

SECTION A

GROSS VALUE ADDED

CHAPTER 2

AGRICULTURAL SECTOR

Agricultural sector covers the activities of growing of crops, fruits & vegetables, harvesting & threshing, growing of trees & logging, fishing, breeding and rearing of animals and poultry, production of milk, eggs, dung, raw wool etc. For the purposes of computation of value added estimates, the sector has been divided into the following four sub-sectors.

- ◆ Crops
- ◆ Livestock
- ◆ Fishery
- ◆ Forestry

Detail of each sector is described below.

Crops

Summary: The increase in the value added of this sub-sector, over the published estimates of 1980-81 bases is 11.9%. The share of crops in agricultural output is estimated at 50.7% for the base year 1999-2000. The summary performance of the sub-sector is tabulated below.

GVA Estimates of Crops, 1999-2000 (Rs. Million)

Sub-sector	1999-2000 Base	1980-81 Base	Change (%)
Major crops	342200	309121	10.7
Minor crops	125679	108927	15.4
Total	467879	418048	11.9

The contribution to the Gross Domestic Product (GDP) of agricultural crops has been estimated by product approach. It involves estimation of gross value of products and by-products, estimation of inputs like seed, fertilizer, pesticides, water and agricultural services viz. tractors and draught power for ploughing, planking, sowing, harvesting and thrashing etc.

Gross Output and Valuation of Crops: The production estimates of major and minor crops are obtained from the Provincial Department of Agriculture, Agriculture Extension, Crop Reporting Services that are coordinated in the Federal Bureau of Statistics and released by the Ministry of Food and Agriculture. The estimated output of by-products of major crops is obtained as percentages of the respective crops products collected as subsidiary

information through objective crop cutting surveys supplied by Provincial Directorates of Agriculture and Crop Reporting. The corresponding harvest prices have been obtained from the Provincial Departments of Agriculture, Department of Agriculture Extension, Directorate of Crop Reporting, Provincial Economic and Marketing Department. For some of minor crops, where no harvest prices from any source were available, wholesale prices compiled and issued by the Department of Agriculture Marketing & Grading and Provincial Departments of Economics and Marketing have been used after netting out the effect of trade and transport margins. Trade and transport margins are based on the Study on Wholesale and Retail Trade.

The revised-base Gross Value Added (GVA), at 1999-2000 prices (at factor cost), have been computed, for the year 1999-2000, on the basis of enlarged coverage and improved methodology. Strawberry, mushroom, betel leaves, tea, henna (myrtle) and number of vegetables have been added to the output. Provincial Agriculture Departments and Directorate of Crop Reporting have provided data on these items. The valuation of flowers and foliage is also estimated first time and included in the estimates of crops sector; the data have been made available by the Provincial Agriculture Departments.

The gross value of crops and by products of crops is based on province-wise production of crops multiplied by the corresponding harvest prices. In case of wheat and sugarcane, procurement prices have been used for the part of production procured by the federal and provincial governments or sold directly to mill sector on government fixed prices.

Major Crops: The detail of the 1999-2000 based estimates has been attached as annexures 1-3. The estimates of output of major crops for the year 1999-2000, according to the revised base, are not much different from those worked out from the 1980-81 base. The production used in the two estimates is same, however, gross value of output shows an increase of 0.52% only. In the old series, benchmark estimates of harvest prices of 1980-81 were extrapolated with the WPI due to non-availability of any reliable data. The estimates for revised base are based on harvest prices, for the year 1999-2000, reported by Directorate of Crops Reporting Service, Punjab, Provincial Agriculture Departments, Directorates of Economic and

Marketing. The change in the value of crops between the two benchmarks is due to use of WPI in the 1980-81 based estimates. For example, in the old series the WPI for wheat (released) was also used for most of the by-products of major crops such as gram bhoosa, rice husk, bajra and Jowar stalks, maize pith etc. Similarly, harvest prices used for valuation of major crops outputs in old benchmark estimates, were based on WPI. Harvest Prices are the prices received by the producers which excludes the trade and transport margins, whereas, WPI includes the both.

Minor Crops: The detail of the 1999-2000 based estimates is attached as annexures 4-9. The production of pulses, potato, fruits and fodder crops in the both estimates are the same. Whereas, in the revised base estimates the output of vegetables, condiments, oilseeds, horticulture, some non-reported crops (in 1980-81 series) and other crops have been enlarged with inclusion of new crops. In the old series benchmark, prices had been extrapolated by WPI. Due to non-availability of WPI for each minor crop, one WPI was used for all vegetables, one for all fruits, one for all oilseeds (except groundnut) and the same was the case of garlic, turmeric and coriander. In the 1999-2000 base series actual harvest prices by province for each minor crop have been used.

Intermediate Inputs: The detail of the 1999-2000 based estimates is attached as annexes 10-16. Comparison of estimates of values of inputs used for major crops shows mixed trends in both of the benchmarks. The value of seed used, in the 1999-2000 based estimates is more than double, while that of fertilizer is significantly less than the 1980-81 based estimate. But there is not much difference in the values of pesticides in the two-benchmark estimates. The value of water, in the revised benchmark estimates, is higher due to proper valuation of tube-well water while in the old series value had been extrapolated by index. In the revised series the transport charges and wastage has declined. The detailed discussion on the sources and methodology is made at relevant inputs.

Seed: The value of seed is worked out on the basis of crop-wise area sown in each province and per acre use of seed. The seed rates have been compiled on the basis of information made available by the Provincial Departments of Agriculture, Agriculture Extension, Crops Reporting, Agricultural Price Commission and Agriculture Seeds and Supplies Corporations. The quantity of seed by crops so derived has been multiplied by the corresponding prices. The major element in the increase of value of seeds is the higher prices of improved seeds. FBS has collected the prices from the Provincial Agriculture Departments, Provincial Economics and Marketing Departments, Department of Crop Reporting. For the certified seed, data of Federal Seed Certification and Registration Department have been used. For wheat, rice, cotton and sugarcane the information contained in the reports of Agriculture Prices

Commission have been utilized. For the minor crops valuation of seed have been estimated on Pakistan basis.

Fertilizer: The value of fertilizer has been estimated on the basis of data on variety-wise quantity and value of fertilizer sold to the farmers. The National Fertilizer Development Centre, Ministry of Planning and Development; Fertilizer Imports Department, Ministry of Food and Agriculture, Fertilizer Development Cell, Agriculture Seed and Supplies Corporation, Provincial Bureaus of Statistics, have supplied the information on sale, stock and consumption of fertilizer. The information on off take/consumption of fertilizer in product tonnes and nutrient tonnes, and its value have been compiled on provincial basis by source of availability. The new benchmark estimates have been obtained from National Fertilizer Development Center, Planning and Development Division, which they have worked out for each item separately. Value of the fertilizers, in 1980-81 based estimates, had been calculated from extrapolated benchmark prices. The index of WPI used for fertilizers is more than 800 percent, while WPI, for the same period, of active ingredients of pesticides is 350 only.

Pesticides & Insecticides: The cost incurred by the farmers for plant protection has been estimated on the basis of actual sale of various types of pesticides and insecticides to the farmers. The data on the quantity and value are supplied by the Provincial Plant Protection Departments in respect of NWFP and Balochistan provinces and by Pakistan Pesticides Association in respect of Punjab and Sindh provinces.

Water: The cost of water has been estimated separately for canal water and tube well water. Canal water data have been obtained from Indus River System Authority, Ministry of Water and Power; Agriculture Water Management Department Punjab; Irrigation and Power Department, Sindh; Provincial Agriculture Departments NWFP and Balochistan; Agriculture Prices Commission, Ministry of Food and Agriculture; Planning and Development Division; and Agriculture Statistics of Pakistan. Data/Information available with Provincial Boards of Revenue, and WAPDA was also reviewed for reconciliation of the data between the different sources.

Cost of ploughing, planking and sowing: The cost of ploughing, planking and sowing through tractor and draught power have been estimated on the basis of per acre cost of crops derived from the different studies conducted by Agricultural Price Commission, Planning and Development Division. Due to non-availability of appropriate data on ploughing and planking for minor crops, average cost per hectare of all major crops has been used.

Detailed comparison of the 1999-2000 estimates on both bases is given below.

Comparison of GVA of Crops Sector, 1999-2000 (Rs. Million)

Item	1999-2000 Base			1980-81 Base		
	Major Crops	Minor Crops	Total	Major Crops	Minor Crops	Total
Gross Output	435967	152112	588079	433712	129164	562876
Gross Input	93767	26433	120200	124590	20237	144827
Seed	20469	3717	24186	8367	2331	10698
Fertilizer	36952	12077	49029	72925	8103	81028
Pesticide	6172	1927	8099	8126	903	9029
Water	10665	3909	14574	7005	2194	9199
Ploughing & Planking	16586	3821	20407	21169	5234	26403
Others	2924	981	3905	6998	1472	8470
GVA	342200	125679	467879	309121	108927	418048

The value of gross inputs for major crops in 1999-2000 base has been estimated at Rs. 93.8 billion compared to Rs. 124.6 billion of old series. The value of gross inputs for minor crops in 1999-2000 base has been estimated at Rs. 26.43 billion compared to Rs. 20.24 billion of old series. The major changes in the inputs in revised series are due to the re-distribution of fertilizer, pesticides and water according to new shares of major and minor crops (Annexure-16) and revised estimates of ploughing and planking cost.

Livestock

The livestock sub-sector includes the value of livestock products and the value of draught power. The sub-sector has been divided in to the following broad categories.

- ◆ Net sale of animals (for slaughtering)
- ◆ Natural growth of animals
- ◆ Livestock Products
 - Milk Production
 - Draught Power
 - Dung and Urine
 - Wool and Hairs
- ◆ Poultry Products

The data have been taken from Agricultural Statistics of Pakistan, Ministry of Food, Agriculture & Livestock. Further discussions were held with the experts of Livestock Division.

Summary: The increase in the value added of this sub-sector, in spite of taking slaughtering out, over the estimates of 1980-81 base is 23.7%. The share of livestock sector in agricultural output is estimated

at 45.2% for the year 1999-2000. The summary performance of the sub-sector is tabulated below.

Valuation of Livestock Products: Detailed sheets have been worked out for the valuation of each item. The gross output of the livestock sub-sector is valued at producers' prices and is equivalent to the total production of the livestock products multiplied by their respective prices. Annexures 17 & 18 provide the source data.

1. Net Sales of Animals: The net sales were previously ignored in the livestock but presently these are being incorporated as per 1993 SNA recommendation. Detail is given in annexure 19. Following estimation procedure has been adopted to arrive at the final figures of net sales:

$$\text{Net Sales} = \text{Sale of animals} - \text{Purchase of animals in livestock activity} = \text{Sale for slaughtering}$$

2. Natural Growth of Animals: The animals in livestock are divided as under according to their age specific groups (Annexure 18):

- a. Adult
- b. Young Males and Females

So far as the adult are concerned they make part of 'work in progress' and their value is accordingly imputed in net sales but not here. For young males and females the

data was available for the age below three years. Only the

GVA Estimates of Livestock, 1999-2000 (Rs. Million)		
Item	1999-2000 Base	1980-81 Base
Net sale of animals	128757	
Natural growth of animals	39569	
Livestock Products	325966	
Milk	278178	257585
Draught power	18590	23328
Dung and Urine	27697	8041
Wool and Hair	1501	913
Poultry Products	42933	
Total Gross Output	537226	
Fodder	85576	
Poultry inputs	15528	
Other inputs	19002	
Intermediate Consumption	120106	85479
Gross Value Added	417120	337300

animals, which were of age one year and below, were taken as a part of natural growth. Detail is given in annexure 20.

3. Livestock Products: For the valuation of Milk, Dung and urine, Wool and hairs, and Poultry products, quantities have been taken from agricultural statistics of Pakistan and prices have been taken from the Agriculture and Livestock Products, Marketing and Grading Department. Detail is given in annexures 21, 23 and 24.

4. Poultry and Poultry Product: Number of birds and eggs has been taken from the Livestock Division. Prices are taken from Agriculture and Livestock Products, Marketing and Grading Department. Prices for chicks and other inputs have been collected from Poultry Research Institute (PRI). Detail is given in annexure 25.

5. Draught Power: Draught power has been subject to decreasing trend due to mechanization of agriculture sector and replacement of non-mechanized road transport with light transport vehicles like Auto Rickshaws and Motor Cycle Rickshaws. However the use of animal for power is in practice. The estimate of draught power has been developed by comparing the output with the equivalent work done by mechanized power. Detail is given in annexure 22.

Intermediate Inputs: The inputs of livestock are mainly derived from Agriculture sector. Emphasis on better rearing and catering, intensive use of medicines and health care services, and commercialization of dairy farming has led to diversification of input structure. The shift-in farming structure has brought about the use of expensive fodder and other inputs. For the intermediate consumption, fodder, medical care, transportation, interest, value of chicks, poultry feed etc. have been taken in to consideration.

Fishery

The fishing activities cover commercial and subsistence fishing in ocean, coastal and offshore waters and inland waters. This includes catching, tackling and gathering of fish from rivers, canals, lakes, fish farms, ponds and inundated tracts.

Output: The data on quantity and value of commercial and subsistence fishing (inland and marine) have been obtained from Marine Fisheries Department, Ministry of Food & Agriculture, and from the Provincial Fisheries Departments. The value of marine fish catch is reduced by 6.5% for auction charges so as to arrive at the value at factor cost. The auction value of inland fish is doubled to cover the under-reporting on inland fishing as recommended by Kazi Committee in 1986. The doubling of inland fish demands an objective estimate. The estimates are based on annual catch

of inland and marine fishing and their respective base year prices.

Inputs: The use of 36 percent as input cost for marine fishing has been continued. This provides basis for estimation of GVA at constant factor cost. The value at current factor cost is derived from the current data on quantity and value of fish-catch. The cost of inputs at 16 percent, due to fish farming, have been used for inland fishing as recommended by the FBS inland fishing survey. In 1980-81 base no input cost was deducted from inland fishing.

Value Added Estimates for 1999-2000 Base: Based upon data available from various sources, benchmark VA estimates for the year 1999-2000 have been computed as Rs 15163 million against provisional current factor cost estimates of Rs 17168 million for the same year. This reduction in value is the result of new rates of inputs and under coverage in fishing. Details are given in annexure 26. Summary table is given below.

GVA Estimates of Fisheries, 1999-2000 (Rs. Million)

Item	1999-2000 Base	1980-81 Base
Inland	110495	12500
Marine	4668	4668
Total	15163	17168

Forestry

The Forestry sub-sector covers the activities of logging and gathering of uncultivated forest products, which are classified, into two large groups.

- ◆ Major products comprising industrial wood such as timber and firewood.
- ◆ Minor forest products including a large number of heterogeneous items such as ephedra, grazing, resin, medicinal herbs etc..

In minor forest products only resin is gathered by the Forest Department, other forest products are gathered by the local population and sold in the market.

In the 1980-81 base methodology, data on public sector forests being used are collected from the Provincial Chief Conservators of Forests. Whereas for the private sector forests and non-forests areas, ratio of timber supply as 73% and firewood as 99% of total consumption of the forest output had been applied. The consumption of forest output for the household sector is estimated from the Household Integrated Economic Survey (HIES) 1998-99 and industrial use from Census of Manufacturing Industries (CMI) 1995-96 and survey of Small and Household Manufacturing Industries (SHMI) 1996-97. The use of timber in construction is also taken from construction survey 1993-96, adjusted with three years

trend. As no inputs have been estimated, the same output is being used as value added.

One of the output of forestry and logging consists of the timber felled, prepared into logs and transported by logging establishments to the purchasers of the timber. The gathering of wild berries, fruits, seeds and thatching grass; charcoal burning; and rough-cutting of timber for firewood or building poles are also considered to be forestry activities. Such produce available in Pakistan forests has been included. Summary table of the sub-sector is produced below.

GVA Estimates of Forestry, 1999-2000 (Rs. Million)

Item	1999-2000 Base	1980-81 Base
Timber	2852	4727
Firewood	26262	4841
Gross output	29114	9568
Intermediate Consumption (25%)	7278	2392
Value Added	21836	
Minor produces	1611	
Gross Value Added	23447	7176

Estimates of Gross Value Added

Timber: The gross value of timber and firewood, reported by the Provincial Chief Conservators of Forests and published by the Ministry of Environment, Local Government and Rural Development in 1999-2000 is Rs. 1003 million and revenue earned by Forests Departments is Rs. 687 million.

The estimates of timber have been developed from the consumption side. In this exercise 35% is used as trade and transport margin to convert the purchaser's price into producer's price. 25% is deducted for smuggling. 25% input costs have been taken in respect of timber and firewood. Detail is given in annexure 27.

Firewood: The major user of firewood is household sector. Firewood is also used in large and small scale manufacturing sectors. The estimates of firewood have been developed from the consumption side taking all possible care of double counting and inline with the recommendations of 1993 SNA. Estimates of consumption of firewood (used as fuel wood) by household is Rs. 25445 million, by small scale manufacturing industry is Rs. 1247 million and by large scale manufacturing industry is Rs. 10 million. However after deducting transport and trade margins, the estimate of fire wood consumption in large and small scale manufacturing industries (establishment/household) comes to be 817 million. Detail is given in annexure 27.

The value of firewood used by households has been checked from expenditure approach from the results of Household Integrated Economic Survey for 1998-99. The estimate so developed comes to be Rs. 24280 millions. However quantity approach is preferred.

Minor Produces of Forests: For the minor produces, the results of the study on forestry have been incorporated as summarized below.

GVA of Minor Produces, 1999-2000

Minor Produces	Rs. Million
1. Medicinal Herbs (Crude)	1300
2. Mazri and Gum Arabic	3
3. Wild Mushroom	2
4. Honey and Wax	280
5. Silk Worms (Sericulture)	16
6. Wild Fruits	10
Total	1611