CONSTRUCTION

Coverage

14.1 The construction activity as per the International Standard Industrial Classification (ISIC) adopted in the 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 from units carrying out construction work, construction industry, in India, for the purpose of estimating domestic product, has been taken to include the whole of construction activity (contractual as well as own account). Construction work covers all activities connected with site preparation, alteration, addition, repair & maintenance, construction & maintenance of roads, rail-beds, bridges, tunnels, pipelines, rope-ways, ports, harbours runways, construction/ erection & maintenance of power, telecommunication, transmission lines, waterways & water reservoirs, power plants, hydro-electric projects, industrial plants & building installations, planting & cultivating of new forests and plantations & orchards. Due to lack of data, demolition activity has, however, been excluded. Under NIC 1998, Division 45 covers construction activity.

Methodology and Sources of Data

Estimates at Current Prices

14.2 The 'Construction' broadly comprises two components namely (i) Accounted Construction (Pucca Construction) and (ii) Un-accounted construction (Kutcha Construction). In each category, both the new construction and repair & maintenance are covered. The output of construction of the total economy is compiled by a composite methodology including both commodity flow approach and Expenditure approach and taken as the total production costs of accounted and unaccounted constructions. The value of accounted construction undertaken with the use of construction materials such as cement, steel, bricks, timber, fixtures etc., is determined by commodity flow method. The estimates of labour intensive unaccounted construction undertaken mostly with the help of freely available or traditional, locally procured materials like leaves, reeds, mud, etc, on the other hand, are prepared by expenditure approach using data from sample surveys, bench mark estimates.

Accounted Construction by Institutions

14.3 Once the total construction output for accounted (pucca) construction is estimated for the country by the above approach, the estimates of output of pucca construction from public sector and private corporate sector are independently compiled by way of utilizing the data sources viz. budget documents, profit & loss accounts, and the balance sheets. The estimates of pucca construction output for the household (containing consumer households, non-profit institutions serving households (NPISHs) & unincorporated enterprises) sector are then derived as residuals for accounted construction.

Unaccounted Construction by Institutions

14.4 For estimating the total value of output of construction sector from unaccounted (kutcha) construction, the estimates of kutcha construction undertaken by the public and private corporate sector are prepared by expenditure approach using data from budget documents of central/state governments and local authorities, technical reports of NABARD and annual reports of public sector and private sector enterprises in developing rural roads, soil conservation, improvements to land, reclamation of the land cultivating the plantation crops & orchards etc, installing the wind energy systems, construction of wells and other construction works.

14.5 For estimating the value of output of unaccounted construction in the household sector, the main data source is the All India Debt and Investment Survey (AIDIS), conducted by the NSSO once in every ten years. This survey provides benchmark data on (a) new construction and (b) repair & maintenance in respect of (i) rural residential buildings (RRB), (ii) rural non-residential and other construction works (RNRB & OCW) (iii) urban residential buildings (URB) and (iv) urban non-residential and other construction works (UNRB & OCW). These benchmark estimates are moved forward and backward by applying quantitative indicators such as growth rates/ norms derived from various housing censuses and other survey results, combined index of agriculture and industrial production, and price index of cost of construction, separately for each of the above (i) to (iv) components, and also for (a) and (b). Since the AIDIS survey results include both pucca and kutcha construction, all these (i) to (iv) and (a) & (b) components are further bifurcated into accounted and unaccounted construction in rural & urban areas, using the norms derived from the results of surveys undertaken on housing

conditions by the NSSO. The unaccounted construction estimate that is derived through this procedure for household sector is added to the unaccounted construction of public and private corporate sector, to obtain the total value of output through unaccounted (kutcha) construction in the country.

14.6 The Gross Value Added (GVA) from construction is also estimated separately for the accounted (pucca) and unaccounted (kutcha) construction. For the pucca construction, the GVA is equivalent to the factor payments made in the accounted construction. For the kutcha construction, the GVA is estimated to be 75 per cent of the value of output in unaccounted construction. This GVA from construction is subsequently adjusted for FISIM. Further details on output and GVA from construction are discussed in the following paragraphs.

Value of output of accounted construction

14.7 The estimates of value of output for accounted construction are compiled through the commodity-flow approach. This approach envisages estimation of production of commodities used in construction after adjusting them for inputs in other industries, changes in stocks, imports and exports so as to obtain the net availability of commodities for construction purposes. The commodities available for construction are valued at prices paid by the builders at the site of construction. Information on retail prices, transport costs, dealers' margins and indirect taxes collected from various sources is used to estimate the prices of inputs at site.

14.8 The commodity flow approach measures the output and GVA of the (Pucca) accounted construction. It includes both new construction and repair and maintenance as well. The approach covers the cost of basic materials, other construction materials and factor payments such as labour cost, rent interest etc. The basic construction materials considered in this context include (i) Cement and Cement products, (ii) Iron and Steel, (iii) Bricks and Tiles, (iv) Timber and Round Wood and (v) Fixtures & Fittings. While estimating the availability of commodities for construction purposes, the imports of wood and timber products and veneer plywood and the results of ASI 1999-2000 (on products and by products for finalising the composition of commodity groups at NIC 98, 4 digit level, within each basic construction material group) have been used in the current series of national accounts.

14.9 The five basic material groups account for 72.5% of the total construction materials and the remaining 27.5% is from other construction materials (other than the five basic construction materials mentioned in (i) to (v) in paragraph 14.8). Data on basic construction materials is collected every year. The contribution of factor payments to the construction activity is assumed to be 53.4 per cent of the total cost of all construction materials (both basic and other). These norms are derived from the previous surveys and found to be consistent with the results based on cost of construction indices compiled by various states. Principal source for these norms is the Survey on Housing Conditions, 2002-03 (58th Round), NSSO, besides the studies done by few states. The ratio of 53.4 per cent for factor payments account adopted in the current NAS series is the same as that used in the old 1993-94 series. Therefore, the revised norms for basic materials, other materials and factor inputs (out of the total value of output of construction) used in current series for construction activity are 72.5 per cent, 27.5 per cent, and 53.4 per cent as against the norms of 70 per cent, 30 per cent, and 53.4 per cent, respectively in the 1993-94 NAS series.

14.10 Cement and Cement Products: Cement is produced in the organised sector and the data on month-wise year-wise cement consumption in States/Union Territories are available in the annual publication "Cement Statistics" brought out by Cement Manufacturers' Association, New Delhi". From the data on total quantity of cement consumed, the net quantity of cement available for construction is determined by excluding the estimated quantity of cement used for intermediate consumption in other industries and adjusting for net imports. The estimated quantity is then evaluated with the help of all India average price of cement from 23 centres available from the Handbook of Housing Statistics brought out by the National Buildings Organisation (NBO). The total value of cement used in construction as obtained above is marked up by 2 per cent to take account of the transportation costs from the point of purchase to the site of construction. The value of cement products like asbestos sheets, hume pipes etc., as available from ASI is added to the value of cement. The data in respect of excise duties paid on cement products are collected from the Ministry of Finance. The estimates of Trade Transport Margins on cement products have been obtained from the CSO's Input-Output Transactions Table (IOTT), 1998-99. Detailed estimation procedure of the value of cement used in construction is presented in App 14.1.

14.11 Iron and Steel: The composition of items, along with their percentage share, consumed in construction from the "Iron and Steel" group for both organized manufacturing sector and unorganized manufacturing sector is determined through discussions with the officials of Central Public Works Department, National Building Organisation, Building Materials and Technology Promotion Council (BMTPC) Builders' Association, and others. For the current series, the detailed results of ASI 1999-2000 have been used for estimating the value of iron & steel items like heavy structures, light structure, heavy rails, fish plates, corrugated sheets, bars and rods, sleepers, railway track material and iron and steel structures comprising bridge work, fabricated structures for buildings or transmission towers, sluice gates fabricated out of rolled section, gates and grills, shutters including rolling shutters, etc., used for construction purposes. The value of the products and byproducts for these iron and steel commodities has been taken from the ASI detailed results based on NIC 1998 at 5 digit level and multiplied with the corresponding percentage determined, in order to estimate the value of products used for construction purposes. For subsequent years, the estimates are carried forward with the help of changes in the production of finished steel and relevant index of wholesale prices for iron and steel products or the estimates are moved with IIP growth rates.

14.12 The estimates of iron and steel goods produced in the unregistered manufacturing sector, used as input in construction, are based on the value of output of unregistered manufacturing units for the various commodities. The proportions of the value of output of iron and steel goods used in construction applied on the estimated value of output for iron & steel as available from the latest detailed results of the NSSO (56th Round report of the un-registered manufacturing sector) and Census of SSI units, gives the input of iron and steel to construction, from the unregistered manufacturing sector. The NSSO 56th Round results in respect of un-registered manufacturing sector and the Census of SSI contain information on GVO and GVA for different groups of items based on NIC 1998 at 4/3 digit level for 2000-01. For subsequent years, firstly the value of output is estimated for un-registered manufacturing sector by using the ratios of GVO and GVA for each industry group and applying the same on the estimates of GVA available for that year. Thereafter, the proportions of iron and steel used in construction to the total production reported in the ASI 1999-2000 detailed results, at the 4-digit level of NIC-1998, are applied on the estimated value of output of products and byproducts in the corresponding groups of iron and steel products of the un-registered manufacturing sector, to obtain the estimated input of these items in construction.

14.13 The aggregate value of domestic supply of iron and steel products available for construction thus estimated is exclusive of indirect taxes & other duties and Trade & Transport Margins (TTMs). To arrive at the value at site, adjustment has been made on this account. The share of import duties attributable to imports of iron steel products used in construction is worked out on the basis of the proportion of iron and steel goods used in construction to the total iron and steel imported. Trade, transport and other charges have been worked out on the basis of information obtained from the 1998-99 IOTT. The adjustment factor is estimated to be 20.9% of the total value. The detailed steps in the estimation of the value of iron and steel used in construction are given in Appendix 14.2.

14.14 Timber and Round wood: Direct data on the production of timber and round wood are not separately available. Instead, information is available on production of industrial wood comprising mainly timber and round wood (received from the respective State Governments). From the total quantity of industrial wood, the value of timber and round wood is estimated using specified norms. From the estimates of timber, timber used as railway sleepers is deducted to obtain the quantity of timber available for other uses. The quantity of timber utilised for making railway sleepers is obtained from the Railway Board. However, it is almost negligible from the year 2000-01 onwards as Railway wooden sleepers are replaced with RCC/ iron blocks. Of the residual quantity of timber, a fixed proportion (48.5 per cent) is taken as having been used in construction. Similarly, the total quantity of timber and round wood used in construction has been evaluated using all-India average price of timber from 23 centres available in the Handbook of Housing Statistics brought out by NBO. To this, the value of imported timber of different varieties as well as the corresponding import duties is added. The total value thus obtained is adjusted for exports of timber and round wood and TTMs to obtain the value of this basic material at the site of construction. Data on imports and exports of different varieties of wood used in construction are obtained from the Directorate General of Foreign Trade, Ministry of Commerce and Industry. Data on trade, transport and other charges are

estimated on the basis of information obtained from the 1998-99 IOTT. Information on TTMs for railway sleepers is obtained from the headquarters of the Northern Railway and for timber and round wood used in construction (other than railways) directly from the dealers. One-third of the value of "Veneer, plywood and their products" with new varieties as available from ASI has now been included in the value of timber and round wood used in construction. This has been done on the basis of discussions held with the dealers engaged in the trading of veneers & plywood etc. The detailed procedure of estimation of value of timber and round wood used in construction is given in Appendix 14.3.

14.15 Bricks and Tiles: Estimates of the quantity of bricks and tiles are prepared in an indirect way, on the basis of information on dispatches of coal used for brick burning. Information is collected from the Office of the Coal Controller on dispatches of coal for brick burning. On the basis of the information collected from NBO, CPWD and various kiln owners, average quantity of coal needed for producing one lakh of bricks and tiles has been estimated. This proportion is used to determine the total quantity of bricks and tiles produced in the small scale sector. The output of bricks in the sector is evaluated at all-India average retail prices regularly collected and published by NBO along with the prices of timber etc. The discussions held with the brick kiln owners revealed that hardly any coal was being used in the manufacture of bricks & tiles in the registered manufacturing (ASI) and the coal dispatches were mainly used for burning bricks in the un-organised sector. As such the value of production available from ASI has been taken into account explicitly and treated as organised. Besides the small scale industries, a large number of rural households produce bricks for own use. In the absence of adequate data their contribution has been taken equal to 10 per cent of the value of production of bricks & tiles produced in the small scale sector on the basis of data on work force engaged in the manufacturing of structural clay products as per 2001 population census. The value obtained from ASI is marked up by 27.8 per cent for TTMs on the basis of information obtained from IOTT 1998-99. Steps involved in the preparation of the estimates of bricks and tiles used in construction are described in Appendix 14.4.

14.16 Fixtures and Fittings: In the construction activities, 'fixtures and fittings' play significant contribution as the basic materials of construction. Data on value of production of a large number of fixtures and fittings of permanent nature, such as lifts, generators, fire-extinguishers, pipelines of Liquefied Natural Gas, fans and blowers, insulators, electric cables and wires, water meters, house service meters, sanitary fittings, etc., used in construction are collected from the reports of detailed results of ASI 1999-2000. For the years for which ASI data are not available, IIP data are used. For each 5 digit level NIC 1998 compilation category of fixtures & fittings, a specified proportion of total production is treated as used in construction. These proportions are decided after discussing with CPWD & NBO. TTMs are estimated to be 35 per cent which is added to the value of output to arrive at the value at site. Details of estimation are shown in Appendix 14.5.

14.17 Other construction materials: Further, in the case of other construction materials like lime, glass and glass products, paints and varnishes, bitumen, sand, coal tar, chips, etc., adequate annual data do not exist for independent estimation. As such the value of these materials is estimated as a proportion of value of all material inputs (27.5% of the total value of all material inputs). This proportion is based on the information obtained from NBO, CPWD and CBRI for the bench mark year 1999-2000.

14.18 Factor Inputs: Similarly in the case of inputs of factor payments going into construction, the information available from CPWD, NBO, cost of construction indices and NSS survey results is utilised for working out the value of construction due to this component, which is 53.4% of the value of all material inputs.

Value of output of Un-accounted construction

14.19 The estimates of labour intensive kutcha construction mostly undertaken with the help of freely available traditional locally procured materials like leaves, reeds, mud, etc., are prepared by expenditure approach using data from sample surveys, budget documents of central/state and local authorities and annual reports of public sector and private sector enterprises.

14.20 The coverage in un-accounted (kutcha) construction includes civilian construction in installing Wind Energy Systems and 10 plantation crops (Areca nut, coconut, cashew nut, mango, Sapota, grapes, citrus, tea coffee and rubber) under cultivated assets as the capital expenditure incurred on cultivation of plantation crops during the gestation period is treated as output under kutcha construction of the 'Construction Industry' for that year. On the basis of

discussions held with officials of NABARD and various Commodity Boards & National Horticulture Board, NABARD evaluation study reports and some research articles, proportions to allocate the total annual expenditure on cultivation of plantation crops among the three institutional sectors was done. The distribution of annual expenditure among institutional sectors varies from crop to crop. In respect of wind energy, 8.7% of the total capital expenditure incurred in constructing the Wind Energy Systems which include Wind Mills, Aero-generators and Wind Turbines, is treated as new construction in un-accounted (kutcha) construction based on the cost structures of the projects undertaken by NABARD. The distribution of kutcha construction in erecting wind energy systems among institutional sectors is made on the basis of the Annual Reports of NABARD.

14.21 Fresh composite index numbers for (i) General Pucca Construction, (ii) Rural residential Housing, (iii) Urban residential Housing (iv) Basic Materials, (v) Other materials, (vi) Rural–Urban non residential Buildings and other construction works accounted and un accounted, have been compiled with base 1999-2000 revising the weights of materials and other items used for construction. These indices are used for moving forward the base year estimates to succeeding years.

14.22 **Public sector**: On the basis of discussions with the Officers of the State Governments, such labour intensive construction, besides afforestation and re-afforestation, in respect of public sector, relates to the categories of kutcha construction like soil conservation and area development. About 15 per cent of capital expenditure on other construction comprising bunding, field drains, kutcha bridges, etc. in the case of irrigation, expenditure on roads and buildings and 50 per cent of other construction in the case of forestry relates to kutcha construction. Data on such expenditure are available from the annual budget documents.

14.23 **Private corporate sector:** Estimates of construction in the private corporate sector include the expenditures made on plantation crops and wind energy systems. Estimates of construction in plantations in the private corporate sector are prepared on the basis of annual data on area of extensions, replacements and replantations available in the annual reports of Tea, Coffee, Rubber and other Commodity Boards as well as data on the cost of plantations, yearly cost structures during gestation as obtained from the respective Boards, NABARD, and National Horticulture Board. However, in the case of cost data not becoming available for a particular year, the current estimates are obtained by moving the latest available estimates with the help of quantum index based on area on extensions, replacements etc., duly superimposed by the index of daily wages of rural unskilled workers.

14.24 **Household sector**: In the case of household sector, the estimates are based on the results of NSS decennial survey AIDIS for 2002-03. The survey results provide data relating to fixed capital expenditure and expenditure on normal repairs and maintenance by the households separately for residential buildings, non-residential buildings and other construction both for rural and urban areas; and also separately for farm and non-farm businesses. But this expenditure is not available distinctly by pucca and kutcha in respect of residential/non-residential buildings and wells. Therefore, having estimated the total expenditure under different categories of construction for the survey year 2002-03 and for other years using relevant indicators for such categories, ratios based on NSSO reports are then used to estimate the components of kutcha construction (the data on the components of pucca construction available from AIDIS are not considered in the household sector's accounted (pucca) construction, as those estimates were derived through the commodity flow approach). The norms used for apportioning the rural residential buildings into accounted and unaccounted constructions are 79 : 21 in place of 72 : 28 used in the 1993-94 series and for urban residential buildings, they are 97 : 3 in stead of 80: 20. These norms are estimated from the results of NSSO 58th Round "Housing Conditions" Survey results. Other construction works taken up by the Households engaged in Farm business is treated as unaccounted and that in Non Farm business is treated as accounted construction. The proportions and the sources used to obtain the corresponding estimates under different categories of construction are discussed in the following paragraphs.

14.25 **Rural residential buildings/houses**: Estimates for rural residential housing are prepared using the results of AIDIS, 2002-03. The survey report gives estimates of fixed capital expenditure and expenditure on normal repair and maintenance in residential buildings for the year 2002-03. The annual estimates for 1999-2000 and subsequent years are obtained using combined index of

net annual additions in the number of rural residential buildings (based on 1991 and 2001 population census data on rural occupied dwellings) and cost of construction of rural houses. The proportion of kutcha construction is determined on the basis of information relating to expenditure on construction of houses in rural areas available from the report no. 488 of NSSO 58th Round "Housing Conditions" Survey. According to these results only 79 per cent of the total expenditure on new construction & repairs & maintenance relates to pucca construction and is already covered by the commodity flow approach. Accordingly 21 per cent of the total expenditure on construction of rural residential houses has, therefore, been taken as the measure of expenditure of fixed capital formation and repair and maintenance in rural residential houses of labour intensive type, i.e., unaccounted in the commodity flow approach. In the absence of current data on proportions of labour intensive construction, the ratio based on above mentioned NSSO report is assumed to hold good over the years.

14.26 **Urban residential buildings /houses**: Estimates for urban residential housing are also based on the results of AIDIS, 2002-03. The survey report gives estimates of fixed capital expenditure and expenditure on repair and maintenance in urban residential houses for the year 2002-03. Such annual estimates for 1999-2000 and subsequent years are obtained using combined index of net annual additions in the number of urban residential buildings (based on 1991 and 2001 population census data on urban occupied dwellings) and cost of construction of urban houses. Information available in the NSSO 58th Round "Housing Conditions" Survey results on expenditure in construction shows that 3 per cent of total value of construction is of labour intensive type. This proportion has, therefore, been applied on the annual estimates of expenditure on new construction and repairs and maintenance under this category to obtain the measure of the labour intensive type of construction

14.27 **Rural/urban non-residential buildings and other construction works**: The estimates of the value of household construction consisting of rural and urban non-residential buildings and other construction works have been prepared using the results of AIDIS, 2002-03 separately for the pucca construction and kutcha construction.

14.28 **Rural non-residential buildings**: As in the case of residential buildings using the data contained in NSSO Report No 488 of 58th Round "Housing Conditions" Survey results 21 per cent of fixed capital formation and expenditure on repairs and maintenance under this category has been treated as unaccounted for in the commodity flow approach and, therefore, of the labour intensive type.

14.29 **Urban non-residential construction**: On the basis of the details available in the NSSO Report No. 488 of 58th Round "Housing Conditions" Survey results, the value of urban household non-residential construction and repairs and maintenance relating to labour intensive kutcha construction is taken to be 3 per cent.

14.30 **Rural and Urban other construction works**: The estimated total value of such fixed capital formation and expenditure on repairs and maintenance excluding pucca wells is treated as labour intensive. 'Other construction works' include reclamation of land, bundings and other land improvement, digging of wells, development of other irrigation resources, afforestation, re-afforestation and laying of new orchards and plantations both in the urban and rural sectors of the economy. Value of all these items excepting a part of the construction of wells (attributable to pucca wells) forms part of investment in labour intensive kutcha construction. The estimates of wells as given in AIDIS, 2002-03, have been split up into 'pucca' and 'kutcha' construction on the basis of information available in Season and Crop Reports of various State Governments on masonry and non-masonry wells and the relative values of these two types of wells have been determined on the basis of the estimates of cost of wells of Minor Irrigation Works. These exercises suggested that of the total value of construction of wells, two seventeenth related to kutcha construction. Further, for the category of rural/urban non-residential buildings and other construction (kutcha) as discussed above, the estimated fixed capital expenditure and expenditure on repairs and maintenance are first prepared for the survey year 2002-03. For the year 1999-2000 and the years subsequent to 1999-2000, the estimates have been obtained using the combined index of agricultural and industrial production and cost of construction of rural/urban non-residential buildings and other construction works for kutcha construction.

Method of Estimation of Gross Value added

14.31 For pucca construction, having estimated the value of material inputs by commodity

flow-approach, other materials and factor payments by fixed (53.4%) proportions, the GVA is taken to be 34.81 per cent of the value of output. In case of all labour intensive kutcha construction, the GVA is taken to be 75 per cent of the value of output on a uniform basis. The sum of the two i.e., GVA from construction based on commodity flow approach and GVA from construction based on kutcha construction gives the total GVA from construction. The details of estimates of value added for 1999-2000 are given in Appendix 14.7.

Estimates at Constant Prices

14.32 The estimates of GVA at current prices are converted to constant prices by using appropriate deflators given in Appendix 14.6 specially prepared for the purpose for different types of construction works. The sum of the estimates for various components of construction thus obtained gives the total value added from construction at 1999-2000 prices.

Quality and limitations of data base

14.33 In the estimation of GVA of construction sector, indirect approaches are adopted, in the absence of direct data on construction works. As a result a number of rates and ratios are used here. Although, most of these are updated at the time of revision of base year, the year to year changes in these rates are also expected to be significant. Presently, only five basic materials are examined in detail to estimate the value of output of accounted construction. The proportion of some of the other inputs, like bitumen, etc. could also be significant in the construction activity. There is, therefore, a need to increase the number of basic construction materials in the estimation procedure and reduce the proportion of 'other materials'. The proportions of GVA to value of output for kutcha construction works are not based on satisfactory data. Because of the wide diversity in the types of construction even within the broad groups of pucca and kutcha construction, the proportions of GVA to the total value of construction for different types are likely to vary. It is desirable that the different types of construction are classified into homogeneous groups and the proportion of value added for each group is worked out on a more scientific/ satisfactory basis.

Appendix 14.1

VALUE OF CEMENT AND CEMENT PRODUCTS USED IN CONSTRUCTION

Rs. Lakhs

ITEM	1999-00
1.Total Consumption of Cement including Net Imports '000 Tonnes *	92050
2.Cement used as input in other industries 10.87% **	10006
3.Cement available for Construction '000 Tonnes (1-2)	82044
4.Prices of Cement (Rs. Per Tonnes) @	2909
5.Value of Cement (3*4) (Rs. Lakhs)	2386665
6.Transport Margin 2% of item 5 ***	47733
7.Value of Cement used in Construction (5+6)	2434398
8.Value of Cement Products(From ASI) Rs. Lakhs #	409787
9.Excise duty on Cement Products Rs. Lakhs	40979
10.Value of Cement Products ASI inclusive of Excise duty (8+9)	450766
11.T.T.Margin 25% of item 10 **	112691
12.Value of Cement Products at site (10+11)	563457
13.Total Value of Cement incld. Cement products used in Construction (7+12)	**2997855**

Sources:

* Cement Statistics (Publication of Cement Manufacturer's Association)
** IOTT Norm , *** Study based on Cement Dealers
@ NBO, # New basket of items used in construction culled out from ASI

Appendix 14.2

VALUE OF IRON AND STEEL USED IN CONSTRUCTION

Rs. Lakhs

ITEM	1999-00
1. Value from ASI #	3880258
2. Excise Duty ##	388026
3. Net Imports *	-26760
4. Import duties *	8167
5. Value from Small Scale @	914725
6. Total Value (1 to 5)	5164415
7. TTM at 20.9% of item 5 **	1079363
8. Value at Site (6+7)	**6243778**

Source:
New basket of items used in construction culled out from ASI , ** IOTT
@ NSS 56th Round and SSI Results, ## TRU, M/O Finance, * DGCIS

Appendix 14.3

VALUE OF TIMBER AND ROUNDWOOD USED IN CONSTRUCTION

(Rs. Lakhs)

ITEM	1999-00
1. Production of industrial wood (000' cu. mt.) *	4898
1.1 Timber (91.86% of item 1)	4500
1.2 Round wood (7.95% of item 1)	389
2. Timber used in Rly. Sleepers (000'cu.mt.) **	3.053
3. Timber other than Rly. Sleepers(1.1-2)	4497
4.Timber used in construction 48.5% of item 3	2181
5. Price of Timber (Rs. per cu. mt.) @	31361
6. Value of Timber (4*5) in Rs. Lakhs.	683934
7 Import of Timber & round wood(HS code 4403+4407)	90782
8. Import duty of Timber & round wood (Rs. Lakhs) (HS code 4403+4407)	1924
9. Total Value of Timber produced inclusive of import(6+7+8)	776640
10. Export of Timber & round wood(HS code 4403+4407)	245
11.Trade and Transport Margin(TTM) 17.2% of item 9	133582
12. Value of Timber at site (9+11-10) in Rs. Lakhs.	**909977**
13. Round wood 38.3% of item 1.2	149
14. Price of round wood (Rs. Per Cubic Mtr.)	5286
15.Value of round wood (13*14)	7884
16.TTM (22.3% of item 15)	1758
17.Value of round wood at site (15+16) in Rs. Lakhs	**9642**
18. Price of Railway Sleepers **(per cu. mtr.)	19359
19. Value of Rly. Sleepers (Rs. Lakhs)	591
20.TTM 5% of item 19	30
21. Value of Rely. Sleepers at site(19+20) (Rs. Lakhs)	**621**
22.Ex-factory val. of veneer & plywood & their product From ASI #	97458
23.Exise duty on veneer & plywood @@	8600
24.Value of plywood (22+23)	106058
25. Value of plywood & veneer used in construction (1/3 of 24)	35353
26. Imported veneer and plywood(HS code 4408+4410+4411+4412)	3551
27. Import duty of veneer and plywood (HS code 4408 + 4410 + 4411 + 4412)	1161
28. Value of veneer, plywood etc. at site(25+26+27) Rs. Lakhs	40064
29. Export of veneer and plywood(HS code 4408+4410+4411+4412)	2358
30. TTM 25% of item 28	10016
31. Value of Veneer and plywood at site (28+30-29)	**47723**
32. Total value of Timber & round wood etc (12+17+21+31)	**967962**

Source:

* Supplied by DES, ** Collected from Railway Board.

@ NBO Average Price of 23 Centre from the publication HANDBOOK ON STATISTICS - 2003

New basket of items used in construction culled out from ASI

@@ TRU Annexure 2 Item 67, wood and activity of wood.

Appendix 14.4

VALUE OF BRICKS AND TILES USED IN CONSTRUCTION

(Rs. Lakhs)

ITEM	1999-00
1. Allocation of Coal for brick burning 000' tonnes *	6361
2. Total bricks produced (in crores) @	3976
3. Price of bricks Rs. Per thousand of bricks @@	1800
4. Value of bricks in un-organised sector(Rs. Lakhs)	787179
4.1 Value [produced mainly in Small enterprises (2*3)]	715618
4.2 Others (10% of 4.1)	71561
5. Value of bricks & Tiles in organised sector (Rs. Lakhs) ASI #	277917
6. Excise Duty	27792
7. Trade and Transport Charges 27.8% of item 5 $	77261
Total Value of bricks at site (Rs. Lakhs) (4+5+6+7)	**1170149**

* data supplied by Office of the Coal Controller
@ 16 Tonnes of coal is required for burning of one lakh of bricks

@@ Average price of NBO.
# New basket of items used in construction culled out from ASI

$ With the help of IOTT

VALUE OF FIXTURES AND FITTINGS USED IN CONSTRUCTION

Rs. Lakhs

Sl. No.	NIC 98 Code at 4-digit	NIC 98 Code at 5-digit	Description of Items	1999-00	Proportion Utilized
1	**2520**	**25203**	Manufacture of bathing tubs, wash-basins, lavatory pans and covers, flushing cisterns and similar sanitary-ware of plastics	**683**	100%
2	**2610**	**26109**	Manufacture of other glassware/glass products: articles of glass used in construction such as glass blocks	**51859**	50%
3	**2691**	**26914**	Manufacture of ceramic sanitary wares: sinks, baths, water-closet pans, flushing cistern etc.	**3455**	100%
4	**2691**	**26915**	Manufacture of ceramic insulators and insulating fittings for electrical machines, appliances and equipment	**4461**	100%
5	**2694**	**26944**	Manufacture of quicklime, slaked lime and hydraulic lime (excl. chewing lime)	**36097**	100%
6	**2694**	**26945**	Manufacture of plasters consisting of calcined gypsum or calcium sulphate	**944**	100%
7	**2696**	**26960**	Cutting, shaping and finishing of stone[includes cutting, shaping and finishing stone for use in construction, in cemeteries, on roads, as roofing and in other applications]	**127019**	50%
8	**2720**	**27203**	Manufacturing of Aluminum (includes basic processing, smelting, refining for production of base metal; its further rolling, drawing and extruding; and production of powders or flakes, foil, plates, sheets or strip, bars, rods, profiles, wires, tubes, pipes and tube or pipe fittings)	**129596**	50%
9	**2812**	**28122**	Manufacture of tanks, reservoirs and similar containers	**30773**	100%
10	**2899**	**28993**	Manufacture of reinforced safes, vaults, strong room doors and gates and the like	**0**	100%
11	**2899**	**28994**	Manufacture of metal sanitary ware, including baths, sinks, wash basins, and other metal sanitary and toilet articles, whether or not enameled	**30703**	100%
12	**3130**	**31300**	Manufacture of insulated wire and cable [insulated (including enameled or anodized) wire, cable (including coaxial cable) and other insulated conductors; insulated strip as is used in large capacity machines or control equipment; and optical fibre cables]	**377182**	50%
			Grand Total	**792771**	
			TTM 35%	*277470*	
			Total Value of Fixtures & Fittings	**1070241**	

Appendix 14.6

WEIGHTS ALLOTTED TO DIFFERENT INDICES IN THE PREPARATION OF DEFLATORS FOR VARIOUS TYPES OF CONSTRUCTION

Indices	Pucca construction	Kutcha Construction			
		Rural housing	Urban Housing	Rural/Urban non-residential buildings & other construction	Others*
1. Wage rate index for rural construction workers	33	100		14.9	
2. Wage rate index for urban construction workers	67		100	55.5	
3. Wage rate index for rural unskilled labour				29.6	100

* Construction under the category "others" covers plantations and afforestation and other "Kutcha construction" outside household sector.

Appendix 14.7

GROSS VALUE ADDED IN CONSTRUCTION

Rs Crores

ITEM	1999-00
1.Accounted construction in Commodity flow approach	**91700**
2.Unaccounted Construction	**12031**
2.1 R/U non res. buildings& OCW- New	3690
2.2 R/U non res. buildings& OCW- Rep. & Maintenance	681
2.3 Rural residential buildings- New	3660
2.4 Rural residential buildings- Rep.& Maintenance	537
2.5 Urban residential buildings- New	554
2.6 Urban residential buildings- Rep. Maintenance	29
2.7 Capital expenditure incurred in Plantations & Civil Construction in installations of Wind Energy systems in the Private Corporate Sector	228
2.8 plantations in household sector	1058
2.9 Govt. Kutcha Construction	1595
3. TOTAL G V A	**103731**
LESS FISIM (Construction)	**1724**
TOTAL GVA (Adjusted)	**102007**