Value of output is obtained using the ratio of value of output of total non metallic minerals at constant to current prices ♦ Input rates are directly available
<b>5. Manufacturing</b>			
<b>5. manufacturing registered</b>	♦ CSO for ASI and IIP or State IIP ♦ Centre/State budgets for railway workshops, mints and security printing presses. ♦ Ministry of Industry for the WPI ♦	♦ GVO and GVA are from the results of ASI. ♦ The IIP and WPI when ASI data not available ♦ Railway workshops etc., supplied by CSO	♦ Current price estimates are deflated with the relevant WPI.
<b>6. manufacturing unregistered</b>	♦ Third All India Census of Small Scale Industrial Units, 2001-02 conducted by the Office of the DCSSI for value added per worker (VAPW) of SSI units ♦ Survey on unorganised manufacturing sector conducted by the NSSO, 2000-01 for VAPW	♦ Benchmark estimates of GDP for the year 1999-2000 = value added per worker (VAPW) * number of workers (separately for compilation category level of NIC for the segments of SSI and non-SSI, which comprises of directory manufacturing establishments, non-directory manufacturing establishments and own-account manufacturing enterprises)	♦ The benchmark industry wise estimates are moved with the relevant IIP

Item	Source of data	Assumption/method of estimation	
		At current prices	At constant (1999-2000) prices
	<ul style="list-style-type: none"> <li>◆ NSS/Population Census for Workforce (WF) estimates</li> <li>◆ CSO for the IIP or State IIP</li> <li>◆ M/Industry for the WPI</li> </ul>	<ul style="list-style-type: none"> <li>◆ The benchmark industry wise estimates are moved with the relevant IIP and the WPI at compilation category levels</li> </ul>	
<b>7. Electricity, gas and water supply</b>			
(1) electricity	<ul style="list-style-type: none"> <li>◆ Annual Reports of State Electricity Boards for output and inputs</li> <li>◆ Annual Reports of electricity generating private companies for output and inputs</li> </ul>	<ul style="list-style-type: none"> <li>◆ Both value of output and value of material inputs are available</li> </ul>	<ul style="list-style-type: none"> <li>◆ Base year estimate moved with the index of quantum sales of electricity</li> </ul>
(2) gohar gas	<ul style="list-style-type: none"> <li>◆ Ministry of Non-Conventional Energy for no. of bio gas plants</li> <li>◆ Khadi &amp; Village Industries Commission (KVIC) for value of production</li> </ul>	<ul style="list-style-type: none"> <li>◆ Value of production is directly treated as value added. Value of material inputs (dung) is assumed to be equal to the value of after use by-product (dung manure).</li> </ul>	<ul style="list-style-type: none"> <li>◆ Base year estimate moved with the index of no. of bio gas plants</li> </ul>
(3) gas	<ul style="list-style-type: none"> <li>◆ Gas Authority of India Ltd. for output and inputs</li> <li>◆ Indraprastha Gas Ltd.</li> </ul>	<ul style="list-style-type: none"> <li>◆ Both value of output and value of material inputs are available</li> </ul>	<ul style="list-style-type: none"> <li>◆ Current price estimates are deflated with the index of price of gas</li> </ul>
(4) water – public	<ul style="list-style-type: none"> <li>◆ Budget documents of centre and states for data on salaries and wages</li> </ul>	<ul style="list-style-type: none"> <li>◆ Value added = salaries and wages + consumption of fixed capital</li> </ul>	<ul style="list-style-type: none"> <li>◆ Current price estimates are deflated with the CPI(IW)</li> </ul>
(5) water – private	<ul style="list-style-type: none"> <li>◆ Data from municipalities for data on salaries and wages</li> </ul>	<ul style="list-style-type: none"> <li>◆ Value added = workforce * salaries and wages per worker</li> </ul>	<ul style="list-style-type: none"> <li>◆ Current price estimates are deflated with the CPI(IW)</li> </ul>
<b>8. Construction</b>			
<b>House hold sector</b> <ul style="list-style-type: none"> <li>◆ Rural residential buildings (RRB) (new construction outlays)</li> <li>◆ RRB-repair and maintenance (R&amp;M)</li> <li>◆ Urban residential buildings (URB) (new construction outlays)</li> <li>◆ URB – repair and maintenance</li> <li>◆ R/U - non residential building other construction works( new construction outlays)</li> <li>◆ R/U Non-residential building other construction works R&amp;M</li> <li>◆ Plantations in household sector</li> </ul>	<ul style="list-style-type: none"> <li>◆ AIDIS, 2002-03 for capital expenditure in rural &amp; urban residential buildings and R/U non-residential buildings and other construction works</li> <li>◆ Census for number of dwellings</li> <li>◆ Commodity Boards for plantation crops, NHB, NABARD publication for cost structures,</li> <li>◆ NSSO 58<sup>th</sup> Round Results Report No 488 “ Housing Conditions in India”</li> <li>◆ NBO for prices of cement, I&amp;S, bricks &amp; timber and wages</li> </ul>	<p>The state wise estimates of new and repairs &amp; maintenance in respect of rural and urban residential buildings of AIDIS are moved to latter years with the help of growth rate given by CSO. Prices changes of Building material (Cement, Iron &amp; Steel Bricks, Timber, Labour and furniture &amp; Fixures.)are imposed with the help of cost of construction under Cost of Construction Index (CCI) of rural/urban and combined index of value of 85%output from Agriculture sector and 15% from manufacturing registered sector</p>	Deflated by index of rural and Urban unskilled labour
<b>Public Sector</b>	<b>Budget documents for outlays</b>	Railways, Communication, Central Government departmental commercial undertakings GVO supplied by CSO. Regarding State Government departmental commercial undertakings and State administration expenditure taken from state Government budget documents and annual accounts	Same as above

Item	Source of data	Assumption/method of estimation	
		At current prices	At constant (1999-2000) prices
		of state Non-departmental commercial undertakings.	
<b>Private corporate sector</b>	Tea, Coffee, Rubber , Cashew Nut , Spices and National Horticulture Boards for area on Tea, Coffee, Rubber, Cashew Nut, Areca Nut, Coconut, Mango, Citrus, Grapes and Sapota Plantations and data on cost structures from NABARD.		
<b>Residual Sector</b>	Supplied by CSO	Supplied by CSO	Same as above
<b>9. Trade, Hotels and Restaurants</b>			
<b>a) Trade</b> public sector dealing in wholesale and retail trade (except motor vehicles) + auctioning activity	<ul style="list-style-type: none"> <li>◆ Budget documents for the DCUs for output and inputs</li> <li>◆ Annual reports of the Non-Departmental Commercial Undertakings (NDCU) for output and inputs</li> </ul>	Both value of output (trading margins) and value of inputs are available	Current Price estimates are deflated with WPI
Trade - Private organised sector	<ul style="list-style-type: none"> <li>◆ RBI's study of the finances of a sample of companies for value added</li> <li>◆ Ministry of Company Affairs for the total paid-up capital</li> <li>◆ DGET report</li> <li>◆ Ministry of Industry for WPI (Arranged by CSO)</li> </ul>	Base year GVA (VAPW * WF), VAPW estimated from private corporate sector and WF from DGE&T, is moved with growth trend observed in private corporate sector. or CSO allocates to states in proportion to DGE&T workforce	Current price estimates of GVA are deflated with the WPI
Trade-Private unorganised sector <ul style="list-style-type: none"> <li>◆ wholesale trade (except motor vehicles) + auctioning activity</li> <li>◆ Retail trade except motor vehicles Repair of personal household goods</li> </ul>	<ul style="list-style-type: none"> <li>◆ Informal sector survey, NSS 55<sup>th</sup> round 1999-2000 for VAPW</li> <li>◆ EUS, NSS 55<sup>th</sup> round 1999-2000/ Population Census 2001 for WF estimates</li> <li>◆ Gross Value of output from commodity producing sectors both at current and constant prices</li> <li>◆ trade and transport margins from private final consumption expenditure</li> <li>◆ 'Agricultural Statistics at Glance, Ministry of Agriculture and DMI for marketable surplus ratios</li> </ul>	Base year GVA (VAPW * WF) is moved with the index of gross trading income of commodity producing sectors evaluated at current prices.  Or base year estimates may be moved with growth in sales tax realized from trade sector	Base year estimate is moved with the Index of gross trading income of commodity producing sectors evaluated at constant prices.  If the sales tax data is used, current price estimates are deflated with WPI.
Trade-Private unorganised sector <ul style="list-style-type: none"> <li>◆ Maintenance and repair of motor vehicles</li> </ul>	<ul style="list-style-type: none"> <li>◆ Informal sector survey, NSS 55<sup>th</sup> round 1999-2000 for VAPW</li> <li>◆ EUS, NSS 55<sup>th</sup> round 1999-2000/ Population Census 2001 for WF estimates</li> <li>◆ "Motor Transport Statistics of India"</li> </ul>	Constant price estimates are inflated with CPI (IW)	Base year GVA (VAPW * WF) is moved index of 'number of registered vehicles'.

Item	Source of data	Assumption/method of estimation	
		At current prices	At constant (1999-2000) prices
	<ul style="list-style-type: none"> <li>M/o Shipping, Road Transport &amp; Highways</li> <li>◆ Labour Bureau for CPI-IW</li> </ul>		
Trade-Private unorganised sector Sale of motor vehicles	<ul style="list-style-type: none"> <li>◆ Informal sector survey, NSS 55<sup>th</sup> round 1999-2000 for VAPW</li> <li>◆ EUS, NSS 55<sup>th</sup> round 1999-2000/ Population Census 2001 for WF estimates</li> <li>◆ "Motor transport Statistics of India"</li> <li>◆ M/o Shipping, Road Transport &amp; Highways</li> </ul>	Base year GVA (VAPW * WF) is moved with the indicator based on taxes and fees.	Current year estimates are deflated with Index of sale of number of motor vehicles.
Public Sector dealing in wholesale and retail trade (except Motor vehicles) +auctioning activity	<ul style="list-style-type: none"> <li>◆ Budget documents for the departmental commercial undertakings (DW) for output and inputs</li> <li>◆ Annual reports of the Non-Departmental Commercial undertakings (NDW) for output or inputs.</li> </ul>		
<b>b) Hotels and restaurants – public sector</b>	<ul style="list-style-type: none"> <li>◆ Budget documents for DCUs for value of output and inputs</li> <li>◆ Annual reports of the for value of output and inputs</li> </ul>	Both value of output and value of material inputs are available	Current price estimates of GVA are deflated with WPI
private organised	<ul style="list-style-type: none"> <li>◆ RBI's study of the finances of a sample of companies for GVA</li> <li>◆ Ministry of Company Affairs for the total paid-up capital (Arranged by CSO)</li> </ul>	Value added from sample companies multiplied by the ratio of total paid-up capital to the paid up capital of the sample companies All India estimates are allocated to States on the basis of DGE&T workforce data	Current price estimates of GVA are deflated with WPI
Private unorganized-	<ul style="list-style-type: none"> <li>◆ Enterprise survey, NSS 57<sup>th</sup> round 2001-02 for VAPW</li> <li>◆ EUS, NSS 55<sup>th</sup> round 1999-2000/ Population Census 2001 for WF estimates</li> <li>◆ Gross Value of output from commodity producing sectors both at current and constant prices</li> <li>◆ Trade and transport margins from private final consumption Expenditure</li> <li>◆ 'Agricultural Statistics at Glance',</li> </ul>	Base year estimate (VAPW * WF) is moved with the index of gross trading income of commodity producing sectors, at current prices as derived for the trade sector Or base year estimates moved with growth in sales tax realized from hotels and restaurants	Base year estimate is moved with the Index of gross trading income of commodity producing sectors at constant prices as derived for the trade sector.  If sales tax data is used as indicator, the deflator is WPI.

Item	Source of data	Assumption/method of estimation	
		At current prices	At constant (1999-2000) prices
	Ministry of Agriculture and DMI for marketable surplus ratios		
<b>10. TRANSPORT, STORAGE &amp; COMMUNICATIONS</b>			
<b>i) Railways</b>	♦ CSO	Estimated through income method (sum of compensation of employees, operating surplus and consumption of fixed capital ) from budgets CSO supplies data	Base year estimate moved with combined indicator of passenger kilometers and net tonne kilometers, combined with their earnings in the base year as weights. CSO supplies data
<b>ii) Transport by other means and storage</b>			
Public Mechanised road transport	♦ Budget documents for DCUs for value of output and inputs ♦ Annual reports of the SRTC's for value of output and inputs	Both value of output and value of material inputs are available.	Current price estimates of GVA are deflated with the index of CPI/IW
Public - water Transport	♦ Budget documents for DCUs for value of output and inputs end central party is arranged by CSO ♦ Annual reports of the NDCUs for value of output and inputs	Both value of output and value of material inputs are available	Base year estimates are moved with index of volume of cargo handled in the ports located in the state.
Public - Air transport	♦ Arranged by CSO	value of output & material inputs are available CSO allocates the data	Current price estimates of GVA are deflated with the index of CPI/IW - CSO allocates the data
Private unorganised Mechanised road transport	♦ Enterprise survey, NSS 57 <sup>th</sup> round 2001-02 for VAPW ♦ EUS, NSS 55 <sup>th</sup> round 1999-2000/ Population Census 2001 for WF estimates ♦ Commissioner of Transport authority Hyderabad supplied for category wise number of registered vehicles. ♦ Labour Bureau for CPI-IW.	♦ GVA is estimated rural and urban separately ♦ Base year Work force is moved with Index of category wise number of registered vehicles. ♦ In ruler base year GVA PW is moved with index of CPI AL . ♦ In urban base year GVA PW is moved with index of CPIW.  GVA= (WF * VAPW)	Base year GVA= (WF*VAPW) is moved with the index of number of registered vehicles.
Private unorganised Non-mechanised road transport	♦ Enterprise survey, NSS 57 <sup>th</sup> round 2001-02 for VAPW ♦ EUS, NSS 55 <sup>th</sup> round 1999-2000/ Census 2001 for WF estimates ♦ Labour Bureau for CPI-IW	Base year GVA (WF*VAPW) is moved with the index of Commodity producing sectors. (Output index)	Base year estimate of GVA (WF*VAPW) is moved with the Commodity producing sectors. (Output index)
Private unorganised Water transport –unorganised	♦ Enterprise survey, NSS 57 <sup>th</sup> round 2001-02 for VAPW ♦ EUS, NSS 55 <sup>th</sup> round 1999-2000/ Census 2001 for WF estimates ♦ Labour Bureau for CPI-IW	Base year GVA (WF*VAPW) is moved with the index of Commodity producing sectors. (Output index)	Base year estimate of GVA (WF*VAPW) is moved with the Commodity producing sectors. (Output index)
Services incidental to transport - Organised public	♦ Data supplied by CSO	Both value of output and value of material inputs are available	Current price estimates of GVA are deflated by CPI-IW
Services incidental to transport - unorganised	♦ NSS 55 <sup>th</sup> and 57 <sup>th</sup> rounds	Base year GVA (WF*VAPW) is moved with the	Base year estimate of GVA (WF*VAPW) is moved with

Item	Source of data	Assumption/method of estimation	
		At current prices	At constant (1999-2000) prices
	♦ Labour Bureau for CPI-IW	index of Commodity producing sectors. (Output index)	the Commodity producing sectors. (Output index)
Warehousing corporations	♦ Central and state warehousing corporations' Annual Reports for value of output and inputs	Both value of output and value of material inputs are available	Current price estimates are deflated by index of CPIW.
Cold storage	♦ Annual Accounts of Cold Storage Central and State	Both value of output and inputs are available All India estimates allocated to states in proportion to storage capacity	Current price estimates are deflated by index of CPIW
Storage n.e.c	♦ NSS 55 <sup>th</sup> and 57 <sup>th</sup> rounds ♦ Labour Bureau for CPI-IW	Constant price estimates are inflated with CPI (IW) CSO allocates on the basis of state-wise workforce	Base year estimate of GVA (WF*VAPW) is moved with the inter survey growth of WF
<b>iii) Communications</b>			
Communication – public	♦ Data supplied by CSO	Estimated through income method (sum of compensation of employees, operating surplus and consumption of fixed capital )	Base year estimate moved with a combined weighted index of number of money orders, number of telegrams, number of telephones and number of postal articles, with respective earnings in the base year as weights
private communication services ♦ Courier services ♦ Cable operators ♦ Other communication	♦ Employment and Unemployment survey data from NSS 55 <sup>th</sup> round and population census, 2001 estimates of work force , ♦ value added per worker from Enterprise Survey, 57 <sup>th</sup> round ♦ CPI(AL) and CPI(IW) ♦ No. of Cellular subscribers	Base year estimate = WF * VAPW For other years <u>Courier services and cable operators</u> WF is projected using the Inter-survey avg. compound growth and VAPW of rural and urban sectors with the CPI for agriculture labourer and CPI (IW) respectively <u>Other communication</u> WF is projected with total stock of telephone connections by private sectors and VAPW with respective CPIs, for rural/urban (Arranged by CSO)	The constant price estimates for rural and urban are obtained by deflating current price estimates with CPI(AL) and CPI(IW) respectively. (Arranged by CSO)

## 11. FINANCING, INSURANCE, REAL ESTATE & BUSINESS SERVICES

<b>i) Banking and Insurance</b>			
Banking & Insurance	♦ GVA s are supplied by CSO.	GVA s are supplied by CSO.	GVA s are supplied by CSO.
<b>ii) Real estate, ownership of dwellings, business services</b>			
Real estate	• Employment and un- employment survey data from NSS 55 <sup>th</sup> round and population census, 2001 estimates of work force • value added per worker from Enterprise Survey, 57 <sup>th</sup> round, • CPI(AL), and CPI(IW)	Base year estimate = WF * VAPW For other years, WF is projected using inter-survey growth rate and VAPW is projected with the index of CPI (AL) and CPI (IW) respectively, for rural and urban areas.	Constant price estimates for rural and urban are obtained by deflating current price estimates with CPI(AL) and CPI(IW) respectively.
Ownership of dwellings	♦ 2001 Census residential houses in urban and rural areas and ♦ NSS 55 <sup>th</sup> round results for rent per household separately for rural and urban areas.	The GVA for the ownership of dwellings is equivalent to gross rental of the residential census houses less the cost of repairs and maintenance. Base year estimate=no. of census houses (rural and urban separately) * gross rental	The constant price estimates are obtained by multiplying the base year rent per household with the projected residential census houses.

Item	Source of data	Assumption/method of estimation	
		At current prices	At constant (1999-2000) prices
	<ul style="list-style-type: none"> <li>◆ CPI(AL), CPI(IW) and CPI(UNME) of house rent sub group.</li> </ul>	For other years, Rent per household moved with the index of house rent (separately for rural and urban areas) and total residential houses with the inter-censal growth rate of dwellings to get the estimates of gross rental.	
Legal services	<ul style="list-style-type: none"> <li>• Employment and un-employment survey data from NSS 55<sup>th</sup> round and population census, 2001 estimates of work force,</li> <li>◆ value added per worker from Enterprise Survey, 57<sup>th</sup> round,</li> <li>◆ CPI(AL), and CPI(IW)</li> </ul>	Base year estimate = $WF * VAPW$ For other years, WF is projected using Inter-survey average compound growth rate and VAPW is projected with the index of CPI for Agriculture Labourer and CPI(IW) respectively for rural and urban areas.	The constant price estimates for rural and urban are obtained by deflating current price estimates with CPI(AL) and CPI(IW) respectively.
Accounting	<ul style="list-style-type: none"> <li>• Employment and un-employment survey data from NSS 55<sup>th</sup> round and population census, 2001 estimates of work force,</li> <li>◆ value added per worker from Enterprise Survey, 57<sup>th</sup> round,</li> <li>◆ CPI(AL), and CPI(IW)</li> </ul>	Base year estimate = $WF * VAPW$ For other years, WF is projected using Inter-survey average compound growth rate and VAPW is projected with the index of CPI for Agriculture Labourer and CPI(IW) respectively for rural and urban areas.	The constant price estimates for rural and urban are obtained by deflating current price estimates with CPI(AL) and CPI(IW) respectively.
Computer related services	<ul style="list-style-type: none"> <li>◆ NASSCOM data of output apportioned by CSO among the States.</li> <li>◆ Annual reports/ accounts of software companies for GVA to GVO ratio</li> <li>◆ CPI(AL), and CPI(IW)</li> </ul>	Organised part of software companies is supplied by CSO. For others, Base year estimate = $WF * VAPW$ Subsequent years: WF is projected using NASSCOM data of output and VAPW is projected with the index of CPI for Agriculture Labourer and CPI(IW) respectively for rural and urban areas.	The constant price estimates for rural and urban are obtained by deflating current price estimates with CPI(AL) and CPI(IW) respectively.
Renting of Machinery	<ul style="list-style-type: none"> <li>• Employment and un-employment survey data from NSS 55<sup>th</sup> round and population census, 2001 estimates of work force,</li> <li>• value added per worker from Enterprise Survey, 57<sup>th</sup> round,</li> <li>• CPI(AL), and CPI(IW)</li> </ul>	Base year estimate = $WF * VAPW$ For other years, WF is projected using Popn. growth rate and VAPW is projected with the index of CPI (AL) and CPI (IW) respectively, for rural and urban areas.	Constant price estimates for rural and urban have been obtained by deflating current price estimates with CPI(AL) and CPI(IW) respectively.
Research & Dev.	<ul style="list-style-type: none"> <li>• Employment and un-employment survey data from NSS 55<sup>th</sup> round and population census, 2001 estimates of work force,</li> <li>• value added per worker from Enterprise Survey, 57<sup>th</sup> round,</li> <li>• CPI(AL), and CPI(IW)</li> </ul>	Base year estimate = $WF * VAPW$ For other years, WF is projected using Pop. growth rate and VAPW is projected with the index of CPI (AL) and CPI (IW) respectively, for rural and urban areas.	Constant price estimates for rural and urban have been obtained by deflating current price estimates with CPI(AL) and CPI(IW) respectively.
<b>12. PUBLIC ADMINISTRATION</b>			
public administration and defence	Budget documents from state government and local authorities for details on salaries	Income method (Total earnings of staff + consumption of fixed capital)	Current price estimates deflated by the CPI(IW)



Item	Source of data	Assumption/method of estimation	
		At current prices	At constant (1999-2000) prices
quasi-government bodies	<ul style="list-style-type: none"> <li>◆ Annual Reports of research institutes for VAPW</li> <li>◆ NSS / Census /DGET for WF estimates</li> </ul>	Base year estimate (WF * VAPW) of WF is moved with the avg. compound growth rate observed between 1995/1990 in the WF of Quasi-Government bodies and value added per worker projected to subsequent years with the index of CPI (IW) .	current price estimates deflated by the CPI (IW)
<b>XIII. OTHER SERVICES</b>			
education, medical, etc.(public) <ul style="list-style-type: none"> <li>• education,</li> <li>• medical,</li> <li>• sanitary,</li> <li>• TV &amp; radio</li> </ul>	◆ Budget documents for salaries and wages	Income method (Total earnings of staff + consumption of fixed capital )	Current price estimates deflated with CPI (IW)
Coaching centre	<ul style="list-style-type: none"> <li>• Employment and un- employment survey data from NSS 55<sup>th</sup> round and population census,2001 estimates of work force ,</li> <li>• value added per worker from Enterprise Survey, 57<sup>th</sup> round,</li> <li>• CPI(AL),and CPI(IW)</li> </ul>	Base year estimate (WF * VAPW) WF is projected using inter-survey growth in workforce and VAPW is projected with the index of CPI (AL) and CPI (IW) respectively,	by deflating the current price estimates with CPI(AL) and CPI(IW) respectively.
Education (-) Coaching centre <ul style="list-style-type: none"> <li>• private- sector</li> </ul>	<ul style="list-style-type: none"> <li>• DE&amp;T workforce</li> <li>• value added per worker from Enterprise Survey, 57<sup>th</sup> round,</li> <li>• CPI(AL),and CPI(IW)</li> </ul>	Base year estimate = WF * VAPW For other years, WF is projected using compound annual growth rate and VAPW is projected with the index of CPI (AL) and CPI (IW) for rural and urban areas, respectively	by deflating the current price estimates with CPI(AL) and CPI(IW) respectively.
medical & health pvt. sector	<ul style="list-style-type: none"> <li>◆ DE&amp;T WF</li> <li>• value added per worker from Enterprise Survey, 57<sup>th</sup> round,</li> <li>• CPI(AL),and CPI(IW)</li> </ul>	Base year estimate =WF * VAPW For other years, WF is projected using All India inter survey Compound annual growth rate and VAPW is projected with the index of CPI (AL) and CPI (IW) for rural and urban areas, respectively	by deflating the current price estimates with CPI(AL) and CPI(IW) respectively.
Sewage and refuse disposal ◆ private sector	<ul style="list-style-type: none"> <li>• Employment and un- employment survey data from NSS 55<sup>th</sup> round and population census,2001 estimates of work force ,</li> <li>• value added per worker from Enterprise Survey, 57<sup>th</sup> round,</li> <li>• CPI(AL),and CPI(IW)</li> <li>• Municipalities reports for VAPW</li> </ul>	Base year estimate = WF * VAPW For other years, WF is projected using pop. growth rate and VAPW is projected with the index of CPI (AL) and CPI (IW) for rural/urban areas	by deflating the current price estimates with CPI(AL) and CPI(IW) respectively, for rural and urban areas.
Activity of membership organisation	<ul style="list-style-type: none"> <li>• Employment and un- employment survey data from NSS 55<sup>th</sup> round and population census,2001 estimates of work force ,</li> <li>• value added per worker from</li> </ul>	Base year estimate =WF * VAPW For other years, WF is projected using AP Inter-survey annual compound growth rate and VAPW is projected with the index of CPI for Agriculture Labourer and CPI(IW) respectively for rural and	by deflating the current price estimates with CPI(AL) and CPI(IW) respectively for rural and urban areas.



Item	Source of data	Assumption/method of estimation	
		At current prices	At constant (1999-2000) prices
	Enterprise Survey, 57 <sup>th</sup> round, • CPI(AL),and CPI(IW)	urban areas.	
Recreational activities Private Sector	♦ DE&T publication for WF ♦ Annual reports/ Accounts of research Institutes for VAPW.	Work force estimates for private segment has been obtained by subtracting public sector workforce as obtained from DE&T from the total EUS (55 <sup>th</sup> round) work force. Thus obtained private sector WF estimates have been divided into rural / urban X Private. These WF estimates have been multiplied with the respective VAPW of 57 <sup>th</sup> round (adjusted for the base year 1999-00 with suitable indicators) of NSS to get the estimates of GVA in the base year.  For subsequent years the estimates of work force have been prepared using the AP inter survey annual compound growth rate of quinquennial Employment & Unemployment surveys as observed between 1993-94 and 1999-00 of NSS and value added per worker of rural and urban sectors have been projected to subsequent years with the index of CPI(AL) and CPI (IW) respectively.	by deflating the current price estimates with CPI(AL) and CPI(IW) respectively for rural and urban areas.
following services: • Pvt. Hhs with employed person • Washing & cleaning • Hair dressing • Funeral related activities	• Employment and un-employment survey data from NSS 55 <sup>th</sup> round and population census,2001 estimates of work force , • value added per worker from Enterprise Survey, 57 <sup>th</sup> round, • CPI(AL),and CPI(IW)	Base year estimate = WF * VAPW) For subsequent years: WF is projected using Inter-survey annual compound growth rate and VAPW is projected with the index of CPI for Agriculture Labourer and CPI(IW) respectively for rural and urban areas.	The constant price estimates for rural and urban have been obtained by deflating current price estimates with CPI(AL) and CPI(IW) respectively, for rural and urban areas.
Tailoring services	♦ NSSO 56 <sup>th</sup> round data on Value Added Per Worker (VAPW) and 55 <sup>th</sup> round NSSO estimates of work force separately for rural and urban areas in the base year	Base year estimate =WF * VAPW For subsequent years the estimates of work force have been prepared using the all India inter survey annual compound growth rate of quinquennial Employment & Unemployment surveys as observed between 1993-94 and 1999-00 of NSS and value added per worker of rural and urban sectors have been projected to subsequent years with the index of CPI(AL) and CPI (IW) respectively.	by deflating the current price estimates with CPI(AL) and CPI(IW) respectively, for rural and urban areas.
International and other extra territorial bodies	♦ Employment and un-employment survey data from NSS 55 <sup>th</sup> round and population census,2001 estimates of work force ,	WF X thrice the VAPW of public admn. & defence for the base year. CSO allocates estimates to states on the basis of workforce	by deflating the current price estimates with CPI(IW)

## METHODOLOGY FOR COMPILING DISTRICT DOMESTIC PRODUCT

### Introduction and Background

6.1 The information / statistics / indicators on economic activities at levels lower than state are often required by the central and state authorities as well as research institutions for planning and policy purposes to know the development as well as levels of living of the people etc. at that level. Districts have well been recognized as the areas for such requirements. Estimates of income of a district (DDP) is thought to be one of the most important indicator/barometer to measure the economic growth/development of a district, vis-à-vis, other districts and the estimates of per capita income in the district is considered to be the indicator / barometer to measure the level / standard of living of the inhabitants of the district. Preparation of DDP estimates has recently gained added importance, as it is one of the three indicators to construct a composite Human Development Index (HDI) for inclusion in the Human Development Report being prepared by some of the states of India. Other two indicators forming part of HDI are life expectancy and educational attainment.

6.2 The Regional Accounts Committee (RAC) recognized the need of the estimates at a level lower than state as early as in 1974. Two more important groups set up for the purpose were (1) working group on regional level statistics set by the CSO in 1975; and (2) working group on district planning set up by the Planning Commission in 1986. The Seventh Conference of Central and State Statistical Organisations held at Hyderabad in December 1985 also discussed the issues relating to the preparation of the income at district and rural/urban levels. Keeping in view the demand from the Planning Commission and the state governments for the income estimates at the district and rural/urban levels the Conference recommended constitution of a Technical Group to examine the requirements of data and recommend appropriate methodology for compilation of these estimates. In pursuance of this recommendation the Department of Statistics constituted a Technical Group for Estimation of Income at District and Rural/Urban Levels in January 1987 under the Chairmanship of Shri Jagdish Kumar, the then Director, National Accounts Division, Central Statistical Organization, Department of Statistics, New Delhi. The Group in its Report submitted in September 1988 recommended that:

- (i) To start with, attempts should be made to compile the district income estimates following the standard methodology, based on the income originating approach, as used for compilation of state income estimates. Due to the free flow of goods and services across the borders of the districts and the non-availability of net factor income earned by the residents from other districts/states/countries, the income accruing approach was not feasible.

- (ii) Even to compile the estimates by following the income originating approach a lot of additional data, as detailed in the Report, need to be collected.
- (iii) For district income estimates, tremendous amount of information would need to be collected and compiled at the district as well as at state levels. The Group felt that the state governments should assess the precise requirements of additional resources for implementing the recommendations of the Group and make necessary provisions in their core schemes.
- (iv) Since the estimates at the district level would be utilized for the purpose of determining the backwardness/development of a district, and as consequence for allocation of resources, it would be necessary to make necessary adjustments in these estimates in regard to significant flow of income from and to across the territories of typical districts which are rich in minerals and/or forest resources or where flow of daily commuters, migration of labour and cattle are involved.
- (v) With the present availability of data at the district level it would be sufficient to compile these estimates at an interval of five years.

6.3 Further, on the recommendations of Second Regional Conference on Statistical Matters, the Government of Karnataka and Uttar Pradesh jointly prepared a draft methodology for compiling the estimates of District Domestic Product and submitted the report to CSO in August, 1996. This draft methodology prepared jointly by the Governments of Karnataka and Uttar Pradesh was circulated among State Directorates of Economics & Statistics for their comments in order to prepare a standard methodology for compiling the DDP estimates and implement the system of District Domestic Product in States.

6.4 The National Statistical Commission (NSC) set up in under the chairmanship of Dr. C. Rangarajan, the then Governor of Andhra Pradesh on 19th January, 2000 through a government resolution, also recognized the need for the estimates of DDP in the context of calculating district level human development index. The NSC noted that (a) the DDP estimates, wherever currently available, cover mostly major agricultural crops only, or at best commodity producing sectors covering agriculture and industry because of problems of data availability at the district level; (b) available DDP estimates are calculated by income-originating (by sector of origin) method; (c) conceptually, for HDI, what are needed are DDP estimates by the income accruing method in order to reflect district-level living standards; and (d) currently available data do not permit calculation of DDP by the income-accruing method. It would be desirable to develop some appropriate indicators of the living standards at the village / block / district level. NSC has suggested that the techniques of small area statistics may be used to

estimate these indicators on the basis of State/regional level statistics capabilities. Also, a National Workshop on "State Human Development Reports and the Estimation of District Income and Poverty" sponsored by Planning Commission and UNDP, New Delhi was organized in Bangalore during July 20-21, 2006. The outcome/recommendations of this Workshop in the form of a book titled "District Income In India" by Rohini Nair, Meenakshi Rajiv and Vinod Vyasulu has been published by Mcmillan India Ltd in 2006. However, the contents of the book suffer from serious conceptual, coverage and methodological issues, and therefore, was not adopted by the concerned official agencies.

6.5 The estimation of income at district level is beset with the problems of availability of data, collection and analysis of information etc. Nevertheless, all these Committees, Groups and Workshops have recommended the compilation of the estimates of DDP, which is the need of the hour for planning and policy making at a level lower than state. As well, this is considered to be one of the important indicators to construct a composite Human Development Index (HDI). They have strongly recommended the compilation of the estimates of DDP for commodity producing sectors, for which most of the data is readily available, with immediate effect. For other sectors / activities, they have recommended to allocate the State Level Estimates among districts using relevant indicators.

### Concepts and Definitions

6.6 The estimates of District Income can conceptually be prepared by adopting two approaches, namely, income originating and income accruing.

6.7 **Income originating approach:** In the Income originating approach, the measurement corresponds to income originating to the factors of production physically located within the geographical boundaries of district and represents net value of goods and services produced within the district. It is the income originating as a result of the utilization of the physical assets and the labour force of the region, even though some of the income might flow to residents outside the region.

6.8 **Income accruing approach:** The income accruing approach relates to the income accruing to the normal residents of a district. In other words, it is the income received by the residents of a region, even though some of it might have accrued outside the region. Since this measures the income that becomes available to the residents of a district, it provides a better measure of the welfare of the residents of the region. Therefore, for a realistic measurement of income received, account needs to be taken of net inflow/outflow of income between districts. But in an open economy like that of a district in this country, it is very doubtful whether such an estimate can be prepared unless special effort is made for the collection of this data.

6.9 For estimating the District Domestic Product, the economy is divided into various economic activities like agriculture, forestry fishing, mining, manufacturing, construction, electricity, transport, communication, trade etc.

- (i) In the **commodity producing sectors** like agriculture, forestry, fishing, mining and manufacturing (regd.), the estimates of DDP may be prepared using the production approach i.e., gross value added = value of output *minus* value of inputs used in the process of production.
- (ii) In the **services sectors** like trade, transport, hotel and restaurants etc., the estimates may be prepared by income approach, i.e., gross domestic income = compensation of employees *plus* gross operating surplus.
- (iii) For the **unorganized sectors** like manufacturing unregistered and the unorganised segments of the remaining sectors of the economy i.e. unorganised trade, unorganised hotels and restaurant, unorganised road transport, unrecognised educational institutions, unorganised medical and health services, etc. the estimates of GVA may be worked out as a product of work force and gross value added (GVA) per worker. While the GVA per worker is derived from the follow-up surveys of economic censuses carried out by the NSSO, the work force is estimated from the quinquennial surveys of employment and unemployment of the NSSO and the population censuses.
- (iv) **Supra regional sectors:** There are certain activities which are supra regional in nature i.e. they cut across the boundaries of the states/districts, for example, the activities of railways, communication, banking and insurance and central government administration. The estimates for these supra regional activities may be compiled for the economy as a whole and allocated to the states and further to the districts on the basis of relevant indicators.

6.10 The estimates of district domestic product may be prepared broadly by compiling the actual estimates for the agriculture, forestry, fishing, mining and registered manufacturing sectors, from the district level available data; and by allocating the state level estimates to the districts on the basis of work-force data for other sectors. A number of state governments have already initiated the work on the preparation of district income estimates. While some of them have compiled the estimates for all the sectors of the economy, others have restricted this to the commodity producing sectors.

### **Sources and Methods of DDP Compilation**

6.11 The agencies/personnel responsible for collecting district level data are mainly District Statistical Office (DSO), District Forest Officer, District Fisheries Deptt, etc. It has been observed that the availability of district-wise basic data required for estimation of income at the district level is still not satisfactory in most of the States in India. The data in respect of commodity producing sectors viz. Primary Sectors and Manufacturing (regd.) sector, are

fairly available but in respect of remaining sectors, it is very scanty. As such, wherever district-wise basic data are available, the same may be utilised to compute the direct 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 need to 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 can be utilised 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 utilised for district income estimates also.

6.12 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 recommended by various Committees, Groups and Workshops in brief are as follows:

#### **Agriculture including Animal Husbandry- Value of Output**

6.13 **Agriculture (Proper):** 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:-

- (i) **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 farm harvest prices should be taken, where available, otherwise the wholesale prices of primary market during peak marketing period should be taken.
- (ii) **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 area and yield estimates are available.*
- (iii) **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.

- (iv) **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.
- (v) **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. The type of by-products may vary from state to state or even district to district. Efforts should be made to cover all the by-products.

6.14 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 to be made in the value of such agricultural produces by evaluating separately the quantity procured and sold in primary market by their respective prices.

6.15 **Animal Husbandry:** Similar procedure as adopted at the state level may be followed at the district level also. District-wise estimates of no. 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.

- (i) 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.
- (ii) 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 the 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.

- (iii) 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
(a) Milk	rural price/coop. collection price
(b) Meat(Buff)	Slaughter house price
(c) Goat, Sheep and Pig meat	Slaughter house price
(d) Hides (Cow and buffalo)	Slaughter house price
(e) Skins (Goat and Sheep)	Urban wholesale price of goat skin
(f) Bones (of various animals)	Urban wholesale price of bone
(g) Dung	Rural prices of dung cake
(h) Egg (Hen and Duck)	Prices from National Egg Coordination Committee

- (iv) 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.
- (v) 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.
- (vi) 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.

**6.16 Value of Inputs:** 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 charge, x) Repairs and Maintenance of fixed assets and other operational costs and (xi) FISIM.



6.17 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 districts 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 Product. For estimating the quantity of concentrates consumed, the returns 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 quantity of pesticides and insecticides per hectare in the district 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 no. 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 no. of private and Government electric tube-wells and energized 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.

(xi) **FISIM:** State level value of FISIM may be distributed on the basis of total value of output of the district.

**6.18 Gross Product from Operation of Government Irrigation System:** 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 Govt. Irrigation system may be distributed among the districts in proportion to the district-wise area irrigated by Government canals.

### Forestry and Logging

**6.19 Major Forest Products:** 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 utilized) the district value of output may be obtained by allocating state level estimates to the district in proportion to district-wise rural population.

**6.20 Minor Forest Products:** 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.

**6.21 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

**6.22** 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**

6.23 For major minerals including petroleum (crude) and natural gas (utilized), 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**

6.24 **Manufacturing (Registered):** 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 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 no. of workers available in the ASI frame. To work out FISIM, state level proportion to GVA may be adopted.

6.25 **Manufacturing (Un-registered):** For this sub-sector, the district-wise projected working force and the value added per worker (VAPW) from the latest NSS surveys could be used to compile DDP estimates directly at district level. However, if reliable data on value added per worker at district level is not available from the NSS data, attempt could be made to estimate VAPW for regions within the states, and assume the same VAPW for all districts within the regions. By this procedure, one could reasonably account for the productivity differentials across the districts to some extent. From, the total of GVA, FISIM is to be deducted using the state level ratio of FISIM to GVA.

### **Electricity, Gas and Water Supply**

6.26 **Electricity:** The state level value added from this sub-sector may be distributed to districts in proportion to district-wise working force.

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

6.29 **Water supply:** 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**

6.30 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 utilized.

### **Transport, Storage And Communication**

6.31 **Railways:** State level estimates, as provided by 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***

6.32 Public Sector: 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.

6.33 Private Sector: 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:

*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:***

6.34 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***

6.35 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***

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

### **Storage**

6.37 Warehousing (State and Central): State level estimates may be allocated to districts on the basis of average storage capacity.

6.38 Cold Storage: State level estimates may be allocated on the basis of district wise working force.

6.39 Storage not elsewhere classified: State level estimates may be allocated to districts on the basis of working force.

### **Communication**

6.40 State level estimates may be allocated to districts in proportion to the working force. Alternatively, attempt could be made to collect total stock of telephone connections (both landline and cellular) in each of the districts and this indicator could be used to allocate state level estimates.

### **Trade, Hotels and Restaurants**

6.41 The domestic product relating to 'Trade, Hotels and Restaurants' may be estimated district wise separately for public and private sector. 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.

6.42 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. Another indicator for allocation could be the sales tax receipts from trade, hotels and restaurants data on which may be available district-wise.

### **Banking and Insurance**

6.43 The state income estimates of this sector may be allocated to the districts on the basis of district wise working force. Alternatively, the allocation could be done on the basis of aggregate deposits and bank credits, data on which is available at district level.

### **Real Estate, Ownership of Dwellings and Business Services**

6.44 **Real Estate and Business services**: State level estimates from these sub-sectors may be allocated to districts in proportion to the working force in these activities.

6.45 **Ownership of Dwellings**: State level estimates may be allocated to districts in proportion to no. of dwellings (Rural/Urban) in each district based on census data.

### **Public Administration**

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

### **Other Services**

6.47 **Education, Research and Scientific Services**: State level estimates may be allocated to districts on the basis of no. of employees (Teaching and

Non-Teaching) in each district. Alternatively, attempt could be made to compile the estimates for the public part from the budget documents of state governments and local bodies, or public part estimates could be allocated to districts on the basis of public sector working force in these services.

**6.48 Medical and Health Services:** For the public sector part, State level estimates may be allocated to districts on the basis of public sector working force in medical and health profession, or district level estimates may be compiled by analyzing the budget documents of states and local bodies. For the Private Sector part, 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. The working force may be moved on the basis of no. of registered medical practitioners and registered nursing staff.

**6.49 Legal Services:** State level estimated 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.

**6.50 Sanitary Services:** District wise data (Rural/Urban) may be collected from local bodies and used.

**6.51 Rest of Other Services:** State level estimates may be allocated to the districts on the basis of working force.

### **Consumption of Fixed Capital**

**6.52** The ratio of consumption of fixed capital (CFC) to Gross value added (GVA) at state/sector level may be applied on the estimates of GVA compiled at district/sector level.

### **Estimates at Constant Prices**

**6.53** 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.

**6.54** For the remaining sectors, the District Income estimates at constant prices may be worked out using the state level deflator of current to constant 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. Alternatively, the same indicators that are used to allocate the SDP at current prices to districts may be used for allocating

SDP at constant prices as well, assuming that the implicit deflator is same for the activity across all the districts.

6.55 The above methodology takes into account the available data at the district level for the commodity producing sectors and the results of the surveys, both relating to socio-economic aspects and unorganised sectors of the economy, conducted by the National Sample Survey Organisation (NSSO) and states DES. Also, for other sectors, the methodology recommends compilation of district level estimates for the public sector part separately using the data available in the budget documents and reports of the NDCUs. For many of the sectors of the economy the methodology purposely avoids allocation of state estimates to districts in proportion to the district-wise work force, as allocation does not take into account the income disparity at the district level. For commodity producing sectors income originating approach is followed whereas for non-commodity producing sectors it is a mix up of income originating and income accruing approaches. It is because of the fact that the work force used for non-commodity producing sectors is based on the residence concept both in the population censuses and the household surveys of NSSO. Thus the use of work force, being based on the residence concept, automatically does not take into account the income of daily commuters, etc. across the districts.

6.56 For unorganised manufacturing, Construction and Tertiary Sector, generally allocation method is used. In this method, allocation of state totals of SDP estimates, for various sectors, over different districts is done on the basis of certain indicator, generally workforce. This method of allocation assumes that per head earnings/incomes are same in all districts over which allocation is made. Such assumption may not be true. The per head earning/income in a particular district may be substantially higher/lower than in other districts. In the absence of per capita value added of all the districts individually, it is not possible to compile the DDP estimates of all the districts in an objective way. However, if one is interested in the reliable DDP of a particular district and through some different survey results it is possible to find the estimates of earning/value added per worker for the comparable district, then an adjustment for differentials in per head earning/value added in that district can be done as follows:

$$\text{DDP(Adj)} = \text{DDP(Unadj)} \times \frac{\text{VAPW (Comp. District)}}{\text{VAPW (State)}}$$

The adjustment can be applied for individual sectors.

6.57 Most of the states and UTs collect data from the field on matching sample basis for each round of NSS but only a few states are able to process this data. Efforts need to be made to ensure that the data collected by states on matching sample basis of NSS round is processed and the pooled estimates prepared which will give more reliable macro-economic indicators at state as well as district level.

6.58 Efforts need to be made to extend the coverage of ASI to all the states and UTs of the country and involve state/UT DESs in collection of ASI data for the left out portion of the sample sector so as to build more reliable district level estimates.

6.59 It would be desirable that the estimates of DDP are compiled by the district statistical offices in view of their intimate knowledge of the local conditions and close contact with other agencies in the district. However, this should be adopted in a phased manner, till requisite expertise is developed for compiling DDP estimates in the districts.

6.60 If the estimates at the district level are to be utilised for the purpose of determining the backwardness/development of a district, and as consequence for allocation of resources, it would be necessary to use these estimates with a caution. A backward tribal district rich in minerals and/or forest resources, generating lot of royalty income to the state govt. may be rated as above average by income originating approach, whereas in terms of the income accruing to the residents of the district it may normally be a backward district.

6.61 While preparing the district level estimates in agricultural sector, yield rates, price and input rates of miscellaneous and unspecified crops, byproducts, and livestock as applicable at state level are applied uniformly for all the districts. However, the rates and ratios applicable to a crop depends on a number of factors like rainfall, irrigation facilities, availability of raw material, topography of district, etc. Thus, the application of uniform rates and ratios for all the districts does not bring out the varying characteristics of a district and as such estimates should be cautiously used for planning and policy purposes. In such cases, efforts should be made by the States to conduct type studies to determine such rates and ratios specific to the districts or atleast to a group of districts within the State.

6.62 Migration of animals during the times of drought, famine, cyclonic conditions from one district/state to another district/state as also the migration of people living in high altitude areas/district to low altitude areas/district in winter season hurdles the objectivity of estimating district level estimates.

6.63 There are also the districts wherein a large number of workers commute daily to another district or even to other state for work while they would be accounted for in the working force of the district where they actually reside. This will not give the correct per capita income of that district. The problems of cosmopolitan cities like Delhi & Bombay is still severe where workers particularly relating to transport operators frequently commute between different districts/state.

6.64 In the case of bigger companies in the public/private sectors with units located in various districts/states the allocation of profit, dividends and interest to the concerned districts poses a serious problem.

6.65 Use of projected working force estimates in allocation of state level estimates poses another problem. The working force estimates are generally



projected using the geometric/compound growth rates observed between two census/survey periods. These growth rates might undergo a substantial change due to policy decisions and their implementation in certain districts would seriously affect the estimates of these districts.

6.66 All state DESs should be encouraged to make best use of the latest technology (in particular IT) for increasing their efficiency as well as reliability. Use of computers will check the consistency and validate data at every level of aggregation.

6.67 Estimation of population parameters for districts on the basis of sample surveys are likely to be prone to larger degree of sampling error. Therefore, a caution is needed while using them or alternatively sufficiently large sample for giving the reliable estimates of DDP is to be selected.

## Supra Regional Sectors

1. In the preparation of the estimates of SDP, certain economic activities transcend State boundaries and thus their economic contribution can not be assigned to any one state. Such activities are Railways, Communications, Banking & Insurance and Public Administration, popularly known as the supra-regional activities. The Working Group on State Income (WGSi) recommended that the state level estimates for these sectors may be prepared by Central Statistical Organisation (CSO) by allocation of the national estimates. In pursuance of this recommendation, the estimates for these sectors are prepared by the CSO and supplied to State DESs, who incorporate them in their state level estimates. The estimates in respect of supra-regional sectors were being prepared at current prices only till 1979. In a meeting of the Directors of State DESs and the CSO on State Income and Regional Accounts held during 25-24 January, 1979, it was recommended that estimates for supra-regional sectors at state level may be prepared at constant prices also. Therefore, the CSO is has now been continuously preparing the estimates at current and constant prices and supplying the same to the State DESs for their use. The methodology used for allocating estimates of GDP of the supra-regional activities to the states is given below.

### **Railways**

2. The GSDP estimates at current and constant prices are compiled by extracting the information from General Managers' annual reports of nine railway zones and Indian Railways Annual Statistical Statement (IRASS) and other documents. All India GVA figures at current prices, segregated into Compensation of Employees (CE), interest, and operating surplus and rent (including depreciation), for Railways are extracted from the budget documents. A share of CE attributable to Railway Board and other offices of railways extracted from IRASS of railways is first subtracted from the all-India CE and is distributed among the respective states, where these Railway Board and other offices are actually located. In the absence of direct availability of Head Offices (HO) share in CE, an amount of 5% of the balance CE is presumed to be the share attributable to HO and is also subtracted from balance CE. The CE share of Railway Board, other offices and HO is later included in the respective states where these offices are actually located.

3. These all India figures are further segregated into nine zones of railways. To arrive at zonal GVA, all India values of CE as obtained above, interest and surplus & rent (including depreciation) are distributed among the nine zones on the basis of cost of staff, capital at charge and net earnings respectively. The zonal GVA is further distributed for passenger and goods traffic (including miscellaneous activities) based on the zonal earnings for passenger and goods traffic respectively. The GVA on account of passenger traffic and goods traffic for each zone is distributed among different states on the basis of average total daily number of vehicles (in terms of four wheeler) run on the section and net tonne kilometres per route km per day respectively among different states falling within a zone. It is quite likely that some states may fall in two and more zones. Final GVA at current prices for each state is

first compiled separately for passenger and goods traffic by aggregating their share in each zone and then added up to get state share of GSDP at current prices in railways. To the state wise estimates of GSDP so arrived, the share of CE in respect of Railway Board, other offices and HO is also added to respective states.

4. For compiling the constant price estimates, the base year estimates for passenger and goods traffic of each zone are moved forward based on the growth indicators as compiled from the total passenger km and net tonne km respectively. These figures are further adjusted based on the total all India constant price estimates after excluding total CE of Railway Board, Head Offices and other offices (obtained by deflating the current prices estimates by consumer prices index of industrial worker). These zonal constant price estimates are further distributed among different states using the same indicators as used for current price estimates. To the state-wise estimates of GSDP so arrived, the share of CE at constant price in respect of Railway Board, other offices and HO is also added to respective states. The portion of private railway (Konkan Railway) is directly distributed among the three states where actually the Konkan Railway runs viz. Maharashtra, Goa and Karnataka on the basis of track length.

### **Banking & Insurance**

5. The state-wise estimates for this activity are prepared separately for (i) Commercial Banks, (ii) Banking department of Reserve Bank of India (RBI), (iii) Non-banking financial companies/corporations, (iv) Post Office Saving Bank, (v) Co-operative Credit Societies, (vi) Life Insurance (from Life Insurance Corporation (LIC) only), (vii) Postal Life Insurance (PLI), (viii) Non-life insurance, (ix) Employees State Insurance (ESI) and (x) Employees Provident Fund Organisation (EPFO). For commercial banks, all-India estimates of CE and rent are distributed among the states in the ratio of number of employees, data on which is received from RBI. Operating Surplus is distributed in the ratio of credit of scheduled commercial banks, data on which is available in the RBI's annual publication 'Banking Statistics'. For the part of Banking Department of RBI, the all-India estimates of CE, rent and surplus are allocated among states in the ratios of wages and salaries, rent & taxes and deposits respectively, data on which is received from the RBI through correspondence.

6. For the non banking financial companies, the all-India estimates of total GDP of this activity are allocated among states using the data on paid-up capital, data on which is received from the Ministry of Corporate Affairs. For the non banking financial corporations, the following procedure is followed:

IFCI: The all-India estimates of CE, rent and surplus are allocated to States on the basis of wages and salaries, rent & taxes, and loan outstanding, data on which is received from IFCI.

SFC: The GSDP for all the states is directly estimated from the annual reports of state financial corporations.

UTI: The all-India estimates of CE are allocated on the basis of wages and salaries of UTI staff in each state; and operating surplus is distributed in the ratio of information available on financial disbursement of states.

IRBI, NABARD & IDBI: All-India estimates of GDP are allocated to the States on the basis of state-wise disbursement data available in their annual reports.

OIDB: All India estimates of GDP are allocated on the basis of state-wise loans outstanding.

NCDC: All India estimates of GDP are allocated on the basis state-wise loans released for central and corporation sponsored schemes.

EXIM & ECGC: All India estimates of GDP are allocated on the basis of state-wise value of export and re-export data obtained from the office of Directorate General of Commercial Intelligence and Statistics, Kolkata.

AFC: All India estimates of GDP are allocated to States on the basis of share of each state in total for all the above 7 categories.

Post Office savings Bank: All India estimates of GDP are allocated to States in the ratio of state wise gross collections under small saving schemes, data on which is obtained from the Ministry of Finance.

Co-operative Credit Societies: All India estimates of CE, rent, depreciation and profit are allocated in the ratio of state wise wages and salaries, rent, profit and depreciation, data on which is received from NABARD.

Life Insurance Corporation: All India CE and rent are distributed in the ratio of state-wise number of employees and operating surplus and commission to agents are distributed in the proportion of state wise net premium income.

PLI: All India estimates of GDP are distributed to the States in the proportion of wages and salaries of PLI staff.

7. For the Non-life Insurance part, the allocation to States is done on the following basis:

Fire Insurance: All India estimates of GDP are distributed to states in the ratio of state-wise income from business and property assessed to income tax, data on which is obtained from the Income Tax Department.

Marine Insurance: All India estimates of GDP are distributed to states in the ratio of state-wise value of exports and re-exports.

Deposit Insurance: All India estimates of GDP are allocated to states on the basis of state-wise deposits of scheduled commercial bank.

Misc. Insurance: All India estimates of GDP are allocated to states on the basis of state-wise number of registered vehicles, data obtained from the Ministry of Transport.

ESIC: All India CE is allocated among these states in the proportion of state-wise wages & salaries of Employees State Insurance Corporation (ESIC); and all-India operating surplus is distributed among the states in the ratio of state-wise revenue expenditure, excluding wages & salaries, data is supplied by the ESIC.

Employees Provident Fund Organisation: All India estimates of GDP are allocated on the basis of share of each state in total for all the above nine categories.

8. Estimates of GSDP from Banking & Insurance Sector at constant prices are prepared only for three sub-sectors namely, Commercial Banks, Co-operative Credit Societies and Life Insurance Corporation. For Commercial Banks, base year estimates are moved using average index of state-wise deposits and credits deflated by urban non-manual consumer price index. For Co-operative Societies, the base year estimates are moved using average index of deflated deposits and membership of Co-operative Societies. For the part of LIC, the base year estimates are moved using index of deflated net premium income of LIC. Further, ratio of constant/current price estimates of these three sectors is used to obtain the residual of constant price estimates. The difference in constant price estimates is further adjusted using the same ratio.

### **Communication**

9. The GSDP estimates for communication are compiled separately for Post and Telecommunication, on the basis of data received from Department of Posts, Department of Telecommunication, Mahanagar Telephone Nigam Limited (MTNL) and Videsh Sanchar Nigam Limited (VSNL). All India estimates at current prices for Posts, Telecommunication, MTNL and VSNL are compiled in the form of compensation of employees, interest, rent and surplus (profit and depreciation). These estimates at current prices for each of the communication activities are further distributed/allocated to different states and UTs based on some indicators as explained in the following paragraphs.

10. Post & Telecommunication: Data for the indicators for the activities covered under posts and telecom services is received directly from Department of Posts and Department of Telecom respectively. For both Posts and Telecom, the GVA part of compensation of employees is distributed among the circles on the basis of circle-wise wages and salaries; interest on the basis of cumulative expenditure; telecom surplus is distributed in the ratio net operating income; and postal surplus is distributed in the proportion of circle-wise wages & salaries of postal staff. These circle wise estimates are

distributed among co-terminus states on the basis of workforce for 1999-2000. However, rent for P&T combined is directly distributed state-wise on the basis of number of Post Offices, data on which is available in the annual publication 'Book of Information' from Department of Posts, in each state.

11. MTNL: Data for development of indicators for distribution of GVA components (CE, interest, rent and surplus) for both metropolises Delhi and Bombay are received through correspondence directly from MTNL. The part of Compensation of employees is distributed in two metropolis on the basis of wages and salaries; interest on the basis of capital expenditure during the year; rent on the basis of rent and surplus on the basis of difference of gross receipt and gross expenditure. For MTNL, the HQ figures on CE etc. are added to Delhi.

12. VSNL: Data for development of indicators for distribution of GVA components (CE, interest, rent and surplus) for different states are received from the source agency.

13. All-India estimates of GDP for communication at constant prices are allocated among the states according to their share in current price estimates.

#### **Central Government Administration**

14. Estimates of net value added (NVA) for Central Government Administration are prepared using the income method, the Compensation of Employees (CE) being the only factor income. For current price estimates, the total all-India CE of Central Government Administration are extracted from Central Government Budget documents, from which the CE of Defence employees, Offices Abroad, Para Military Forces, UT covered under Home Ministry Budget, Issue Department of RBI and Atomic Energy are subtracted and the balance is distributed among various states & UTs in the ratio of state-wise number of Central Government employees. To these estimates of CE, state wise estimates of CE in respect of Issue Department of RBI, as received from RBI, and Atomic Energy as extracted from the budget document of Department of Atomic Energy are added to get the final state-wise estimates of CE for Central Govt. Administration. The estimates of Central Government Administration at constant prices are prepared by deflating the current price estimates using the CPI (IW).

## ESTIMATES OF WORKFORCE AND VALUE ADDED PER WORKER

### Introduction

1. For the segments of the economy where adoption of 'production approach' is not feasible due to non-availability of requisite information on output and intermediate inputs, macro-economic aggregates are estimated by using the data on workforce, through the labour input method. In this method, estimates of *value added* for each individual economic activity or group of economic activities are compiled using the *Labour Input* as estimates of workforce and *Productivity of Labour* as estimates of 'value added per worker'. Such synthetic estimates are generally required for unorganized segment of manufacturing, water supply, wholesale and retail trade, hotels and restaurants, transport, storage, business services, legal services, sanitary services, research and scientific services, religious and other community services, personal services, etc. The Labour Input estimates are also used for allocation of national level estimates to state/regional level where direct data or suitable physical indicator is not available.

2. The definition of labour input used in national accounts compilation and the number of workers as used in working out 'value added per worker' from the enterprise surveys (ES), should be the same. The data from households like those collected in Population Census (PC) and Employment and Unemployment Surveys (EUS) of the NSSO are usually in terms of employment of persons. However, data from enterprises, collected in the ESs, are usually in terms of jobs. The difference between the two is the multiple jobs performed by workers. Therefore, for the labour input method, it is the count of jobs that is relevant for measuring labour input, particularly because the measure of productivity of labour, i.e. *value added per worker* (VAPW), obtained from the ESs is, in principle, defined in terms of jobs rather than workers.

### (i) Estimates of Workforce Sources of data

3. The two main data sources on workers and their distribution over economic activities in India are the decennial Population Census (PC) and the Employment & Unemployment Surveys (EUS) of the NSSO. These sources provide information on the entire workforce of the country. Besides these, there are other sources that provide workforce estimates for specified segments.

4. *Population Census:* In India, the first Population Census was conducted non-synchronously in different parts during 1872. Thereafter Population Censuses are being conducted decennially since 1881. Census operations spawn a large volume of demographic and socio-economic data for the entire population of the country. Among other information, the census publications provide 'Economic Tables', containing detailed data on economic activity of the population, employment status, composition of the workforce, rural-urban distribution, industrial and occupational composition. During the population census, the information is collected *inter alia* on "economic questions" through

individual slips. Based on this information, the Office of the RGI compiles the estimates of working force in respect of main workers and marginal workers at four digit level of National Industrial Classification (NIC) separately for rural and urban as well as for male and female workers.

5. In the 1981 Population Census, a three-fold classification of main workers, marginal workers and non-workers was adopted. For identifying a main worker, the time criterion of engagement in work for the major part of the year, i.e., at least 183 days, was adopted while those who worked for some time during the preceding year but not for the major part were treated as marginal workers. Those who had never worked during the preceding year were non-workers. In addition, information was also collected on secondary work of main workers. Such of the main workers having secondary work were referred to as 'Main Workers with Other Work' (MWOW). The same concept of work was adopted for the 1991 Census too.

6. In the Population Census (PC), 2001, though there was no change in the three-fold classification of main, marginal and non-workers, information on secondary work was not collected. As a result, the estimates of MWOW are not available from PC 2001 unlike the earlier years. As regards the definition of economic activities, its scope was expanded as follows: 'Cultivation' now included all crops except five plantation crops namely, tea, coffee, rubber, coconut and betel nut. In 1991 Census, cultivation included only a few crops. Cultivating crop for self-consumption, as in the past census, was considered to be economic activity. Production of milk for self-consumption was included within the boundaries of economic activity.

7. *NSS Employment and Unemployment Surveys:* The first survey on employment and unemployment was carried out by the NSSO in its 9<sup>th</sup> Round (1955). From the 32<sup>nd</sup> Round (1977-78), the survey on employment-unemployment has become a part of the quinquennial programme of NSS surveys, with an identical approach being followed in the measurement of employment and unemployment parameters. The quinquennial EUSs of NSSO aim to measure the extent of 'employment' and 'unemployment' in quantitative terms disaggregated by various household and population characteristics. The persons surveyed are classified into various activity categories on the basis of the activities pursued by them during certain specified reference periods. Three reference periods are used in these surveys. These are (i) one year, (ii) one week and (iii) each day of the week. Based on these three periods three different measures are arrived at, of which the one with 365 days reference period, called workforce according to 'usual status' approach, is widely used.

8. The usual activity status (It is the activity situation in which a person is found during a reference period that relates to the person's participation in economic and non-economic activities) relates to the activity status of a person during the reference period of 365 days preceding the date of survey. The activity status on which a person spent relatively longer time (major time criterion) during the 365 days preceding the date of survey is considered the



principal usual activity status of the person. In this approach, a person is first categorised as belonging to the labour force (Persons, who are either 'working' (or employed) or 'seeking or available for work' (or unemployed) constitute the labour force. Persons who are neither 'working' nor 'seeking or available for work' for various reasons during the reference period are considered as 'out of labour force' or not, according to major time criterion. For the persons belonging to the labour force, the broad activity status of either 'working' or 'not working but seeking and/or available for work' is then assigned on the basis of the relatively longer time spent in the labour force during the 365 days preceding the date of survey. If a person – whether or not a worker in the principal status - pursues some economic activity more or less regularly for a relatively shorter period during the reference period, he / she is treated to have pursued the economic activity in subsidiary capacity.

9. *Employment Market Information Programme of the Ministry of Labour:* Under the Employment Market Information (EMI) Programme, the Directorate General of Employment & Training (DGE&T), Ministry of Labour, publishes data on employment and unemployment in organised part of the economy. The EMI programme, first taken up on a pilot basis during the second Five Year Plan, was strengthened by the provisions of the Employment Exchanges (Compulsory Notification of Vacancies) Act, 1959. The programme covers all establishments in the public sector (except the defence establishments and armed forces) and those establishments in the private sector that employ 25 or more persons on the last day of the quarter under reference. Apart from this, since 1966, the establishments employing 10 to 24 persons are also covered on a voluntary basis. The information is collected, *inter alia*, on number of persons employed, classified by industry and sex, at the end of each quarter.

10. *Annual Survey of Industries:* The Annual Survey of Industries (ASI), conducted every year by the CSO is another source of employment data. Its coverage is restricted only to the establishments registered as factories under Sections 2m(i) and 2m(ii) of the Indian Factories Act, 1948. However, Departmental units such as Railway workshops, Road Transport Corporation Workshops, Government Mint, Sanitary, water supply, gas, storage etc. are kept out of the coverage, though they may be registered under the Factories Act. Some of these activities when carried out in private factory establishments like cold storage, water supply, gas production and distribution, motion picture production, laundry services, repair of motor vehicles and of other consumer durables are covered under the survey. Until 1997-98, all electricity undertakings engaged in the generation, transmission and distribution of electricity registered with the Central Electricity Authority were also covered under ASI irrespective of their employment size.

### ***Estimates of Workforce for 1999-2000 Series***

11. The advisory Committee on National Accounts, under the Chairmanship of Prof. S.D. Tendulkar, recommended formation of a Working Group (WG) to formulate and suggest a detailed methodology of estimating the labour input using the results of EUS, 1999-2000 and PC-2001, for the purpose of national accounts compilation. The Committee submitted its

Report in March, 2004 and the same was published by the CSO, entitled “Report of the Working Group on Workforce Estimation for Compilation of National Accounts Statistics with Base Year 1999-2000”. This publication is also available on the Ministry of Statistics and Programme Implementation’s website at, [http://www.mospi.nic.in/mospi\\_cso\\_rept\\_pubn.htm](http://www.mospi.nic.in/mospi_cso_rept_pubn.htm).

12. The Working Group observed that in the context of national accounting, estimating *labour input* requires estimates of workforce (number of workers) in the base year separately for the organised and unorganised segments of the economy and its distribution over economic activities or groups of economic activities. The workforce is then to be adjusted for multiple jobs in respect of each activity or activity-group so as to measure the *labour input*. These base-year estimates are required to be projected to the subsequent years too. Further, to arrive at the unorganised *labour input*, the organised *labour input* should be appropriately netted out from that of the economy. As the LIM is also used for the estimation of the State Domestic Product (SDP), it is necessary that method of estimating *labour input* comprises estimating *labour input* for SDP compilation as well. The following were the summary of issues identified by the Working Group in estimating labour input for use in national account compilation for unorganised segments:

- Estimating workforce aggregates for the base year,
- Adjusting for multiple jobs to derive the *labour input*,
- Distribution of workforce / *labour input* by economic activity,
- Projecting estimates of *labour input* to subsequent years,
- Netting out the workforce engaged in organised segment of the economy from the estimates of total *labour input*,
- Estimating workforce / *labour input* for compilation of SDP.

13. The above issues were dealt with differently in the various series of the NAS. From the conventional series to the 1980-81 series, the estimates of workforce used for NAS compilation were mainly based on PC data. A significant departure was made for the 1993-94 series of NAS. The alternative source of data used for obtaining the aggregate estimates of workforce for the first time in NAS is the EUS of the 50<sup>th</sup> Round (1993-94) of the NSSO and the data on population of PC 1991. As mentioned earlier, for compilation of NAS, what matters is not the size of the working population but the amount of labour put in by it in the process of production of goods and services. Thus, what is required is not just the estimate of workforce, which is merely the head count of economically active persons, but a measure of total *labour input* going into production activities of the economy. The use of LIM for estimating *value added* requires reliable estimates of *labour input*, measured as workforce adjusted for multiple employment. The industrial classification used for this purpose, the method of estimating the workforce by industrial classification, and the method of adjusting these estimates to obtain *labour input* have varied from one NAS series to the other. Moreover, in the absence of annual data for estimation of the *value added*, the base year estimates are required to be carried forward to the subsequent years using physical indicators. When more appropriate indicators are not available, the estimates are projected using growth rates of workforce. While the earlier series used

the inter-censal growth rates of workforce for this purpose, the 1993-94 series uses the growth rates observed between 43<sup>rd</sup> (1987-88) and 50<sup>th</sup> (1993-94) Round EUSs. Different series of the NAS were generally using the DGE&T data on the employment to net out the organised *labour input* from that of the economy.

14. The detailed procedure of obtaining the number of jobs performed in each economic activity from the available data sources, is given in the Report of the Working Group. In this context, the following is quoted from the Report of the Working Group:

*“The WG recommends that the CSO should continue to use the data available from the following sources for estimating labour input at the national level:*

- Population Census(PC);
- Employment and Unemployment Survey (EUS) of NSSO;
- Employment in the Organised Sector data of the DGET;
- Annual Survey of Industries.”

15. For manufacturing and services, the recommended method also specifies the levels at which compilation of national accounts should be attempted – the corresponding activity-groups recommended for this purpose are called compilation categories in this report. The method described below is meant for restricted application only to the segments of the economy comprising the manufacturing and service-producing activities. The following is a step-wise description of the recommended method:

- Obtain the mid-year population from the PC for the four segments of the population, viz. rural male, rural female, urban male and urban female.
- Obtain the activity-specific rates of *labour input* as the *labour input* per thousand population estimated from EUS for each identified compilation category. The survey-based estimate of *Labour input* would be arrived at as the sum of EUS estimates of (a) persons reporting *principal-capacity* employment, and (b) persons reporting *subsidiary-capacity* employment (usual status) in the respective manufacturing or service-producing activities, separately for the four population segments.
- Apply the rates of *labour input*, as obtained in Step (ii), on the male and female populations of rural and urban areas, as obtained in Step (i), to get the required estimates of *labour input* in each of the four segments of the population, separately for each of the compilation categories.
- Obtain the base year estimates of *labour input* for each of the compilation categories as the sum of the respective estimates of *labour input* in the four population segments.
- Extrapolate the base-year estimate of *labour input* for each compilation category using the respective growth rate in *labour input* observed between the two most recent EUSs to arrive at

estimated *labour input* for the subsequent years.

- Finally, for the base year as well as the subsequent years, obtain the estimates of unorganised segment *labour input* in the identified compilation categories using the Employment Market Intelligence(EMI) data of the DGET of the respective years.

16. The Working Group also provided national-level estimates of total *labour input* for the recommended compilation categories obtained by applying steps (i) to (iv) mentioned above, in Appendix 4.3 of the Working Group Report. The data presented in the Report under this Appendix refers to the *labour input* for the mid-financial years of 1993-94 and 1999-2000, based respectively on the EUS of the 50<sup>th</sup> and 55<sup>th</sup> Rounds of the NSSO and PC-based population projections, and also the annual compound growth rates derived from these estimates for the compilation categories. On the estimates of labour input and annual growth rates in the labour input, the Working Group observed that these are consistent in most cases with the general perception of developments during the 1990s. However, the Working Group also observed that for some of the activities like selling motor vehicles, wholesale trade except motor vehicles, textile industry and food processing, the growth rates are doubtful, perhaps due to misclassification of the workers and lack of exact concordance between NIC 1987 and NIC 1998. In view of these observations, the Working Group recommended external validation of the *labour input* estimates of all the compilation categories in general and the doubtful cases in particular, using data from other sources like PC 2001 and the contemporary enterprise surveys, whenever these become available.

17. In view of the observations of the Working Group, further validation of estimates of workers for some compilation categories was done for the new series using the limited single-digit (industry) level (NIC 1998) workforce data obtained from the RGI (detailed information on workforce was not released by the Office of the Registrar General of India at the time of the release of new series), and the same was compared with the NSS 55<sup>th</sup> Round data obtained from the NSSO. While comparing the two sets of data, the number of workers in both sources was adjusted to bring them as on 1<sup>st</sup> October, 1999. Since the basic structure of the recommendations and data on workforce provided by the Working Group was to be adopted for the new series, the adoption of alternative sets of data compiled using the NSS and Population Census, 2001 based workforce data [for individual activities, the NSS data was multiplied by 1-digit (NIC 1998) level ratio of workforce from Population Census to the workforce from NSS] was restricted to the doubtful cases mentioned in the Working Group Report, in addition to few others. These compilation categories are (i) sale of motor vehicles, (ii) wholesale trade except for motor vehicles and auctioning activities, (iii) storage and warehousing, (iv) sewage and refuse disposal, sanitation and similar activities, (v) activities of membership organizations, n.e.c. and social work with accommodation, (vi) recreational, cultural and sporting activities, and (vii) private households with employed persons and the workforce estimates for these 7 categories are from the Population Census, 2001 based workforce data at 1-digit level, distributed to these compilation categories on basis of the distribution of NSS workforce data.

18. The estimates of overall workforce adopted in the new series for the compilation categories are provided to the States by the CSO. While the estimates of workforce in public sector and private organized sector are available annually from the DGET, those for the unorganized sector are derived as residual by deducting the organized sector workforce estimates from the total workforce of that compilation category.

**Table-1: Sources and coverage of data**

Sl. No.	Source	Coverage
1.	Decennial Population Census	All economic activities of the population, employment status, composition of the workforce, rural-urban distribution, industrial and occupational composition
2.	Employment & Unemployment Surveys of NSSO (quinquennial)	-do-
3.	Employment Market Information Programme of the Ministry of Labour	Employment and unemployment in organised segment of the economy.
4.	Annual Survey of Industries	Employment data of the factories registered under Sections 2m(i) and 2m(ii) of the Indian Factories Act, 1948.

**(ii) Estimates of value added per worker (VAPW)**

19. The estimates of VAPW for the unorganized and some private organized segments of manufacturing (non-SSI part) and services sectors have been compiled from the detailed data available from the NSS 55th round (1999-2000) on informal non-agricultural enterprises, NSS 56th round (2000-01) on manufacturing enterprises in the unorganised sector, and NSS 57th round (2001-02) on unorganised enterprises in service sector (excluding trade and finance).

20. The estimates of VAPW at the compilation category level are arrived at as a ratio of the gross value added to the total employees in the particular compilation category. The following adjustments are made while processing the data for estimating the VAPW.

- Rent on land and building is treated as factor income, in the absence of data on rent on land;
- Wherever survey results are for years other than 1999-2000, suitable adjustments have been made on the VAPWs using CPI-AL and CPI-IW to arrive at the estimates for the benchmark year 1999-2000.
- Wherever the unit level data has shown either zero or very low value of output, but has entries against inputs and salary and wages, the same have been assumed to be outliers and have been removed from the estimation of VAPW. However, the number of such records removed from the data processing were very low.

21. Estimates of workforce and value added per worker for all compilation categories of SDP have been provided by the CSO to the States. Also, the CSO provided the estimates of workforce at district level for use in DDP estimation.

## ESTIMATION OF CAPITAL FORMATION AT STATE LEVEL

### 1. INTRODUCTION

1.1 The 'Capital Formation' is an important indicator useful to measure the economic development of the state. For the balanced regional development, estimates of gross capital formation, capital stock and consumption of fixed capital are very much required.

1.2 The gross capital formation is measured by the total value of a producer's acquisition less disposal, of fixed assets during the accounting period plus certain additions to the value of non-produced assets realized by the productive activity of institutional units. Thus the capital formation at State level is that part of the State's 'Output' and 'Imports' which is not consumed but added to the State's fixed tangible assets and stocks. The concepts and definitions of fixed assets is given in Section 2.

1.3 The estimates of capital formation can be prepared by following any of the three approaches

- (1) **Production or commodity flow approach:** in this approach the estimates for entire country/states/regional economy is prepared on the basis of commodities flowing into various types of assets of the capital formation namely construction, machinery and software.
- (2) **Saving and flow of funds approach:** in this approach the estimates of saving are prepared and then the net capital in flow from outside the region/state/country is added to get the total estimates of capital formation.
- (3) **Expenditure approach:** in this approach the expenditure incurred on acquiring fixed assets namely construction, machinery and software is estimated and the estimates of GFCF is arrived at. To this change in stocks is added to obtain capital formation.

1.4 At national level, all the three approaches are currently adopted by the CSO. For measurement of GFCF at state level, only expenditure approach can be adopted as the other two methods require data on imports and exports of capital goods across the state boundaries and net inflow of resources from outside the state, which are not available.

### 2. CONCEPTS OF CAPITAL FORMATION

2.1 Gross capital formation (GCF) refers to the aggregate of gross additions to fixed assets (i.e., fixed capital formation) and change in stocks during the accounting period. Fixed assets comprise construction and machinery and equipment (including transport equipment and breeding stock, draught animals, dairy cattle and the like). Construction for military purposes (other than construction or alteration of family dwellings for military personnel), defence equipment, durable goods in the hands of the households and increase in the stocks of defence materials are excluded from the scope

of capital formation. However, capital outlays of defence enterprises on ordnance and clothing factories are included.

2.2 Gross capital formation is measured by the total value of the (i) gross fixed capital formation, (ii) changes in inventories and (iii) acquisitions less disposals of valuables. Total capital formation can be broadly classified into (i) fixed capital formation and (ii) changes in stocks of raw materials, semi-finished and finished goods.

2.3 Gross fixed capital formation is measured by the total value of a producers' acquisitions, less disposals, of **fixed assets** during the accounting period plus certain additions to the value of non-produced assets realised by the productive activity of institutional units. Fixed assets are tangible or intangible assets produced as outputs from processes of production that are themselves used repeatedly or continuously in other process of production for more than one year.

2.4 There is substantial diversity in the different types of gross fixed capital formation that may take place. The following main types may be distinguished.

**(a) Acquisitions, less disposals, of new or existing tangible fixed assets, subdivided by type of asset into :**

- Dwellings,
- Other buildings and structures;
- Machinery and equipment;
- Cultivated assets – trees and livestock-that are used repeatedly or continuously to produce products such as fruit, rubber, milk etc.

**(b) Acquisitions, less disposals, of new and existing intangible fixed assets, sub-divided by type of asset into:**

- Mineral exploration;
- Computer software
- Entertainment, literary or artistic originals;
- Other intangible fixed assets;
- Major improvements to tangible non-produced assets, including land;
- Costs associated with the transfers of ownership non-produced assets.

2.5 The various components of acquisitions and disposals of fixed assets as referred to in categories (a) and (b) above are, listed below:

- (a) Value of fixed assets purchased
- (b) Value of fixed assets acquired through barter,
- (c) Value of fixed assets received as capital transfers in kind;
- (d) Value of fixed assets retained by their producers for their own use. Including the value of any fixed assets being produced on own account that are not yet completed or fully mature;

**Less**

- (e) value of existing fixed assets sold;
- (f) Value of existing fixed assets surrendered in barter;
- (g) Value of existing fixed assets surrendered as capital transfers in kind.

2.6 Gross fixed capital formation consists of the outlay of industries and the producers of government services and of private non-profit services to households on addition to their fixed assets, reduced by their net sales (sales less purchases) of similar second hand and scrapped goods. The commodities in question may be purchased or produced on own account. They include (i) durable goods – the lifetime of which is one year or more-acquired by producers (ii) improvements and alteration of the durable goods which significantly extend and expected life-time or productivity of assets, (iii) new construction and major improvements which extend its life period, (iv) reclamation and improvement of land and the development and extension of timber tracts, mineral exploration, orchards, plantations and similar other agricultural holdings and (v) breeding stocks, draught animals, dairy cattle and the like. Dealers' margins, service charges, taxes and other transfer costs in regard to transaction of such assets form part of capital formation. Destructive weapons such as missile, rockets, bombs etc. are excluded. However, military structures also used for civilian purpose are included. Outlays on newly constructed dwellings (either by households or industries) and expenditure on major improvements and alterations of residential buildings form part of fixed capital formation, while the purchase of durable goods by households for its own consumption are not treated as capital formation. Expenditure on Computer software, Entertainment, literary or artistic originals, and copyrights/ patents also form part of fixed capital formation. Research and development expenditure should be considered as normal revenue expenditure and thus should not be capitalised.

2.7 Gross fixed capital formation, also, includes expenditure on land clearance, irrigation works, plantation and cultivation of new timber tracts, new fruit and sap bearing trees, vines etc. which yield products after a number of years. After such plantations and cultivations become productive, further outlays in respect of cultivation should be classified as intermediate consumption. Clearance and afforestation of timber tracts and forests is classified under land improvement activity and included in gross fixed capital formation. In view of the above 'afforestation programmes and clearance of forest land for refugee rehabilitation' should be treated as construction activity and included in gross fixed capital formation. Soil conservation activity undertaken by the public sector for conservation of forests and capital expenditure on such construction activity is included in gross fixed capital formation. Similarly soil conservation activity in the private sector may be treated as own-account construction. The expenditure on own-account construction should, in principle, be assigned to the construction industry and should not form part of the output of the industry where it is actually undertaken.



2.8 Construction activity covers all new constructions, alterations and repairs of buildings, highways, streets, bridges, culverts, railroad beds, railroads, subways, airports, parking areas, dams, drainages, wells and other irrigation sources, water and power projects, communication systems such as telephone and telegraph lines, land reclamations, bunding and other land improvements, planting and cultivating new orchards, tea, coffee and rubber plantations, afforestation projects and all other types of heavy construction. Activities of the special trade contractors such as carpenters, plumbers, plasterers and electricians relating to construction projects, and assembly and installation at site of prefabricated integral parts into bridges, storage and warehousing facilities, etc. are also included.

2.9 Machinery and equipment comprises all types of machinery like agricultural machinery, power generating machinery, manufacturing, transport equipment, furniture and furnishings. Also included are increments in livestock in respect of breeding stock, drought animals, dairy cattle and other animals raised for wool clippings. Additions to livestock other than these are accounted for under change in stock.

2.10 The estimates of GCF for the economy as a whole, include all relevant items of new capital goods which are produced domestically (exclusive of exports) and new and second-hand imported goods. According to SNA, imports should include the outlays in foreign countries of the embassies, consulates and other extra-territorial establishments of the government of the given country on new fixed assets reduced by the net sales of their second-hand and scrapped assets. Similarly, the net outlays of foreign embassies, consulates and other diplomatic bodies located in a country, on fixed assets produced within the country are to be recorded in the exports and not in the gross fixed capital formation (GFCF) of the given country. The fixed capital outlays of international agencies located in the country are to be treated in an identical manner. Due to want of data, it has not been possible to account for these. The estimation, therefore, follows the domestic concept, whereby, only additions to stocks of fixed assets and inventories within the geographical boundary of the country are taken into account. Accordingly, the GCF refers to gross domestic capital formation (GDCF).

2.11 Additions to non-reproducible tangible assets such as land, mineral deposits and the natural growth of standing timber or crops have not been included in GCF. However, outlays on improvement of land and development or extension of mining sites, timber tracts and plantations are part of capital formation. The outlays on incompleting construction works incurred during the period are included in the estimates of fixed assets. Inventories consist of materials and supplies, work-in-progress and finished products and goods in the possession of producers and dealers. Stocks of strategic materials, grains and other commodities of special importance to the nation in the possession of government are also included in the estimates of change in stocks.

2.12 Before proceeding further, it is necessary to look at the definition of assets and its various types.

## ASSETS

### Definition

2.13 The SNA defines an economic asset as “an entity functioning as a store of value:

- (a) Over which ownership rights are enforced by institutional units, individually or collectively; and
- (b) From which economic benefits may be derived by its owner by holding it, or using it, over a period of time.

2.14 The first restriction in this definition serves to limit the concept of assets to items that are effectively claimed by an economic agent, excluding, for instance, international waters or wild birds; the second restriction says that only items with an economic value are taken into account.

### Types of assets

2.15 Many assets come into existence as outputs from production processes. To qualify as a *produced asset*, the item must first of all answer the condition of being the result of a process that falls within the SNA production boundary. However, there are further conditions. Collective services, for instance, are considered as being consumed at the moment they are produced and consequently cannot be “stores of value.” By convention, goods and services purchased for final consumption by households are used up at the moment of purchase, implying that neither these items enter the accumulation accounts and balance sheets. This is true even if they are durable, such as furniture and private cars. In addition, by force of 1993 SNA conventions, military weapons of destruction and the equipment to deliver them equally are outside the asset boundary.

2.16 People often think that produced assets should be tangible, in other words, that they are “goods.” However, this is not the case: the System classifies cost on mineral exploration, computer software and the value of produced entertainment, literary or artistic originals also under the heading of produced assets when they are actually traded on markets.

2.17 The second class of assets which may be distinguished consist of items which have their origin in nature or in legal and accounting actions. They are the so-called *non-financial non-produced assets*. This group includes, among other things, land and water resources, mineral deposits, virgin forests and non-cultivated fisheries provided that ownership rights over them are enforced. Included are again certain intangibles, such as patented entities (including those brought about by research and development activities), transferable contracts and purchased goodwill.

2.18 The third and last group consists of *financial assets*. These arise out of contractual relationships between two institutional units under which one party becomes entitled to receive a payment, or series of payments, from the other party. Also included are monetary gold, Special Drawing Rights (SDRs), shares in corporations, and financial derivatives. Except in the case of monetary gold and SDRs, every financial asset has a counterpart in a liability representing the obligation of the debtor to pay the amounts specified by the

contract. The Accumulation accounts and Balance sheets record both financial assets and the counterpart liabilities.

2.19 The difference between the aggregate value of the assets of all types owned by an institutional unit and the value of its liabilities is called the unit's *net worth*. Net worth is an indicator of wealth.

## 2.20 Classification Of Assets And Liabilities

### 2.21 Main Classification of Assets

#### 1. Non-financial assets

- A. Produced assets
  - a. Fixed
    - i. Tangible: dwellings, other buildings & structures, machinery & equipment, cultivated assets
    - ii. Intangible: mineral exploration, computer software, entertainment etc.,
  - b. Inventories
  - c. Valuables
- B. Non-financial non-produced assets
  - a. Tangible: land, subsoil assets, non-cultivated biological, water
  - b. Intangible: patents, leases, goodwill

#### 2. Financial assets/liabilities

- a. Monetary gold and SDRs
- b. Currency and deposits
- c. Securities other than shares
- d. Shares and other equity
- e. Loans
- f. Insurance technical reserves
- g. Accounts receivable/payable.

2.22 The broad classification of assets distinguishes first between non-financial versus financial assets. The first group is further broken down between produced assets and non-produced assets.

2.23 *Non-financial produced assets* consist of fixed assets, inventories and valuables. *Fixed assets* are those which are used repeatedly or continuously in production processes for more than one year. Not included are small, inexpensive tools, such as hammers and screwdrivers. Included are, for instance, dwellings occupied by their owner, livestock or trees used repeatedly to produce other goods and services, mineral exploration, and computer software and artistic originals if ownership rights have been established over them. *Inventories* comprise materials and supplies, work-in-progress, finished goods held by the enterprise that produced them, and goods for resale (or provision in kind). *Valuables* are goods primarily as stores of value in the expectation that they hold their value in real terms in the long run. Examples are precious stones and metals, works of art, and antiques. Not included is gold held by the authorities responsible for the management of the foreign reserves. Monetary gold is classified as a financial asset.

2.24 *Non-financial non-produced assets* are broken down in tangible assets and non-tangible assets. *Tangible* are land, subsoil assets, biological reserves which are not under the direct control, responsibility and management of an institutional unit but are economically exploitable (such as virgin forests which are used for collecting firewood), and natural water resources. The *intangibles* consist of patented inventions, transferable leases and other transferable leases, and purchased goodwill. The value of goodwill includes anything of long-term benefit to an enterprise that has not been separately identified as an asset. The System does not record any goodwill other than purchased by acquiring an entire enterprise.

2.25 *Financial assets* are broken down between monetary gold and SDRs, currency and deposits, securities other than shares, loans, shares and other equity, insurance technical reserves and other accounts receivable or payable. *Monetary gold* is gold that is held as a financial asset as a component of foreign reserves. *SDRs* are international reserve assets created by the IMF to supplement other reserve assets of official holders. *Currency and deposits* are financial assets used to make payments, such as notes and coins, and checking accounts. *Securities other than shares* are assets that are traded in financial markets and usually give the holders the unconditional right to receive a stated fixed sum on a specified date. Examples are bill, bonds, and bankers' acceptances. *Loans* are created when creditors lend funds directly to debtors; they are normally evidenced by non-negotiable documents. *Shares and other equity* are instruments that acknowledge claims on the residual value of incorporated enterprises. Included is the net equity of the owner in quasi-corporations. *Insurance technical reserves* comprise reserves against outstanding risk, reserves for with-profit insurance, pre-payments of premiums and reserves against outstanding claims. *Other accounts receivable or payable* are trade credit, receivable taxes, receivable wages, etc.

### 3. ESTIMATION PROCEDURE AT NATIONAL LEVEL

3.1 The estimates of GFCF for the country are prepared both by type of assets viz., construction and machinery and equipment and by industry of use. Estimates of change in stocks are generally prepared on the basis of inventories held by industries except for foodgrains for which the total stocks in private and public sectors are measured irrespective of their being held by producers or traders. To the extent possible estimates of change in stocks are prepared separately for public and private sectors. The estimates by industry of use are compiled separately for public and private sectors for the same industry groups for which the estimates of GDP by the industry of origin are prepared.

#### Domestic Capital Formation by Type of Assets at Current Prices

3.2 The estimates of GDCF by type of assets are prepared separately for (i) construction, (ii) machinery and equipment and (iii) change in stocks. The commodity flow approach is followed for preparing the annual estimates of pucca construction works as well as for machinery and equipment. The

estimates of kutcha construction are prepared using the expenditure approach.

### **(i) Construction**

3.3 As mentioned above the estimates of domestic capital formation in construction are compiled separately for pucca construction and kutcha construction i.e., labour intensive construction works undertaken using materials like reeds, mud, etc., which either have very little economic value or are freely available. The total expenditure on new construction, is the aggregate of the values of both material inputs and factor income in the form of payments to labour as well as to capital (i.e., rent, interest, profits etc.). But the total value of output of construction undertaken during the year is estimated inclusive of new construction including major repairs and replacements (herein after referred to as new construction) and current repairs and maintenance. In order to obtain the estimates of domestic capital formation it is netted for the expenditure on current repairs and maintenance.

3.4 The value of output of pucca construction is worked out at the aggregate level and its break up into new construction and repairs & maintenance by institution is not attempted by Commodity Flow Approach (CFA) for want of requisite data. On the other hand the new construction component of kutcha construction is estimated separately for each of the institutional sectors, i.e. public sector, private corporate sector and households as explained in the chapter on Construction. In order to work out the estimates of fixed capital formation for pucca construction, the current repairs & maintenance component will have to be estimated and subtracted from the value of output of pucca construction. The estimates of current repairs & maintenance by institutions are attempted following the expenditure approach. This approach, incidentally, also provides the estimates of fixed capital formation by type of institutions as discussed in the following para.

3.5 In case of public sector, the estimates of expenditure on new construction and repairs and maintenance are obtained by analysing the budget documents and annual accounts of public sector enterprises/companies. Such estimates for private corporate sector are based on RBI studies of sample joint stock companies and the estimates for the co-operative societies are based on the data obtained from the NABARD. The estimates of expenditure on new pucca construction and repairs & maintenance in case of household sector are prepared in three parts - (i) rural residential buildings, (ii) urban residential buildings, and (iii) rural/urban non-residential buildings and other construction works (repair & maintenance only) and are based on the data thrown up by NSSO survey AIDIS. As the whole of the expenditure on construction estimated on the basis of AIDIS, does not comprise pucca construction, ratios based on NSSO reports and other sources are used to estimate the components of pucca construction. Although the point estimate of new construction for rural/urban non-residential buildings and other construction works is also available in the report on AIDIS, the estimate for this category is derived as residual i.e., by deducting the independent estimates of expenditure on new construction and repairs and maintenance of three institutional sectors as detailed above from the

estimates of total value of construction accounted in commodity flow approach. This is done in order to keep the value of construction obtained following commodity flow approach intact.

3.6 Similarly, in respect of labour intensive kutcha construction works, independent estimates of expenditure on new construction and repairs and maintenance are obtained for the same categories as for the accounted pucca part. In respect of public sector, the estimates of expenditure on kutcha new construction are based on the analysis of budget documents and relate, besides afforestation and reforestation, to soil conservation and area development, capital expenditure on 'other construction comprising bunding, field drains, kutcha bridges etc. in the case of irrigation and expenditure on roads & buildings and 50 per cent of other construction in the case of forestry. In the case of private corporate sector, kutcha construction covers expenditure on tea, coffee and rubber plantations. Expenditure towards repairs and maintenance for these two categories is assumed to be nil. For the household sector, the estimates of expenditure on new construction and repairs and maintenance are based on the results of RBI's decennial survey AIDIS. As stated earlier, ratios contained in the NSSO reports are used to estimate the components of kutcha construction separately for residential buildings, non-residential buildings and other construction works. The estimates in respect of public and private corporate sectors are based on current data for each year. However, in case of household sector the estimates of expenditure on new construction and repairs and maintenance based on the results of AIDIS are moved backward and forward with suitable quantum and price indicators to obtain the corresponding estimates in other years.

### ***(ii) Machinery & equipment***

3.7 The estimates of (at current prices) in machinery and equipment are prepared by the commodity flow approach. Various items of machinery and equipment domestically produced, imported, exported and re-exported are classified into (i) capital goods; (ii) parts of capital goods; (iii) partly capital goods and (iv) parts of partly capital goods. The total availability of the items classified under (i) is taken for capital formation. In the case of parts of capital goods, on the basis of ASI data and details from users, 50 per cent of the value is taken as capital formation and the rest treated as intermediate consumption.

3.8 The detailed Annual Survey of Industries (ASI) factory sector report giving itemwise data on industrial production is used for estimation of capital formation in machinery & equipment. For the later years for which summary results of ASI are available, the estimates are worked out on the basis of the proportions of capital goods etc., in the production estimates at three digit level of NIC obtained from the detailed classification. For other years, for which ASI results are not yet available, these estimates are carried forward with the help of value of output at two digit level of NIC.

3.9 The contribution of unregistered manufacturing to GCF in machinery and equipment is obtained by using results of NSS report on unorganised manufacturing for the year 1994-95.

3.10 From the estimates of the aggregate production of machinery and equipment in the case of ASI factory sector, the estimates of change in stocks of such goods are deducted to obtain the net availability.

3.11 To the ex-factory value of capital goods produced domestically, the amount of excise duties, imports and import duties are added. From the total thus obtained, the value of re-exports is deducted to obtain the availability of capital goods. The value of capital goods so obtained is then marked up for trade, transport and other charges to obtain the value at purchasers' prices. Trade, transport and other installation charges are estimated on the basis of data collected from leading manufacturing firms in the country in connection with preparation of IOTT tables. From the total value at purchasers' prices thus obtained, the value of exports is deducted to obtain the value of capital formation at site.

3.12 For estimating the value of additions to livestock taken to form part of fixed assets, all livestock excepting bulls and bullocks over three years not in use for breeding or work, cows over three years not in use for work or breeding purposes, young male & female stock, goats under one year, female goats of one year and above and not in milk, pigs and poultry are taken into account. As the annual data on livestock population are not available, these are estimated by interpolation and extrapolation at the state level using geometric rate of growth determined from the data on latest available ILC Reports. For working out the estimates of capital formation, the number of livestock thus obtained are evaluated at the average wholesale prices obtained for various categories from the DES of States.

3.13 The capital investment in Software Services is also included. The GFCF is obtained by adjusting the total production of software for exports, imports and packaging. The relevant data is obtained from NASSCOM (National Association of Software Companies). The estimates of change in stocks are prepared by industry of use and are discussed under Domestic Capital Formation by Industry of Use under Change in Stocks, and also separately.

#### **Domestic Capital Formation by Type of Institutions**

3.14 The estimates of domestic capital formation separately for construction, machinery and change in stocks for the public sector & private corporate sector are also prepared by expenditure approach on the basis of analysis of budget documents and annual reports of enterprises. The GFCF of administrative departments also include GFCF of quasi government bodies similarly GFCF of quasi corporate bodies added to private corporate sector. These estimates of public sector plus private corporate sector by type of assets are subtracted from the corresponding estimates to arrive at the estimates for household sector as a residual.

### **Domestic Capital Formation by Industry of Use**

3.15 An independent set of estimates of GFCF for each of the industrial categories are prepared primarily following the expenditure approach. The estimates of change in stocks on the other hand are prepared only by the industry of use. The estimates of fixed capital formation & change in stocks are aggregated at the industry level to prepare the estimates of GCF by industry of use.

### **Fixed capital formation**

#### ***Agriculture and allied activities***

3.16 The estimates of GFCF are prepared separately for public, private corporate and the household sectors. Data on improvement of land and irrigation works and flood control projects, laying of new orchards and plantations and purchase of agricultural machinery and implements in the public sector are obtained by analysing the budget documents and annual reports. The estimates of capital expenditure in respect of tea, coffee and rubber plantations which are mainly in the private corporate sector are prepared on the basis of data on area on extensions and replacements as available in the annual reports of Tea, Coffee and Rubber Boards.

3.17 As regards the estimates of fixed capital formation in the household sector, the same are prepared separately for (a) construction and (b) machinery & transport equipment for the bench mark year 1991-92 on the basis of such data available from AIDIS, for the households engaged in farm business. The construction estimates of obtained from AIDIS are moved with Output of agriculture and increment in livestock for subsequent years. Then superimposing price index of rural / urban nonresidential buildings and other construction works current price estimates are obtained. ( This index is based on WPI of cement , timber, and bricks and price indices of rural /urban construction worker and rural unskilled labour based on wages of workers in agricultural situation in India and NBO). The machinery estimates of the bench mark year is moved forward by an appropriate indicator compiled on the basis of ASI results . The capital goods ratio obtained from the detailed analysis of ASI is applied on the value of products and by products ( NIC relevant codes) to obtain the value of capital goods for farm business. To obtain the indicator for household sector firstly the Excise duty/imports, import duties are added . Then by adding 18.9 % of this value as TTM the indicator for household sector is obtained as a residual by deducting the machinery portion of Private Corporate Sector and Public sector. Using this indicator we get the current price estimates .Then by adding increment in livestock (machinery) and central and State government capital transfers to agricultural households (purpose classification 8.2) and construction part, GFCF of agriculture at current prices is obtained.

#### ***Forestry & logging***

3.18 The forests are mainly owned by the public sector. Only about 5 per cent of the forests are owned by the private sector. The estimates of GFCF in the public sector are obtained by analysing the budget documents and annual reports of the non-departmental enterprises. In respect of private



forests no data are available. As such the estimates of the public sector are marked up by 5 per cent to account for the private forests.

### ***Fishing***

3.19 The estimates of GFCF in public as well as household sector are prepared separately. In the public sector the same are obtained from the analysis of the annual accounts of the non-departmental enterprises. For the household sector, the estimates are prepared as net additions to the estimates of capital stock. The estimates of capital stock for the years for which livestock census (ILC) has been conducted are worked out using the data on fishing boats etc., available from ILC and the prices of mechanised and non-mechanised boats and fishing gears collected from various states. The estimates of capital stock for other years are arrived at by interpolation/extrapolation and that of GFCF at 1980-81 prices as annual additions. The estimates at current prices are obtained by superimposing the average index of wholesale prices of (i) timber, (ii) diesel engine and (iii) nylon/terene and mixed cotton. The current price estimates so obtained for 1993-94 are used for interpolation/extrapolation (by adopting the same procedure as mentioned above). The GFCF estimates at constant prices are obtained as annual additions. The estimates at current prices are obtained by superimposing the average index of wholesale prices of (i) timber, (ii) diesel engine and (iii) nylon/terene and mixed cotton.

### ***Mining and quarrying***

3.20 The estimates of GFCF in the public sector non-departmental enterprises are obtained from the analysis of the annual reports of such enterprises. In respect of the private corporate sector, the estimates are made available directly by the RBI on the basis of their studies of sample joint stock companies published annually in their publication entitled 'Finances of Public and Private Limited Companies'. For the household sector the estimates of minor minerals are taken from the enterprise survey 1992-93 for subsequent years estimates are obtained by moving the bench mark estimates with output of minor minerals.

### ***Registered manufacturing***

3.21 The estimates of registered manufacturing are prepared using the institutional approach. The estimates of GFCF in public, private corporate as well as household sector are prepared separately. In the public sector the same are obtained from the analysis of the annual accounts of the non-departmental enterprises and budget documents. The household sector component is prepared by using the ASI results considering the contribution of Individual proprietorships, Joint Family (HUF) and partnership factories to the total Gross Fixed capital stock (after removing electricity storage etc.). GFCF for households thus obtained is used to compile GFCF as net additions to fixed assets. Estimates in respect of non credit societies is taken from NABARD.

### ***Unregistered manufacturing***

3.22 The estimates of GFCF for base year are first prepared by using capital - output ratio of this sector. This ratio is used on GVA at constant prices to

obtain capital stock at constant prices . By applying weighted index of general pucca construction and index of Non Electrical Machinery current price estimates are obtained. GFCF at is obtained as net additions to fixed assets

### ***Construction***

3.23 The estimates of GFCF in respect of public sector are obtained by analysing the annual reports/budgets. For the private corporate sector, the estimates are made available by the RBI directly on the basis of their studies of sample joint stock companies. In case of household sector, the capital-output ratio of the bench mark year is obtained. Using this ratio the GFCS for subsequent years are worked out on the basis of current year value of output. . GFCF at current prices is obtained as net additions to fixed assets. By deducting the public sector and private corporate sector component household sector estimates are obtained.

### ***Electricity, gas & water supply***

3.24 The estimates of GFCF in the public sector are obtained by analysing the budget documents and annual reports. In respect of private corporate sector, the estimates are made available by the RBI on the basis of their studies of sample joint stock companies.

3.25 The capital investment made in the Biogas plants has been covered by estimating it using data on number and price of biogas plants obtained from the Ministry of Non conventional energy sources .Value at constant prices are prepared and then superimposing index of electricity current price estimates are prepared. Also capital transfers from government to corporations for purposes of water supply are also taken into account.

### ***Railways***

3.26 Estimates of GFCF for railways are obtained by analysing the budget documents. These refer to transport services only and exclude capital employed in railway workshops and manufacturing units and construction activities undertaken by the railways. The latter are included in the respective industrial sectors.

### ***Transport by other means***

3.27 The estimates of GFCF in respect of public sector are obtained by analysing the annual reports/budgets. For the private sector the bench mark year estimates of capital stock for the entire Private sector are moved to other years with the help of value added from Private transport. The GFCS estimates at constant prices are converted to current price estimates by applying price index of transport equipment. GFCF is obtained as net additions to fixed assets. The estimates of GFCF from private airlines which is compiled by analysing their annual reports is also included. The estimates made available by the RBI directly on the basis of their studies of sample joint stock companies is deducted from this figure to obtain household estimates.

**Storage**

3.28 The estimates of GFCF in storage are obtained by analysing the annual reports of central and state warehousing corporations. For the registered part of the storage, the estimates are based on the reports of ASI factory sector. In respect of un-registered part, the estimates for the base year are obtained from Enterprise Survey Report, 1992-93. The estimates so obtained are then moved forward with the estimates of GFCF of storage obtained from ASI.

**Communication**

3.29 The estimates of GFCF in communication are obtained from budgets/reports .

**Banking & insurance**

3.30 The estimates of GFCF in respect of public sector comprising RBI, nationalised banks, financial corporations and insurance companies are obtained on the basis of analysis of their annual reports. Private sector consists of private banks, financial joint stock companies and the cooperative societies. The estimates of GFCF in respect of private banks are compiled from the Statistical Tables Relating to Banks in India (RBI). For financial joint stock companies, the estimates are obtained directly from RBI. In case of cooperative societies, the estimates are compiled from 'Statistical Statements relating to Cooperative Movement in India (NABARD)'.

**Trade**

3.31 For estimation of GFCF the sector has been divided into (i) public sector, (ii) joint stock companies, (iii) cooperative societies, and (iv) household. GFCF in public sector is based on the analysis of annual reports etc., of the statutory corporations engaged in trade. Estimates of GFCF in respect of joint stock companies and the cooperative societies are made available by the RBI and the NABARD respectively. For the household sector, the capital-output ratio for the bench mark year is applied on value added from un-organised trade. The GFCS estimates at constant prices so obtained are converted to current price estimates by applying weighted price index of Gen. Pucca construction (0.51%) and machinery (49%). GFCF is obtained as net additions to fixed assets.

**Hotels & restaurants**

3.32 The estimates of GFCF in respect of the public sector are based on the analysis of annual reports of the enterprises engaged in the activity. For the private Sector including households we first compile GFCS by moving the bench mark year estimate of GFCS by average growth of number of enterprises as observed in 1988-89 enterprise survey and 1993-94 enterprise survey . By applying weighted price index of Pucca construction (0.46%) and machinery (54)%. The current price estimates of GFCS are obtained. GFCF is obtained as net additions to fixed assets.

**Real estate, ownership of dwellings & business services**

3.33 The estimates of GFCF in respect of ownership of dwellings in public sector are based on the analysis of budget documents. In respect of real

estate companies, the estimates of GFCF are prepared by the RBI based on their studies of joint stock companies. For the household sector, estimates for the base year both for rural & urban residential buildings are prepared on the basis of data contained in AIDIS, which are carried forward & backward with the combined index of annual additions in the number of residential buildings and the cost of housing. Capital transfers to households are also taken into account ( Purpose classification –6). In the business services investment in software services is also included. This is compiled by compiling the capital output ratio of software companies and applying this ratio on production less 82% of onsite production to get GFCS ( information obtained from NASSCOM) . GFCF is obtained as net additions to fixed assets.

### ***Public administration and defence***

3.34 The estimates of GFCF in respect of roads & bridges, vehicles, public buildings etc., are based on the analysis of budget documents. Adjustment has been made for additions to plant and machinery used in Public Works Departments (PWDs) on the basis of data on expenditure on plant and machinery in these departments. Public services in quasi government bodies is also included ( by considering Salaries and wages and GFCF ratio of ICAR and CSIR which is applied to NIC 903 GVA.)

### ***Other services***

3.35 The estimates of GFCF in other services are prepared separately for public sector, private corporate sector and household sector. In case of public sector, the estimates are compiled by analysing the budget documents and annual reports. For the private corporate sector, the estimates are made available by the RBI. In case of household and non-household sectors, the bench mark estimates of GFCF for the services like unrecognised educational institutions, medical and health and other community services are prepared on the basis of data available in the report of the Enterprise Survey, 1991-92 which are moved to other years with the help of GFCF of the respective groups in the public sector. The estimate of GFCF for educational institutions (recognised) are obtained from the annual publication 'Education in India'. For the years for which such data are not available, the estimates are carried to other years with the help of GFCF in education of the public sector and are revised when actual data become available. The contribution of Quasi corporate bodies have also been considered. (is added by considering Salaries and wages and GFCF ratio of ICAR and CSIR which is applied to NIC 922 GVA.)

### ***Errors and omissions***

3.36 The estimates of total capital formation for each of the industry groups are obtained by aggregating the corresponding figures of fixed capital formation and change in stocks. A separate independent estimate of total capital formation by type of assets is also obtained by adding the above total estimate of change in stocks to the total measure of fixed capital formation in construction and machinery and equipment. Two independent estimates of capital formation thus obtained differ in the aggregate. Also the estimates of total saving plus net capital inflow from abroad and the estimate of total domestic capital formation do not tally. Using the measure of saving as the

controlling total, domestic capital formation by type of assets is adjusted for the difference and this difference is treated as 'errors and omissions'. For measuring the rate of capital formation, total domestic capital formation adjusted for 'errors and omissions' is used. Using this series of domestic capital formation (i.e. total by type of assets adjusted for errors and omissions) as controlling total, the estimated total capital formation by industry of use is adjusted for any difference that might still exist. Such differences are shown at the aggregate level.

### **Estimates at constant prices**

3.37 Estimates of the value of output from construction at current prices are adjusted to obtain the corresponding constant price figures. Appropriate deflators for different types of construction specially prepared for the purpose and separate indicators for machinery and equipment are used to obtain these estimates. The deflators for construction are prepared separately for (i) general 'pucca' construction excluding residential buildings, (ii) rural residential buildings, (iii) urban residential buildings, (iv) rural and urban non-residential buildings and other construction works not covered by the commodity flow method and (v) plantations and afforestation outside the household sector. The weights allotted to price indices of different inputs for various kinds of construction works are given in Table 21.2. The value of all constructions other than residential buildings covered in the commodity flow method is deflated by the index of cost of 'general pucca construction excluding residential buildings'. The values of construction of rural and urban residential buildings are deflated by the indices of cost of construction of rural and urban buildings respectively. The value under other two categories are deflated by the corresponding indices. The sum of various components thus obtained gives the total value of construction at constant prices.

3.38 The estimates of machinery and equipment are deflated separately for domestic production and net imports. The estimates of domestic production component of machinery and equipment are deflated separately for (i) machinery other than electrical, (ii) electrical machinery (iii) transport equipment, (iv) other equipment and (v) livestock treated as fixed assets. While the first three groups are deflated by index number of wholesale prices for the relevant groups, 'other equipment' is deflated by the index for 'machinery & transport equipment' and change in livestock is evaluated at base year prices. Net import of machinery and transport equipment is deflated by the index of unit value of imports for respective groups.

3.39 For preparing constant price estimates of GFCF by industry of use, corresponding figures at current prices separately for each industry group are deflated. To the extent data are available, each component of capital formation is deflated separately by relevant price index numbers. These include construction cost indices of "pucca/kutchra" construction, EA's index of wholesale prices of machinery, transport equipments and prices of livestock by categories. In case where it is not possible to use independent indices of prices for each component of capital formation (e.g. in registered manufacturing sector), the total capital formation in the sector is deflated by a composite index constructed using the proportions of capital formation in

construction and machinery and equipment at current prices in the benchmark year.

3.40 Estimates of increase in stocks in foodgrains at base year prices are prepared by using WPI of food grains. In the case of mining WPI based on combined index of minerals, coal mining and mineral oil are used. In the case of agriculture indices of wholesale prices of all commodities are used. The estimates of increase in stocks held by electricity undertakings are deflated with the help of index number of wholesale prices of electrical goods. Index number of cost of material inputs used in general 'pucca' construction is used to deflate the estimates of change in stocks in the construction sector and indices of wholesale prices of all commodities are used to deflate the estimates of change in stocks of trade, public administration and defence, transport by other means covering airways, shipping companies, road transport, real estate and storage. In the case of manufacturing, index of wholesale prices of manufacturing products are used.

#### 4. POSSIBLE APPROACH TO ESTIMATE GFCF AT STATE LEVEL

4.1 Estimates of GFCF at state level are not presently compiled by the CSO because of non-availability of state-wise details on capital expenditures made by the two institutional sectors namely (I) private corporate sector and (II) household sector. The only institutional sector for which GFCF estimates are available is in respect of the public sector. Although data on GFCF in respect of the private corporate sector at the national level are available from the Studies of Company Finances conducted by the RBI, such details are not available at state level due to the small sample size adopted by the RBI for these studies. Further, the blow-up factor adopted for the national level estimates is the paid-up capital (PUC), details of which are not available at state level. Similarly for the household sector, though data for benchmark years for pure households are available from the AIDIS, detailed data on GFCF for the unincorporated enterprises are not available. The benchmark enterprise surveys conducted by the CSO/NSSO do not give reliable estimates of GFCF at state/regional level.

4.2 The RAC has recommended compilation of estimates of **GFCF only** at state level, rather than the compilation of estimates of gross capital formation (GCF), as estimation of change in inventories is not conceptually viable or feasible at the state level because of the open boundaries of the states.

#### Possible approach

4.3 The whole state economy may be grouped into a specified user industries on the same lines as done for the gross domestic product (GDP). Thereafter the GFCF estimates for each industrial sector may be attempted. The estimates can broadly be arrived at depending on the availability of data.

- Where data are collected on regular periodic intervals say every year (e.g. production of principal crops, mining, registered sectors etc., such as from ASI, budget documents).
- Where benchmark estimates can be worked out reasonably/satisfactorily every few years and the estimates for

intervening years can be worked out by moving the bench mark estimates by means of appropriate indicators of physical output and prices (e.g. livestock products, unregistered manufacturing construction, trade etc.)

- Where national totals are allocated among the states by use of some meaningful indicators (e.g. banking, railways. Central government administration, etc.)

4.4 Estimates of the GFCF at state level are prepared by the CSO separately for the public sector, private sector and supra-regional sectors by using various adhoc sources of data. This is a slight deviation from the method adopted for the national level estimates to the extent that the two institutions sectors, namely private corporate sector and household sector are clubbed together for the state level estimates.

4.5 The estimates for the Public Sector for each State is separately worked out directly whereas for private sector it is arrived at first industry wise private estimates and there by state estimate is prepared by aggregation. In the case of public sector, information is available from budget documents and annual reports of public enterprises, to a large extent. The pilot exercise undertaken by the CSO gives some rough estimates of state-wise GFCF for the year 1996-97. The estimates so prepared along with methodology were distributed to States in various regional workshops conducted in different parts of the country in the year 2002. However, the state level estimates need to be compiled by the State DESs as suggested by the RAC. Presently only few states are compiling estimates of GFCF fully/partly. The National Statistical Commission (NSC) in its report have also recommended that all the States should prepare estimates of capital formation.

4.6 On the same methodology as explained above, CSO has again attempted to compile the estimates of GFCF state wise for both public and private sector for the years 1993-94 to 1999-2000. The same were circulated to representatives of State DES at the time of comparable estimates of SDP for the year 2000-01.

4.7 It would be possible to compile the state level estimates of GFCF, by plugging the data gaps. Major bottlenecks in the compilation of state level GFCF refer to the local bodies, private corporate sector, and household sector. The estimates of GFCF for the local bodies could be compiled by the DES by analysing the budgets of a sample of local bodies. For the private corporate sector, the NSC has given a number of recommendations, which when implemented would give state level estimates of all aggregates including those of GFCF, for the entire private corporate sector. For the household sector, the enterprise surveys and the AIDIS need to provide data at state level.

4.8 The estimates of GFCF in respect of supra regional sector namely, railways, communication and banking & insurance shall be made available to states by CSO. The methodology of compilation of these estimates has already been supplied to states.

4.9 As discussed above, the estimates of GFCF can be prepared easily for the public sector, as most states are already analyzing the budget documents and reports of public enterprises. For the supra-regional part of central government administration, central DCUs and central NDCUs, the CSO can provide the estimates.

4.10 For the GFCF in respect of private corporate sector and household sector, the available datasets are the ASI and the 10-yearly AIDIS and the 5-yearly enterprise surveys. Of these, the ASI data can be used for registered manufacturing sector. The AIDIS data could be used for agriculture sector for the benchmark estimates and for subsequent years, these data could be extrapolated with indicators (such as sale of tractors or utilization of diesel, electricity, etc. or all India private investment growth rates). For forestry sector, the public part of GFCF could be updated by the percentage of forests in private hands (generally 5%, but this could be higher in the case of some states like Meghalaya). For the fisheries sector, the ILC data or the data available from the fisheries departments on fishing trawlers, equipment, etc. could be used.

4.11 For the rest of the sectors (other than registered manufacturing and agriculture & allied sectors), the estimates of GFCF could be prepared entirely for the private sector, rather than distinguishing between private corporate sector and household sector. For this purpose, although the enterprise surveys are the ideal source, unfortunately the quality of capital formation data in these surveys is not good. In most cases the capital formation is negative in these surveys. The alternative to this is to use capital output ratios of public sector or capital output ratios of private sector at all-India level. The SDP and GDP data is available separately for public and private sectors and so is the estimates of GFCF at all India level. Alternatively, the CSO can allocate the national level private sector GFCF estimates to the States on the basis of indicators such as the available data on fixed assets in the enterprise surveys, or the output.

4.12 Few states have made considerable efforts to build up GFCF estimates. It is helpful if their best practices are disseminated to other states. States intending to prepare GFCF estimates, may also seek assistance from the states already compiling GFCF estimates in the form of sponsoring study visits or by inviting experts from other states.