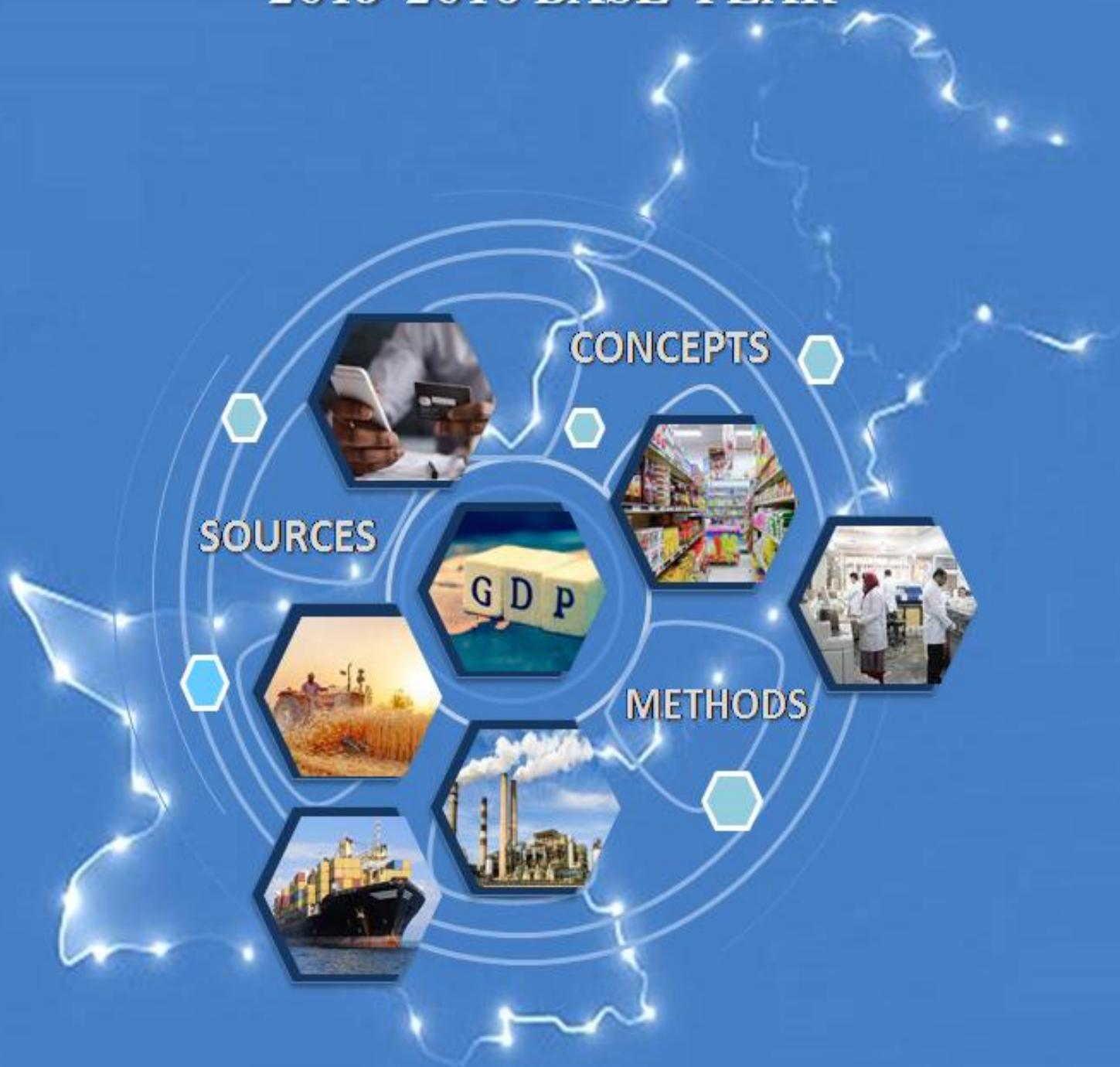




# NATIONAL ACCOUNTS OF PAKISTAN 2015-2016 BASE YEAR



PAKISTAN BUREAU OF STATISTICS  
MINISTRY OF PLANNING DEVELOPMENT & SPECIAL INITIATIVES  
GOVERNMENT OF PAKISTAN  
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## Foreword

Pakistan Bureau of Statistics (PBS) compiles and publishes macroeconomic statistics such as Gross Domestic Product (GDP), Gross National Income (GNI), Per Capita Income, Gross Fixed Capital Formation (GFCF) and Expenditure on GDP on annual basis. These statistics play an important role in policy formulation and informed decision making. They are also often highlighted in print, electronic, and social media platforms. The base year/reference year for the compilation of national accounts is required to be changed for the incorporation of improvement in data sources and re-assessment of the contribution of various industries towards national GDP owing to structural changes in the economy as well as various macroeconomic dynamics in national and international horizons.

The history of change of base of national accounts of Pakistan is not so rich. It remained a rather neglected activity. In 1952 the national accounts estimates were prepared from 1949 onwards at current prices. In 1962-63 the base of 1959-60 was adopted. In 1987 the base of 1980-81 was adopted. Then in 2003, the base of 1999-2000 was adopted with classifications of the 1968 SNA. The 2005-06 base year was adopted in 2013 with the partial implementation of the 2008 SNA. The Governing Council of Pakistan Bureau of Statistics in its 5<sup>th</sup> meeting in 2013 issued a policy directive to rebase the National Accounts after every ten years. As a result, it was decided to change the base year for National Accounts from 2005-06 to 2015-16. The work on the next base year i.e. 2015-16 was started with the approval of a development scheme titled “**Change of Base of National Accounts 2005-06 to 2015-16**” costing Rs.279.95 Million in November 2014. Under the umbrella of rebasing, PBS conducted various censuses e.g. Census of Manufacturing Industries, Census of Electricity, Census of Exploration Companies, surveys e.g. Rent Survey, Household Integrated Income and Consumption Survey, Survey on Small & Household Manufacturing Industries, Survey on Other Private Services, as well as the number of other studies. Further, to ensure consistency among various macroeconomic aggregates, PBS has also changed the reference periods for the compilation of price and trade indices from 2007-08 and 1990-91 to 2015-16.

A technical committee comprising of experts from the Ministry of Planning, Development & Special Initiatives, M/O Finance, State Bank of Pakistan, Pakistan Institute of Development Economics, Quaid-e-Azam University and representatives from various public and private sector organizations have thoroughly reviewed the results of various censuses/surveys/studies conducted for rebasing purpose. Experts of the World Bank also reviewed the methodology of change of base of National Accounts and found it in accordance with the 2008 SNA.

At the PBS, the task of completing the rebasing of national accounts from 2005-06 to 2015-16 has been completed by the highly dedicated team of National Accounts professionals led by S. Ejaz Wasti, Member, National Accounts. I would like to request views and comments on this exercise to help PBS in further improvement of the macroeconomic aggregates.

**Dr. Naeem uz Zafar**  
**Chief Statistician**  
**Pakistan Bureau of Statistics**  
**April, 2022**

## **Preface**

While the change of base of national accounts is a gigantic and challenging task, it also provides an opportunity to enhance the coverage of economic activities and improve the estimation methodologies and sources of data. The Pakistan Bureau of Statistics has capitalized on this opportunity and has made all-out efforts to implement the recommendations of 2008 SNA, explore new sources of data, and enhance the coverage of economic activities described in the Pakistan Standard Industrial Classification (PSIC-2010) adopted from the International Standard Industrial Classifications (ISIC) Rev.4. Efforts have also been made to capture the products in each economic activity as described in the Central Product Classification (CPC) Version 2. The successful completion of rebasing of national accounts from 2005-06 to 2015-16 will provide a necessary benchmark for the compilation of Supply & Use Tables, Input/ Output Tables, Social Accounting Matrix, quarterly GDP, and institutional sector accounts.

The current publication incorporates the details of sources of output and input, deflation methods, and extrapolation methodologies by type of industry on the supply-side of the economy. The sources of data and estimation methodologies have also been documented for the estimation of various components of the aggregate demand i.e. household final consumption expenditure, general government final consumption expenditure, gross fixed capital formation, changes in inventories, exports and imports of goods and services. Further, the process of moving from GDP to Gross National Income (GNI) has also been described in detail. The use of double deflations, basic prices, and indicator-based growth rates are the major hallmarks of the 2015-16 rebasing. In the current report, all possible details have been documented to facilitate the users of the national accounts statistics and make the process of compilation of national accounts statistics more systematic, transparent and authentic.

The exercise took a long time due to resource constraints at the PBS and stoppage of rebasing activities owing to the conduct of the 6<sup>th</sup> Housing & Population Census. The completion of the task of rebasing national accounts is the result of coordinated efforts of staff in the National Accounts Wing, PSLM/HIES Section, Industry Section, Field Services Section, Sample Design and Data Processing Centre of the PBS. Specifically, this achievement is a result of the dedicated efforts of an inspired team of the National Accounts Wing. Senior and experienced national accountants like Mr. Fazil Mahmood Baig and Mr. Attiq-ur-Rehman have contributed heavily. Suggestions for improvement are welcome.

**S. Ejaz Wasti**  
**Member National Accounts**  
**April, 2022**

## Acknowledgement

By the grace of Allah the mammoth exercise of Change of Base of National Accounts (CBNA) from 2005-06 to 2015-16 has been completed successfully and this report is a reflection of the tireless efforts of officers and officials of Pakistan Bureau of Statistics. I wish to extend my special gratitude to (late) Arif Mehmood Cheema, Ex-Member National Accounts for conceiving and initiating the project. The assistance provided by Mr. Asif Bajwa, Ex-Chief Chief Statistician PBS, not only in technical matters but also in timely release of funds from ministries, enabled us to complete data collection activities in time, also needs to be commemorated. Special thanks to Mr. Bernd Struck, Ex-Principal Advisor German International Cooperation (GIZ) for guidance in designing of construction survey and Mr. Sajjad Akhtar, Ex-Member PBS, Mr. Muhammad Ismaeel, DDG, PBS, Mr. Ghulam Muhammad Ex-DDG PBS, for completing the survey activities.

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**(Attiq-ur-Rehman)**  
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## Abbreviations and Acronyms

<b>Abbreviations</b>	<b>Acronyms</b>
AJK	Azad Jammu & Kashmir
AMIS	Agriculture Marketing Information Services
API	Agriculture Policy Institute
APL	Attock Petroleum limited
BMR	Balancing, Modernizing And Replacement
CAA	Civil Aviation Authority
CAAD	Capital Administration and Development Division
CDWP	Central Development Working Party
CMI	Census of Manufacturing Industries
CPC	Central Product Classification
CPI	Consumer Price Index
CRS	Crop Reporting Services
CSO	Central Statistical Office
DFI's	Development Financing Institutions
EPZA	Export Processing Zones Authority
FATA	The Federally Administered Tribal Areas
FBS	Federal Bureau of Statistics
FISIM	Financial Intermediation Services Indirectly Measured
FOTCO	Fauji Oil Terminal And Distribution Company Ltd
GDP	Gross Domestic Product
GFCF	Gross Fixed Capital Formation
GNI	Gross National Income
GPA	Gawadar Port Authority
GVA	Gross Value Added
HDIP	Hydrocarbon Development Institute of Pakistan
HIES	Household Integrated Economic Survey
HIICS	Household Integrated Income and Consumption Survey
IATA	International Air Transport Association
IBRD	International Bank for Reconstruction and Development
ICPF	Insurance Corporations And Pension Funds
IPPS	Independent Power Producers
ISIC	International Standard Industrial Classifications
ISPs	Internet Service Providers
KIBOR	Karachi Interbank Offer Rate
KICT	Karachi International Container Terminal
KPT	Karachi Port Trust (Pakistan)
LNG	Liquefied Natural Gas
LSMI	Large Scale Manufacturing Industries
MMF	Money market funds
MNFSR	Ministry of National Food Security and Research
NAC	National Accounts Committee
NAC	National Accounts Committee
NEC	National Economic Council
NEPRA	National Electric Power Regulatory Authority
NIC	National Income Commission
NPI	Net Primary Income
NPISH	Non-Profit Institutions Serving Households
NTDC	National Transmission and Distribution Company

<b>Abbreviations</b>	<b>Acronyms</b>
NTRC	National Transportation Research Center
OPS	Other Private Services
P@SHA	Pakistan Software House Association
PARACS	Pakistan Railways Advisory and Consultancy Services
PARCO	Pak-Arab Refinery Company Limited
PASHA	Pakistan Software Houses Association for IT
PBS	Pakistan Bureau of Statistics
PCI	Per Capita Income
PEC	Pakistan Engineering Council
PEMRA	Pakistan Electronic Media Authority
PEPCO	Pakistan Electric Power Company
PHA	Pakistan Hotels Association
PIA	Pakistan International Airlines
PICT	Pakistan International Container Terminal
PNSC	Pakistan National Shipping Corporation
PPS	Probability Proportional to size
PQA	Port Qasim Authority (Pakistan)
PSEB	Pakistan Software Export Board
PSIC	Pakistan Standard Industrial Classification
PSLM	Pakistan Social and Living Standards Measurement
PSX	Pakistan Stock Exchange
PTDC	Pakistan Tourism Development Corporation
QICT	Qasim International Container Terminal
QIM	Quantum Index of Large Scale Manufacturing
RNA	Rebasing of National Accounts
SBP	State Bank of Pakistan
SECP	Securities and Exchange Commission of Pakistan
SHMI	Small and Household Manufacturing Industries Survey
SNA	System of National Account
SNGPL	Sui Northern Gas Pipeline
SPI	Sensitive Price Index
SRC	Self-Representative Cities
SSGC	Sui Southern Gas Company
WAPDA	Water and Power Development Authority
WPI	Wholesale Price Index
WRT	Wholesale and retail trade

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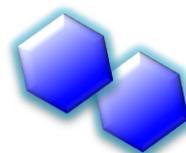
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**CHAPTER 1**  
**Overview of Systems for**  
**Calculating Gross Domestic Product**



**SYSTEM FOR CALCULATING GROSS DOMESTIC PRODUCT****1.1 Introduction**

There are various aspects of economic activities e.g. production, income, consumption or capital formation, which are treated as key factors in national accounts. The purpose of national accounts is to provide the most comprehensive, well-structured, arranged, and quantified picture of a country's entire economy. The raw data on different economic activities is required to be condensed and grouped to provide the basis for informed decision-making and policy formulation aimed at the achievement and maintenance of sustainable economic growth. The aggregation of economic transactions results in meaningful macroeconomic aggregates such as gross domestic product (GDP), gross national income (GNI), per capita income, gross capital formation and expenditure on GDP. The following document describes the sources and methods for the compilation of GDP by industries, expenditure on GDP, and GNI.

In Pakistan, GDP is compiled through production and expenditure approaches. The GDP by income approach is not calculated mainly due to the absence of entrepreneurial income. Although estimation of compensation of employees, consumption of fixed capital and taxes less subsidies on production is possible, the compilation of operating surplus and mixed income is not possible.

The system of national accounts provides the conceptual framework for the compilation of GDP. The first United Nations System of National Accounts (SNA) was published in 1953. The UN recommended countries compile their economic accounts within the SNA framework to achieve consistency and facilitate international economic comparison. SNA has been revised several times to take account of changing economic concerns. The latest version of the system was completed in 2008 and provides measures of production, income, consumption, savings, capital formation and financing for individual sectors and the economy as a whole. It also provides linkages with various monetary and quantitative databases relating to different types of activities through Satellite Accounts. SNA is a powerful and flexible tool to provide the detailed economic information required to meet analytical and policy needs. It should be noted that in the SNA the term "sector" has another meaning than in the common language in Pakistan. The six so-called institutional sectors in the SNA are Non-Financial Corporations, Financial Corporations, General Government, Households, Non-Profit Institutions Serving Households and the Rest of the World.

**1.2 The Quality of the National Account's Calculations**

The quality of the national account's calculations is ensured continuously during the calculation process. Efforts are made to detect and eliminate possible short comings and errors as soon as possible. The main elements of this quality assurance procedure are outlined below:-

- i. The quality of source data, which are produced as part of official statistics by the PBS e.g. price, labour, trade statistics, etc. are checked in respective sections. Before the use of baseline statistics in national accounts, their plausibility is checked again. The national accounts staff constantly shares the information and experiences with all the major suppliers of data.
- ii. The national accounts estimates are approved by a technical committee having representation from all the major suppliers of the data in both

private and public sectors. The data providers authenticate and validate their data before the final approval of the GDP estimates by the National Accounts Committee (NAC). The meeting of the NAC is held in May every year to approve the annual estimate of the GDP.

### **1.3 Revisions Policy, History of National Accounts Compilation and Major Revisions in Pakistan**

The national accounts aggregates are subject to two types of revisions i.e. i) regular revisions ii) comprehensive or major revisions. The objective of these revisions is to include new data, new statistics, new definitions and/or new methods in the system of national accounts. The *regular revisions* are made on annual basis. The GDP estimates are published in May every year by incorporating data for six to nine months but projected for the whole financial year i.e. 1<sup>st</sup> July to 30<sup>th</sup> June on a provisional basis. The provisional estimates are revised next (second) year and are finalized in the subsequent third year.

In contrast to regular revisions, *comprehensive or major revisions* take place less frequently. The major revisions entail a fundamental review of the entire system of national accounts and serve to introduce new definitions, concepts and data sources into the national accounts system. An overview of the major revisions of national accounts in Pakistan is presented in the following:

- i. The first estimates of national accounts of Pakistan were prepared by the Economic Advisor's Office in 1949. On the setting up of the Central Statistical Office (CSO) in 1950, the job was transferred to CSO, the then Federal Bureau of Statistics (FBS) and now the Pakistan Bureau of Statistics (PBS). Since then the PBS has been preparing different series of national accounts at current and constant prices.
- ii. For improvement of national accounts, several groups and committees were set up from time to time, the prominent being the National Income Commission-1963 (NIC) and IBRD Statistical Mission-1969. As a result, the national accounts of Pakistan have undergone modifications and improvements at various stages concerning timeliness, data availability, coverage and statistical techniques involved in their computation.
- iii. In 1972-73, FBS undertook an exercise for switching over the base from 1959-60 to 1969-70. These estimates were presented before the National Accounts Committee (NAC) but could not be adopted due to inconsistencies in the estimates of the manufacturing sector. The Committee directed the FBS to prepare estimates with 1975-76 as a base. A comprehensive work plan was prepared for improving the existing data series and plugging the statistical gaps. Some surveys such as wholesale and retail trade, small and household manufacturing industries were conducted for this purpose. The estimates with base 1975-76, on improved data availability, concepts and methodology were prepared for the year 1975-76 through 1983-84 and presented before the Committee but could not be adopted due to persistent inconsistencies.
- iv. While considering the Annual Plan for the year 1984-85 certain shortcomings in the compilation of National Accounts were brought to the notice of the National Economic Council (NEC). The Council decided to constitute a Committee under the chairmanship of Mr A.G.N. Kazi, the then Governor, State Bank of Pakistan (SBP), to look into the matter. Accordingly, a Committee on National Accounts was constituted to review the present methodology for the preparation of National

Accounts and to propose necessary improvements. The results were completed in 1988 for the base year 1980-81.

- v. Efforts were made from time to time to shift the base from 1980-81 but due to one reason or the other, the work was postponed. Several internal meetings and the meetings of the NAC were held under the chairmanship of the Secretary Statistics Division to change the base from 1980-81 to 1999-2000. Ultimately the NAC approved the rebased estimates in the meeting held on 22<sup>nd</sup> December 2003.
- vi. The year 2005-06 was selected as the next base year and the CDWP approved a project named “Rebasing of National Accounts (RNA) from 1999-2000 to 2005-06”. The project continued up to June 2010. Surveys were conducted for the major sectors and studies were designed to fill the small gaps and to capture emerging fields. The Governing Council of the PBS approved the change of base of national accounts from 1999-2000 to 2005-06 in its fourth meeting held on April 29, 2013.

#### **1.4 Change of Base of National Accounts for 2015-16**

National accounts aggregates at constant prices provide important indicators for measuring growth in the activity or economy. All countries are compiling national accounts aggregates at current and constant prices. They also update the base year periodically. Constant price estimates use the price relatives of a particular year to weight together with the volume components. Each base year gives a different perspective resulting from those weights. Over time the pattern of relative prices in the base period tends to become progressively less relevant. Therefore, it is necessary to update the base period to adopt weights that are more consistent with current conditions.

Observing the performance of the economy and its main macro-economic variables requires a fairly long time series of data that are comparable to those of other countries. Therefore, National Accounts must keep the methods, concepts and definitions of the respective figures constant over time and space. All necessary changes are to be stalled and then implemented as a bundled exercise called “rebasing” or “comprehensive/major revision”. According to international recommendations, such a revision should be undertaken every five to seven years. Pakistan has now completed its rebasing for the year 2015-16 (“base year”) and the succeeding years. The new base year replaces the existing one of 2005-06 which includes:

- i. New censuses, surveys, studies
- ii. New price basis for the year 2015-16
- iii. Enhanced implementation of 2008 SNA
- iv. Enhanced coverage of economic activities as per PSIC

## 1.5 New Censuses, Surveys, Studies

Many censuses, surveys and studies were launched to generate an updated database for National Accounts under the umbrella of rebasing of national accounts from 2005-06 to 2015-16. The most relevant of them were:

- i. Household Integrated Income and Consumption Survey (HIICS), which has been used to change the base of the Consumer Price Index (CPI), Wholesale Price Index (WPI) and Sensitive Price Index (SPI) from 2007-08 to 2015-16
- ii. Census of Large Scale Manufacturing (which also provided the base for the revision of the Quantum Index of Manufacturing (QIM))
- iii. Small and Household Manufacturing Industries (SHMI) Survey
- iv. Census of Electricity Establishments
- v. Census of Exploration Companies (Oil and Gas)
- vi. Construction Survey
- vii. Rent Survey
- viii. Survey of Non-Governmental Organizations (NGO's)
- ix. Survey on Other Private Services
- x. Various studies for updating prices and input-output structure of crops, trade & transport margin, livestock and for estimating output and intermediate consumption of cotton ginning, forestry, inland fishing and marine fishing
- xi. Studies of mining industries and stone crushing
- xii. Study on slaughtering
- xiii. Study on accommodation and food service activities (Hotels and restaurants)
- xiv. Various studies on a component of transport, warehousing, storage and communication services
- xv. Studies on exchange companies and stock exchange brokers
- xvi. Study on autonomous bodies providing education, human health and social work services
- xvii. Studies on TV Channels, Computer Related Activities, Professional, Scientific and technical activities

The above-mentioned censuses, surveys and studies were conducted to update the output, intermediate consumption, gross value added, and gross fixed capital formation for various economic activities. In Pakistan, these censuses, surveys and studies cannot be carried out each year because of resource constraints. The input-output ratios developed through these sources are used for the extrapolation of base-year estimates. One common practice is to have proxies for extrapolating output (e.g. industrial production index-QIM for the extrapolation of the output of large scale manufacturing) and then to apply base year input-output ratios. As these ratios and proxies cannot be applied for a long time, therefore, rebasing is required to review them after every five or ten years.

## 1.6 New Price Basis

All the national accounts aggregates are compiled at both current (nominal) and constant (real) prices. The aggregates initially compiled at current prices are converted into constant prices by applying appropriate price deflators and vice versa. Therefore, the base year for national accounts and the base year for the price indices should coincide. Hence, HIICS was conducted under the umbrella of rebasing of national accounts to serve the purpose of the Family Budget Survey. The Governing Council of the PBS in its 18<sup>th</sup> meeting held on August

30, 2019, approved the rebasing of Price Statistics from 2007-08 to 2015-16. Under 2015-16 rebasing of prices statistics, CPI is being compiled separately for urban and rural areas through electronic data collection and improved methodology i.e. weighted geometric mean, consumption instead of income quintiles, updated weights based on 2017 population census etc. The new CPI and WPI are used as an updated source for deflation and inflation of figures compiled at current and constant prices respectively.

## 1.7 Enhanced Implementation of 2008 SNA

Another important component of this rebasing is to enhance the implementation, as far as possible, of the internationally agreed standards for national accounts e.g. 2008 SNA. SNA 2008 as well as its predecessor, SNA 1993, recommends the application of basic price valuation for output and value-added instead of factor cost (which is the 1953 SNA price concept). While “factor cost” means to value output without any indirect taxes but including subsidies, the basic price concept differs between (indirect) taxes on the products as such (e.g. varying with the output) and subsidies, respectively, and those taxes (less subsidies) which are levied on the production process as such (e.g. taxes on the production factors such as land or vehicles). The basic price is the price the producer gets on his output excluding any taxes on the products and including any subsidies on the products. It should be noted that according to the SNA subsidies on the products also cover payments of the government to its public corporations which are meant for compensating for persistent losses. For Pakistan, the adoption of the SNA’s price concept has a minor impact, only.

Factor cost

+ taxes (less subsidies) on production (e.g. on land, vehicles)

= basic prices

+ taxes (less subsidies) on products (e.g. excise duties)

= producer’s prices

+ trade and transport margins + non-deductible VAT

= purchaser’s prices

Other notable improvements in the compilation of national accounts aggregates in 2015-16 rebasing are:

- Replacing single deflation by double deflation i.e. deflating output and inputs separately by their respective deflators as far as possible.
- Salaries in kind are included in compensation of employees for government services
- Subsidies have to be enhanced by those given for coverage of persistent losses of public corporations (with upward consequences for GVA and GDP at basic prices or factor cost, neutral for valuation at market prices)
- Water supply and sanitation to be treated as non-market production (with upward consequences for GVA, GDP and collective consumption)
- Introduction of calculating bank service charge for financial intermediation
- State Bank to be treated as non-market producer (main activity) while its market production (secondary activity) is confined to services covered by commissions
- Introduction of insurance service charge
- Efforts have been made to capitalize the expenditure on R&D activities and cultivated biological assets. However, the capitalization of expenditure on weapons systems has been left as an area for further consideration keeping in view its sensitivity. The 2008 SNA extends the assets boundary and government gross capital formation to include expenditure on weapons systems comprising of vehicles and other equipment such as warships,

submarines, military aircraft, tanks, missile carriers and launchers, etc. as they are used continuously in the production of defence services. The 2008 SNA, therefore, recommends that military weapons systems should be classified as fixed assets and that the classification of military weapons systems as fixed assets should be based on the same criteria as for other fixed assets; that is, produced assets that are themselves used repeatedly, or continuously, in processes of production for more than one year (SNA, para A3.55).

## **1.8 Enhanced Coverage of Economic Activities as per PSIC**

In 2015-16 rebasing of national accounts efforts have been made to compile and disseminate the estimates of GDP as per United Nations' International Standard Industrial Classification of all Activities" (ISIC), revision 4, adopted through "Pakistan Standard Industrial Classification" (PSIC 2010). Section E of the PSIC-2010 relating to water supply; sewerage, waste management and remediation activities, covered in Divisions 36-39, has been added to the GDP estimates. Although the contribution stemming from the public sector continues to be included in the general government services due to data limitations, the contribution of the private sector has been estimated separately. Particularly, the service industries have witnessed major changes. For example, accommodation and food services, commonly known as hotels and restaurants, which were used to be presented as a sub-component of the wholesale and retail activities, has been estimated separately under Section I, Divisions 55-56. Similarly, information and communication activities have been re-grouped as per Section J, Divisions 58-63. Previously, the information part i.e. the computer-related activities were used to be covered under other private services. The financial and insurance activities and real estate activities (Housing Services) have been covered on the pattern of 2005-06 rebasing. Public administration and defence; compulsory social security, Section O, Division 84, has been estimated separately excluding the education and human health and social work activities, which have been covered under Section P, Division 85 and Section Q, Divisions 86-88 respectively along with contributions from the private sectors and NGOs. Similarly, Professional, scientific and technical activities, Section M, Division 69-75, administrative and support service activities, Section N, Divisions 77-82, arts, entertainment and recreation activities, Section R, Division 90-93, other service activities, Section S, Division 94-96 and activities of households as employers, Section T, Division 97, have been re-grouped separately and are presented under Other Private Services. This disaggregation is expected to provide more insights for policymakers, researchers and academicians.

## **1.9 Extension of the System**

The national accounts aggregates on 2015-16 base year will be extrapolated backwards to provide a longer time-series as the too short time-series hamper economic analysis and are not sufficient to apply modern techniques of time-series analysis and smoothing adjustments.

The current system of Pakistan's National Accounts is mainly restricted to the compilation of annual regular accounts. With the finalization of rebasing 2015-16, the annual time-series is being planned to be quartered to launch Quarterly National Accounts (QNAs). Similarly, Supply and Use Tables (SUTs), for the base year 2015-16 are also on the cards along with the compilation of Institutional Sector Accounts.

## **1.10 Gross Domestic Product Approaches**

In international analyses and comparisons, the Gross Domestic Product (GDP) at market prices is the most important and most common macroeconomic indicator. As a measure of aggregated production, it is the sum of the gross value added of all resident producers plus any taxes on products not included in the value of their output minus any subsidies on

products included in the value of their output. For short: GDP at market prices represents the final results of the production activity of resident producers' units.

GDP at market prices is also equal to the market value of all final uses of goods and services during a year (which includes exports), less the value of imports. Finally, GDP at market prices is also equal to the sum of primary incomes (payables out of the value-added created by production) distributed by resident producers.

GDP may be measured in national (e.g. rupee) or foreign currency (e.g. US\$) or in Purchasing Power Parities (PPP). It may be measured in prices of the reference year ("current prices") or in prices of a foregone year ("constant prices").

In principle, GDP may be derived in three ways or a combination of them:

### **1.10.1 Production Approach**

It measures the contribution to output made by each producer. It is obtained by deducting from the total value of its output the value of goods and services it has purchased from other producers and used up in producing its own output. Total value added by all producers, adjusting taxes and subsidies equals GDP.

Gross Value Added at basic prices = Output at basic prices - Intermediate consumption at purchasers' prices

GDP = Output - Intermediate consumption + Taxes on products - Subsidies on products

or

GDP = Gross value added + Taxes on products - Subsidies on products

### **1.10.2 Income Approach**

In this approach, consideration is given to the costs incurred by the producer within his own operation, the income paid out to employees, taxes (less subsidies) on production, consumption of fixed capital, and the operating surplus. All these add up to GDP at market prices.

GDP = Compensation of employees + Consumption of fixed capital + Gross operating surplus / Mixed-income + Taxes less subsidies on production and imports

### **1.10.3 Expenditure Approach**

This approach looks at the final uses of the output for private consumption, government consumption, capital formation and net of imports & exports.

GDP = Final consumption (Households, NPISH & Government) + Gross capital formation + Exports – Imports

GDP in Pakistan is estimated as per guidelines provided by the SNA. For GDP estimation by activities (current & constant prices), the production approach is applied. For some activities, especially for non-market activities, the output is measured as the sum of primary incomes (GVA) and intermediate consumption. This is commonly also subsumed under the “income approach” though for parts of GDP, only. The expenditure approach is rudimentary as only some of the summands (collective consumption, capital formation and export minus imports) are calculated independently while the biggest summand (private consumption) is calculated as residual vis-a-vis the GDP measured through the production approach.

It should be noted that practically the compilation of GVA (output minus intermediate consumption) uses a more detailed economic classification i.e. PSIC. GDP is computed by a combination of production, income and expenditure methods. The production method is applied to compute value-added in most of the industries e.g. agriculture, mining and quarrying, manufacturing, electricity & gas distribution, transport, storage & communication, wholesale & retail trade, finance & insurance, and ownership of dwellings whereas the income method is used to work out income accruing from general government and some components of services e.g. membership organization.

The coverage, nature and sources of data used and the methodology followed in the compilation of these estimates are explained under respective industries.

## **1.11 Presentation of the Estimates**

There are various ways to sub-classify the economy. One of these is the structure of six institutional sectors of the SNA i.e. financial corporations, non-financial corporations, households, non-profit institutions serving households (NPISH), General Government and the Rest of the world. Others are formal versus informal economy or producing activities versus services and the like. In Pakistan, it has been common so far to divide the economy by using the term “sector”. However, SNA designates all economic activities as industries. The grouping of the industries for the presentation of estimates in 2015-16 rebasing is given below:

## **Agriculture, Forestry and Fishing (PSIC A 01-03)**

- Crops
  - Important Crops
  - Other Crops
  - Cotton Ginning
- Livestock
- Forestry
- Fishing

### **Producing Industries**

- Mining and quarrying
- Manufacturing
  - Large-Scale Manufacturing
  - Small-Scale Manufacturing
  - Slaughtering
- Electricity, Gas and Water supply
- Construction

### **Services**

- Wholesale and retail trade (Inc. repair of motor vehicles and motorcycles)
- Transportation and storage
- Accommodation and food service activities
- Information and communication
- Financial and insurance activities
- Real estate activities (Housing Services)
- Public administration and social security
- Education
- Human health and social work activities
- Other Private Services

## **1.12 Expenditure on GDP**

Final consumption expenditure of household and NPISH, collective consumption expenditure of the general government, gross fixed capital formation, changes in inventories and acquisition and disposal of valuables, exports and imports are the components of this approach. The final consumption expenditure of NPISH has been estimated for the first time. General government consumption expenditures are well documented and available from the budget documents. Gross fixed capital formation is calculated in full detail. The estimation is made according to the public and private sectors. The other dimension of estimation is by industry and by type of assets. The acquisition and disposal of valuables by households has been estimated through HIES. Export and import data of merchandise and services are available from the balance of payment statistics of SBP. Ratios are applied for the estimation of changes in inventories. Final household consumption expenditures are calculated as residual. Detailed estimation procedures are the subject of chapter 5.

Theoretical background, as well as the working of PBS, has been documented here. It serves as a ready reference and future guideline. Final consumption expenditures of government and GFCF have been covered in detail.

## **1.13 Gross National Income (GNI)**

As mentioned above, GDP can be calculated and understood as the sum of all primary incomes stemming from domestic production. The taxes (*less subsidies*) on production then are interpreted as primary income distributed to the government. If GDP is enhanced by the balance of primary income from the rest of the world then the result is GNI. The primary

income from the rest of the world includes compensation of employees, cross-border property income i.e. interest, distributed income of corporations including rents, reinvested earnings on foreign direct investment, investment income attributable to insurance policyholders, income from investment certificates, taxes on production and imports and subsidies.

The rest of the document is organized as follows. Chapter 2 sheds light on the composition, sources, and methods of GVA compilation of agriculture, forestry and fishing whereas Chapter 3 documents the details relating to producing industries e.g. mining, manufacturing, water supply, electricity, gas and construction. Services industries are the subject of the 4<sup>th</sup> chapter. Chapter 5 discusses the expenditure on GDP.

**Table 1.1: Comparison of Gross Domestic Product in Base Years 2015-16 and 2005-06  
(Rs. Million)**

S. No	Sector/Industry	Base 2015-16	Base 2005-06		% Change		% Share	
		At 2015-16 Prices	Year 2005-06	Col (3/4)	Col (3/5)	2015-16	2005-06	
1	2	3	4	5	6	7	8	9
<b>A</b>	<b>Agriculture, Forestry and Fishing (1 to 4)</b>	<b>7,306,957</b>	<b>6,749,966</b>	<b>1,775,346</b>	<b>8.3</b>	<b>311.6</b>	<b>24</b>	<b>23</b>
	<b>1. Crops (i+ii+iii)</b>	2,497,153	2,620,390	766,274	-4.7	225.9	8.2	9.9
	i) Important Crops	1,462,455	1,718,029	449,025	-14.9	225.7	4.8	5.8
	ii) Other Crops	912,388	739,842	256,777	23.3	255.3	3	3.3
	iii) Cotton Ginning	122,310	162,519	60,472	-24.7	102.3	0.4	0.8
	<b>2. Livestock</b>	4,531,885	3,846,646	930,842	17.8	386.9	14.9	12.1
	<b>3. Forestry</b>	161,737	170,706	35,067	-5.3	361.2	0.5	0.5
	<b>4. Fishing</b>	116,182	112,223	43,163	3.5	169.2	0.4	0.6
<b>B</b>	<b>Industrial Activities (1 to 4)</b>	<b>5,939,635</b>	<b>5,308,368</b>	<b>1,616,157</b>	<b>11.9</b>	<b>267.5</b>	<b>19.5</b>	<b>20.9</b>
	<b>1. Mining and Quarrying</b>	691,258	652,814	254,345	5.9	171.8	2.3	3.3
	<b>2. Manufacturing (i+ii+iii)</b>	3,668,778	3,512,556	1,065,323	4.4	244.4	12	13.8
	i) Large Scale	2,841,709	2,801,169	903,323	1.4	214.6	9.3	11.7
	ii) Small Scale	494,949	406,648	89,116	21.7	455.4	1.6	1.2
	iii) Slaughtering	332,121	304,739	72,884	9	355.7	1.1	0.9
	<b>3. Electricity, Gas and Water supply</b>	681,030	541,909	110,109	25.7	518.5	2.2	1.4
	<b>4. Construction</b>	898,569	601,089	186,380	49.5	382.1	2.9	2.4
<b>A+B</b>	<b>Commodity Producing Activities</b>	<b>13,246,592</b>	<b>12,058,334</b>	<b>3,391,503</b>	<b>9.9</b>	<b>290.6</b>	<b>43.4</b>	<b>44</b>
<b>C</b>	<b>Services (1 to 10)</b>	<b>17,261,613</b>	<b>15,343,961</b>	<b>4,324,274</b>	<b>12.5</b>	<b>299.2</b>	<b>56.6</b>	<b>56</b>
	1. Wholesale & Retail trade	5,380,330	4,613,457	1,393,516	16.6	286.1	17.6	18.1
	2. Transportation & Storage	3,448,607	3,208,729	830,209	7.5	315.4	11.3	10.8
	3. Accommodation and Food Services Activities (Hotels & Restaurants)	425,666	491,396	129,551	-13.4	228.6	1.4	1.7
	4. Information and Communication	610,952	457,383	185,088	33.6	230.1	2	2.4
	5. Financial and Insurance Activities	530,185	544,301	282,919	-2.6	87.4	1.7	3.7
	6. Real Estate Activities (OD)	1,735,453	1,506,385	504,743	15.2	243.8	5.7	6.5
	7. Public Administration and Social Security (General Government)	1,458,465	1,420,962	305,658	2.6	377.2	4.8	4
	8. Education	954,556	599,020	130,395	59.4	632	3.1	1.7
	9. Human Health and Social Work Activities	419,645	373,880	83,696	12.2	401.4	1.4	1.1
	10. Other Private Services	2,297,754	2,128,448	478,499	8	380.2	7.5	6.2
<b>D</b>	<b>GDP {Total of GVA (A+B+C)}</b>	<b>30,508,205</b>	<b>27,402,295</b>	<b>7,715,777</b>	<b>11.3</b>	<b>295.4</b>	<b>100</b>	<b>100</b>
	Taxes	2,442,880	1,901,743	573,718				
	Subsidies	226,036	228,405	73,335				
	<b>GDP at mp (GVA+T-S)</b>	<b>32,725,049</b>	<b>29,075,633</b>	<b>8,216,160</b>				
	Net Primary Income (NPI)	1,492,194	1,782,860	149,901				
	<b>Gross National Income</b>	<b>34,217,243</b>	<b>30,858,493</b>	<b>8,366,061</b>				
	Population (million no.)	200.19	193.56	155.37				
	<b>Per Capita Income</b>	<b>170,924</b>	<b>159,426</b>	<b>53,846</b>				
	Exchange Rate (1US \$ = Rs)	104.24	104.24	59.86				
	Per capita GNI (MP) (US \$)	1,640	1,529	900				

Note: Industry-wise figures of gross value added reported above may differ from those given in text described under respective industries i.e. chapters 2, 3 and 4, due to FISIM adjustment.

**Table 1.2: Comparison of Gross Domestic Product and Sectoral Shares, Base Year 2015-16 and 2005-06 (Rs. Million)**

S. No	Sector/Industry	2005-06		2015-16	
		Value	% Share	Value	% Share
1	2	3	4	5	6
<b>A</b>	<b>Agricultural Sector ( 1 to 4 )</b>	<b>1,775,346</b>	<b>23</b>	<b>7,306,957</b>	<b>24</b>
	1. Crops ( i+ii+iii)	766,274	9.9	2,497,153	8.2
	i) Important Crops	449,025	5.8	1,462,455	4.8
	ii) Other Crops	256,777	3.3	912,388	3
	iii) Cotton Ginning	60,472	0.8	122,310	0.4
	2. Livestock	930,842	12.1	4,531,885	14.9
	3. Forestry	35,067	0.5	161,737	0.5
	4. Fishing	43,163	0.6	116,182	0.4
<b>B</b>	<b>Industrial Sector ( 1 to 4 )</b>	<b>1,616,157</b>	<b>20.9</b>	<b>5,939,635</b>	<b>19.5</b>
	1. Mining and Quarrying	254,345	3.3	691,258	2.3
	2. Manufacturing ( i+ii+iii)	1,065,323	13.8	3,668,778	12
	i) Large Scale	903,323	11.7	2,841,709	9.3
	ii) Small Scale	89,116	1.2	494,949	1.6
	iii) Slaughtering	72,884	0.9	332,121	1.1
	3 Electricity, gas, and water supply	110,109	1.4	681,030	2.2
	4. Construction	186,380	2.4	898,569	2.9
<b>A+B</b>	<b>Commodity Producing Sectors (A+B)</b>	<b>3,391,503</b>	<b>44</b>	<b>13,246,592</b>	<b>43.4</b>
<b>C</b>	<b>Services Sectors ( 1 to 6)</b>	<b>4,324,274</b>	<b>56</b>	<b>17,261,613</b>	<b>56.6</b>
	1. Wholesale & Retail trade	1,393,516	18.1	5,380,330	17.6
	2. Transportation & Storage	830,209	10.8	3,448,607	11.3
	3. Accommodation and Food Services Activities (Hotels & Restaurants)	129,551	1.7	425,666	1.4
	4. Information and Communication	185,088	2.4	610,952	2
	5. Financial and Insurance Activities	282,919	3.7	530,185	1.7
	6. Real Estate Activities (OD)	504,743	6.5	1,735,453	5.7
	7. Public Administration and Social Security (General Government)	305,658	4	1,458,465	4.8
	8. Education	130,395	1.7	954,556	3.1
	9. Human Health and Social Work Activities	83,696	1.1	419,645	1.4
	10. Other Private Services	478,499	6.2	2,297,754	7.5
<b>D</b>	<b>GDP {Total of GVA (A+B+C)}</b>	<b>7,715,777</b>	<b>100</b>	<b>30,508,205</b>	<b>100</b>

**Table 1.3: Comparison of Gross Domestic Product and within Sectoral Shares Base Year 2015-16 and 2005-06 (Rs. Million)**

1	Sector/Industry	Base 2005-06		Base 2015-16	
		Estimate	% Share	Estimate	% Share
2	3	4	5	6	
<b>A</b>	<b>Agricultural Sector ( 1 to 4 )</b>	<b>1,775,346</b>	<b>100.0</b>	<b>7,306,957</b>	<b>100.0</b>
	1. Crops ( i+ii+iii)	766,274	43.16	2,497,153	34.18
	i) Important Crops	449,025	25.29	1,462,455	20.02
	ii) Other Crops	256,777	14.46	912,388	12.49
	iii) Cotton Ginning	60,472	3.41	122,310	1.67
	2. Livestock	930,842	52.43	4,531,885	62.02
	3. Forestry	35,067	1.98	161,737	2.21
	4. Fishing	43,163	2.43	116,182	1.59
<b>B</b>	<b>Industrial Sector ( 1 to 4 )</b>	<b>1,616,157</b>	<b>100.0</b>	<b>5,939,635</b>	<b>100.0</b>
	1. Mining and Quarrying	254,345	15.74	691,258	11.64
	2. Manufacturing ( i+ii+iii)	<u>1,065,323</u>	<u>65.92</u>	<u>3,668,778</u>	<u>61.77</u>
	i) Large Scale	903,323	55.89	2,841,709	47.84
	ii) Small Scale	89,116	5.51	494,949	8.33
	iii) Slaughtering	72,884	4.51	332,121	5.59
	3 Electricity, gas, and water supply	110,109	6.81	681,030	11.47
	4. Construction	186,380	11.53	898,569	15.13
<b>A+B</b>	<b>Commodity Producing Sectors</b>	<b>3,391,503</b>		<b>13,246,592</b>	
<b>C</b>	<b>Services Sectors ( 1 to 6)</b>	<b>4,324,274</b>	<b>100.0</b>	<b>17,261,613</b>	<b>100.0</b>
	1. Wholesale & Retail trade	1,393,516	32.23	5,380,330	31.17
	2. Transportation & Storage	830,209	19.20	3,448,607	19.98
	3. Accommodation and Food Services Activities (Hotels & Restaurants)	129,551	3.00	425,666	2.47
	4. Information and Communication	185,088	4.28	610,952	3.54
	5. Financial and Insurance Activities	282,919	6.54	530,185	3.07
	6. Real Estate Activities (OD)	504,743	11.67	1,735,453	10.05
	7. Public Administration and Social Security (General Government)	305,658	7.07	1,458,465	8.45
	8. Education	130,395	3.02	954,556	5.53
	9. Human Health and Social Work Activities	83,696	1.94	419,645	2.43
	10. Other Private Services	478,499	11.07	2,297,754	13.31
<b>D</b>	<b>GDP {Total of GVA (A+B+C)}</b>	<b>7,715,777</b>		<b>30,508,205</b>	

**Table 1.4: GFCF comparison, Private, Public and General Government Sectors Base Year 2015-16 & 2005-06 (Rs. Million)**

Sr. No.	Industries/ Sectors	2015-16 Base	2015-16 (2005-06 Base)	2005-06 Base	Change (%)	
		At 2015-16 prices		At 2005-06 prices	Col. (3 / 4)	Col. (3 / 5)
1	2	3	4	5	6	7
	<b>Total GFCF (A+B+C)</b>	<b>4,657,149</b>	<b>4,095,630</b>	<b>1,456,889</b>	<b>13.71</b>	<b>219.66</b>
<b>A.</b>	<b>Private Sector</b>	<b>3,537,220</b>	<b>2,995,889</b>	<b>1,109,205</b>	<b>18.07</b>	<b>218.9</b>
<b>B.</b>	<b>Public Sector</b>	<b>252,053</b>	<b>238,143</b>	<b>149,606</b>	<b>5.84</b>	<b>68.48</b>
<b>C.</b>	<b>General Government</b>	<b>867,876</b>	<b>861,598</b>	<b>198,078</b>	<b>0.73</b>	<b>338.15</b>
	<b>Private &amp; Public Sector (A+B)</b>	<b>3,789,273</b>	<b>3,234,032</b>	<b>1,258,811</b>	<b>17.17</b>	<b>201.02</b>
1	Agriculture, forestry and fishing	904,250	850,088	254,796	6.37	254.89
2	Mining and quarrying	122,166	105,418	28,962	15.89	321.81
3	Manufacturing	723,845	485,495	287,117	49.09	152.11
	i. Large Scale	633,494	456,222	281,328	38.86	125.18
	ii. Small Scale (including Slaughtering)	90,351	29,273	5,789	208.65	1,460.77
4	Electricity, gas, and water supply	201,651	178,264	54,765	13.12	268.21
5	Construction	64,882	49,009	20,972	32.39	209.37
6	Wholesale and retail trade	202,799	63,419	18,089	219.78	1,021.12
7	Accommodation and food service activities (Hotels and restaurants)	74,922	14,043	4,005	433.52	1,770.71
8	Transportation and storage	416,691	381,876	162,452	9.12	156.5
9	Information and communication	158,036	142,322	138,387	11.04	14.2
10	Financial and insurance activities	56,520	57,775	22,238	-2.17	154.16
11	Real estate activities (OD)	523,819	577,278	190,127	-9.26	175.51
12	Public administration and social security	750,084	750,084	174,829	-	329.04
13	Education	179,991	119,795	26,824	50.25	571.01
14	Human health and social work activities	92,531	115,548	27,734	-19.92	233.64
15	Other Private Services	184,962	205,216	45,592	-9.87	305.69

**Table 1.5: GFCF comparison Private Sector Base Year 2015-16 & 2005-06 (Rs. Million)**

Sr. No.	Industries/ Sectors	2015-16 Base	2015-16 (2005-06 Base)	2005-06 Base	Change (%)	
		At 2015-16 prices		At 2005-06 prices	Col. (3 / 4)	Col. (3 / 5)
1	2	3	4	5	6	7
<b>A.</b>	<b>Private Sector</b>	<b>3,537,220</b>	<b>2,995,889</b>	<b>1,109,205</b>	<b>18.07</b>	<b>218.9</b>
1	Agriculture, forestry and fishing	904,045	849,943	254,746	6.37	254.88
	Crops	176,622	172,352	84,348	2.48	109.4
	Cotton Ginning	1,042				
	Livestock	689,165	673,954	168,657	2.26	308.62
	Forestry	1,392	687	252	102.57	452.38
	Fishing	35,824	2,950	1,489	1,114.52	2,305.91
2	Mining and quarrying	94,113	77,365	22,829	21.65	312.25
3	Manufacturing	722,512	483,781	283,508	49.35	154.85
	i. Large Scale	632,161	454,508	277,719	39.09	127.63
	ii. Small Scale (including Slaughtering)	90,351	29,273	5,789	208.65	1,460.77
4	Electricity, gas, and water supply	46,543	23,156	3,307	101	1,307.49
5	Construction	59,704	43,831	14,597	36.21	309.02
6	Wholesale and retail trade	202,799	63,419	18,089	219.78	1,021.12
7	Accommodation and food service activities (Hotels and restaurants)	74,922	14,043	4,005	433.52	1,770.71
8	Transportation and storage	389,786	354,972	110,281	9.81	253.45
9	Information and communication	129,729	128,245	110,456	1.16	17.45
10	Financial and insurance activities	49,556	50,811	20,360	-2.47	143.4
11	Real estate activities (OD)	523,819	577,278	190,127	-9.26	175.51
12	Education	99,588	39,542	10,144	151.86	881.77
13	Human health and social work activities	55,142	84,287	21,165	-34.58	160.53
14	Other Private Services	184,962	205,216	45,592	-9.87	305.69

**Table 1.6: GFCF comparison Public and General Government Sectors Base Year 2015-16 & 2005-06 (Rs. Million)**

Sr. No.	Industries/ Sectors	2015-16 Base	2015-16 (2005-06 Base)	2005-06 Base	Change (%)	
		At 2015-16 prices		At 2005-06 prices	Col. (3 / 4)	Col. (3 / 5)
1	2	3	4	5	6	7
	<b>Public &amp; General Govt. (B+C)</b>	<b>1,119,929</b>	<b>1,099,741</b>	<b>347,684</b>	<b>1.84</b>	<b>222.11</b>
<b>B.</b>	<b>Public Sector (Autonomous &amp; Semi-Autonomous Bodies)</b>	<b>252,053</b>	<b>238,143</b>	<b>149,606</b>	<b>5.84</b>	<b>68.48</b>
1	Agriculture, forestry and fishing	205	145	50	41.38	310
2	Mining and quarrying	28,053	28,053	6,133	-	357.41
3	Manufacturing (Large scale)	1,333	1,714	3,609	-22.23	-63.06
4	Electricity, gas, and water supply	155,108	155,108	51,458	-	201.43
5	Construction	5,178	5,178	6,375	-	-18.78
6	Transportation and storage	26,905	26,904	52,171	-	-48.43
	a. Railways	5,825	5,825	4,754	-	22.53
	b. Post Offices & PTCL	-	13,644	15,232	-100	-100
	c. Others	21,080	7,435	32,185	183.52	-34.5
7	Information and communication	28,307	14,077	27,932	101.09	1.34
8	Financial and insurance activities	6,964	6,964	1,878	-	270.82
<b>C.</b>	<b>General Government</b>	<b>867,876</b>	<b>861,598</b>	<b>198,078</b>	<b>0.73</b>	<b>338.15</b>
	i. Federal	235,406	229,128	37,307	2.74	531
	ii. Provincial	527,461	527,461	122,774	-	329.62
	iii. District Governments	105,009	105,009	37,997	-	176.36
	<b>General Government (By industries)</b>	<b>867,876</b>	<b>861,598</b>	<b>198,078</b>	<b>0.73</b>	<b>338.15</b>
	Public administration and defence; compulsory social security	750,084	750,084	174,829	-	329.04
	Education	80,403	80,253	16,680	0.19	382.03
	Human health and social work activities	37,389	31,261	6,569	19.6	469.17

**Table 1.7: Comparison of Expenditure on GDP base 2015-16 and 2005-06 for the year 2015-16 and 2005-06 (Rs. Million)**

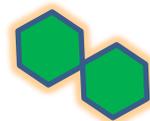
Description	2015-16 Base	2015-16 (2005-06 Base)	2005-06 Base	Change (%)		Diff. Col. (2-3)
	At 2015-16 prices		At 2005-06 prices	Col. (2/3)	Col. (2/4)	
1	2	3	4	5	6	7
Household final consumption expenditure	26,106,974	23,266,454	6,379,481	12.21	309.23	2,840,520
NPISH final consumption expenditure	296,722					296,722
General government final consumption expenditure	3,471,786	3,287,930	857,461	5.59	304.89	183,856
Gross fixed capital formation	4,657,149	4,095,630	1,456,889	13.71	219.66	561,519
Changes in inventories	523,601	465,210	131,459	12.55	298.3	58,391
Valuables	34,231					34,231
Exports of goods and services	2,859,095	2,659,178	1,161,269	7.52	146.2	199,917
Less imports of goods and services	5,224,509	4,698,769	1,770,399	11.19	195.1	525,740
Expenditure on gross domestic product (at MP)	32,725,049	29,075,633	8,216,160	12.55	298.3	3,649,416

**Table 1.8: Comparison of Expenditure on GDP base 2015-16 and 2005-06 for the year 2015-16 and 2005-06 (Rs. Million)**

Description	2015-16 Base	2015-16 (2005-06 Base)	2005-06 Base	% share		
	At 2015-16 prices		At 2005-06 prices	2015-16 (15- 16 base)	2015-16 (2005- 06 base)	2005-06
1	2	3	4	7	8	9
Household final consumption expenditure	26,106,974	23,266,454	6,379,481	79.78	80.02	77.65
NPISH final consumption expenditure	296,722			0.91	-	-
General government final consumption expenditure	3,471,786	3,287,930	857,461	10.61	11.31	10.44
Gross fixed capital formation	4,657,149	4,095,630	1,456,889	14.23	14.09	17.73
Changes in inventories	523,601	465,210	131,459	1.6	1.6	1.6
Valuables	34,231			0.1	-	-
Exports of goods and services	2,859,095	2,659,178	1,161,269	8.74	9.15	14.13
Less imports of goods and services	5,224,509	4,698,769	1,770,399	15.96	16.16	21.55
Expenditure on gross domestic product (at MP)	32,725,049	29,075,633	8,216,160	100	100	100

# CHAPTER 2

## Agriculture, Forestry and Fishing



**AGRICULTURE, FORESTRY AND FISHING****2.1 Introduction**

Allah has bestowed Pakistan with four seasons: a cool, dry winter from December through February; a hot, dry spring from March through May; the summer rainy season, or southwest monsoon period, from June through September; and the retreating monsoon period of October and November. The onset and duration of these seasons vary somewhat according to location. Pakistan's agriculture sector comprises Crops, Livestock, Forestry and Fishing. Crops are further classified into Important Crops and Other Crops. Important Crops include Wheat, Rice, Cotton, Sugarcane and Maize. While, the "other crops" comprise of various pulses, vegetables and fruits. The agriculture industry in Pakistan not only plays a vital role in the development of the economy but also has a significant contribution to the country's Gross Domestic Product. It is also the main source of employment engaged directly or indirectly with agriculture. At the same time, it is the key source of supply of raw material to the industrial sector.

**2.1.1 Conceptual Clarification Agriculture**

In Pakistan, crops and livestock exclusively fall under the private households of the farmers. The sector is informal and the activities of crop production, as well as livestock production, are carried out simultaneously. Therefore, the establishment approach is not applied to crops and livestock. It is a great advantage that in Pakistan different kinds of inputs can easily and fully be assigned to either crop production or livestock as most of the farms have both kinds of activities. There are almost no inputs that may be considered as overhead costs.

**2.2 Crops**

To assess the latest changes in Agriculture during the base year 2005-06 to the base year 2015-16, the harvest prices (basic prices) are applied for the valuation of output and updating the ratios of inputs to outputs. The reason for updating the prices in the base year is that harvest prices are not available on annual basis. However, crop-wise production on annual basis is available from authentic, reliable provincial Crop Reporting Services (CRS). Secondly, the information on inputs of crops is also not available on annual basis. Hence, input-output ratios are updated in the base year and used in the subsequent years. For this purpose, a study on "Agricultural Input Output 2016-17" was conducted (detail in following paras). Production of plant nurseries has been estimated from the field survey conducted in 2016-17. Cotton ginning has also been estimated through Census conducted during 2016-17. Crops have been categorized into three groups namely, important crops (wheat, cotton, rice, sugarcane and maize), other crops (remaining crops such as fruits, vegetables, oilseeds etc. and Nurseries) and cotton ginning (including cotton ginning & own-account capital formation).

**2.2.1 Coverage**

The groups 011, 012 and 013 of Division 01 "Crop and animal production, hunting and related activities" mentioned in Pakistan Standard Industrial Classification 2010 have been covered in this sub-sector. Nurseries are covered under group 013 and cotton ginning under group 016 respectively. PBS has prepared PSIC 2010, rev. 4 to implement the internationally agreed latest version of the International Standard Industrial Classification (ISIC) which is now ISIC rev.4. According to the PSIC 2010, crop production is covered under codes 011, 012, 013 and partly 016.

### **2.2.2 Data**

In general, the data situation of crop production in Pakistan is very good. Data on the volume of output of crops (except flowers) are provided by the Provincial Crop Reporting System. Data on the volume of inputs such as water, fertilizer and seeds are widely available from different sources. The data on the increase in prices are available from Price Statistics. The missing links are the prices of aforementioned outputs and inputs and prices as well as volumes of the remaining inputs such as lubricants, energy and the likes as well as output and input of flower production. The study and underlying survey have bridged the missing links. The overall idea is to have comprehensive data for the base year 2015-16 which allowed estimating overall production and value-added (output minus inputs) for subsequent years till another survey or study to update the underlying ratios and assumptions for the next rebasing / revision.

### **2.2.3 Agriculture Input-Output Study**

To rebase Crops and Livestock, a Study “Agriculture Input-output 2016-17” has been conducted. Based on this study, prices of Crops, Livestock, Inputs of Crops and other Input-Output ratios have been updated.

From each district, five (05) villages were selected and from each village, six (06) farmers were selected as primary sampling units to get the information regarding Crops and Livestock by providing due representation for large, medium and small farmers. A questionnaire was developed by the Agriculture and Trade Section of the National Accounts Wing and the data was collected by the PBS’ Regional / Field Offices. Overall around 3,600 questionnaires were shared with the respondents. Data from 2,970 farmers were collected during the study. For all crops and each age category of animals, separate prices have been collected. Sales and purchases of animals for breeding and slaughtering were asked separately from a price perspective as both categories have different price mechanisms. Prices of livestock products have been collected for 2015-16 and 2016-17. To check the consistency of study results, data on monthly average wholesale and retail prices for the years 2015-16, regarding agricultural commodities, for important markets of Pakistan, were collected from Crop Reporting Services (CRS), Agriculture Departments, Agriculture Marketing Information Services (AMIS) Punjab, Agriculture Policy Institute (API) and Price Statistics Section of PBS. The prices of crops with insignificant production and for which prices were not reported in this survey have been imputed keeping in view the inflation of similar crops during the period 2005-06 to 2015-16.

### **2.2.4 Area and Production of Crops 2015-16**

The crop area is being provided by Provincial Crop Reporting Services. They provide three estimates for important crops such as crop area (first estimate), crop area and provisional production (second estimate) and final estimate based on final area and production. The province-wise area and production for all crops, pulses, vegetables, fruits, condiments, oilseeds and other crops are available. However, this system does not cover the production of flowers. It has been adopted from the study conducted during 2008. The area and production of important crops are given below in Table 2.1. Detail is annexed at Annexures I & II.

**Table 2.1: Area and Production of Important Crops 2015-16**

Important crops	Area (000 hectares)			Production (000 tonnes)		
	2005-06	2015-16	% change	2005-06	2015-16	% change
1	2	3	4	5	6	7
Wheat	8,448	9,224	9.2	21,277	25,633	20.5
Maize	1,042	1,191	14.3	3,110	5,271	69.5
Rice	2,621	2,739	4.5	5,547	6,801	22.6
Sugarcane	907	1,131	24.7	44,666	65,482	46.6
Cotton	3,103	2,902	-6.5	6,643	5,061	-23.8

### 2.2.5 Production of Flowers

The volume of production of flowers and their value is not available. Pakistan Bureau of Statistics has estimated the output by utilizing the principle that supply matches use. Supply, in principle, is domestic production plus imports and use is consumption plus exports.

$$Production + Imports = Consumption + Exports$$

This approach decomposes the consumption of flowers into *Industrial Consumption* and *Consumption of Private Households*. Two separate surveys were carried out to cover both components in 2008. These surveys served as the basis for the 2015-16 valuation. In this regard, the *Net Exports* have been taken from the Trade Section of PBS while Household Use is derived from Household Integrated Income and Consumption Survey (HIICS) (2015-16) data. Inputs from horticultural experts were also sought. For an estimate, three groups have been formed. Export / Import of flowers, Industrial Consumption and Household Consumption were estimated separately. Summary results are given below in Table 2.2.

**Table 2.2: Expenditure on flowers 2015-16 (Rs in Million)**

Kind of expenditure	2005-06	2015-16	% change
1	2	3	4
Net export	3.4	31.9	838.2
Industrial use	133.6	738.7	452.9
Household use	1,883.30	9,677.30	413.8
<b>Total</b>	<b>2,020.30</b>	<b>10,448.00</b>	<b>417.2</b>

### 2.2.6 Output of Crops

The output of crops is the product of production and harvest prices. Harvest prices are available at the provincial level through the study results and crop-wise production is received from Provincial CRS (Details is at Annexure-III). The group-wise output value of crops for the year 2015-16 is given in table 2.3 below. By-products have been included in the crops to which these belong. The figures for the flowers have been taken from the study. Own-account capital formation, according to the SNA, is also an output. For the base year 2015-16, Rs.46, 626 million is included in the results. Details may be seen in chapter 5 which pertains to the GFCF component. The detail of output of crops is annexed at Annexure-IV.

**Table 2.3: Group-wise output value of crops 2015-16 (Rs. in Million)**

Crop/Item	Punjab	Sindh	KPK	Baluchistan	Pakistan	Share (%)	
						2015-16	2005-06
1	2	3	4	5	6	7	8
Cereals	1,068,978	203,246	102,222	58,287	1,432,733	44.3	42.9
Leguminous (beans & pulses)	30,012	2,451	1,905	4,492	38,860	1.2	1.9
Oil seeds	20,146	6,623	1,175	955	28,898	0.9	1.3
Vegetables	121,893	43,754	21,049	26,860	213,556	6.6	7.2
Sugarcane	227,078	88,449	30,714	392	346,633	10.7	7
Tobacco	3,676	30	12,434	183	16,323	0.5	0.4
Cotton	244,675	128,874	47	3,525	377,120	11.7	19.4
Fodder	427,786	31,934	16,997	12,359	489,076	15.1	8.6
Flowers	6,269	3,134	836	209	10,448	0.3	0.2
Others	1	0	104	0	104	0	0
Fruits	111,809	33,644	24,745	79,521	249,719	7.7	10.5
Spices	10,586	15,365	4,302	1,996	32,249	1	0.8
<b>TOTAL OUTPUT</b>	<b>2,272,907</b>	<b>557,503</b>	<b>216,530</b>	<b>188,779</b>	<b>3,235,719</b>	<b>100</b>	<b>100</b>
<b>Share (%)</b>	<b>70.2</b>	<b>17.2</b>	<b>6.7</b>	<b>5.8</b>	<b>100</b>		

### 2.2.7 Intermediate Consumption

Intermediate consumption for crops consists of the value of seed, fertilizer, pesticides, irrigation water and ploughing & planking. Local transport charges on seed, fertilizer and pesticide have also been included in the inputs. Losses of crops during the transportation of output from fields to home or market have also been taken as intermediate consumption.

#### a. Valuation of Seed

The average use of seed per acre and its price varies from region to region due to soil fertility and climatic conditions. Data have been collected from farmers in selected areas of four provinces through the agriculture input-output study. The seed of perennial fruits has not been taken into account as it becomes mature for production after a few years. The rate of seed per unit (value) and quantity of seed per hectare (volume) is the indicator of the cost of seed used per hectare. The area of each crop is available from the Provincial Crop Reporting Systems. The value of the seed used has been estimated from these estimates. Detail is annexed at Annexure V & VI.

#### b. Valuation of off-take of Fertilizer

The data on the off-take of fertilizer and its value is collected from National Fertilizer Development Centre, Planning, Development and Special Initiative Division, Islamabad. The province-wise details of fertilizer off-take along with value are given below in Table 2.4.

**Table 2.4: Province-wise Off-Take of Fertilizer during 2015-16**

Description	Punjab	Sindh	KPK	Baluchistan	Pakistan
1	2	3	4	5	6
<b>Quantity (000' nutrients Tones)</b>	2,503	947	174	76	<b>3,700</b>
<b>Value (Million Rs.)</b>	229,580	86,861	15,960	6,971	<b>339,371</b>

**c. Valuation of pesticides used**

The data on the use of pesticides have been taken from the “Department of Plant Protection, Karachi” and the Economic Survey (2015-2016).

**Table 2.5: Consumption of pesticides (Quantity = M. Tons, Value = Rs. Million)**

Value of Pesticides					Quantity in tons value Rs. in Million	
1	2	3	4	5	6	7
Year	Imports consumed		Prod. consumed		Total consumption	
	Quantity	value	Quantity	value	Quantity	value
<b>2015-16</b>	22,187	20,385	124,481	7,318	146,668	27,703

**d. Valuation of irrigation water**

As no direct valuation is available, indirect estimates through the expenditure approach have been prepared. Three separate strata are formed for the purpose i.e., canal water, tube wells run by electricity and diesel.

**i. Canal water**

Different options were considered. The revenues collected by Provincial Boards of Revenues for irrigation water charges have been taken and used as the value of the water. For unit value pricing quantity received from IRSA was used.

**ii. Tube well (Electrical)**

The number of electrical tube wells running in the private sector has been taken from the annual publication “Agricultural Statistics of Pakistan” Ministry of food security and research. Electricity consumed by the agriculture sector has been taken from the Pakistan Energy Year Book 2017, published by the Hydrocarbon Development Institute of Pakistan. The rates of electricity for agriculture have been taken from the Economic Survey of Pakistan. (Total electricity consumed has been broken into public and private tube wells run by electricity, according to their numbers).

**iii. Tube well (Diesel)**

Consumption of light-speed diesel oil for agriculture has been taken from the Energy Year Book 2017 along with its price. The overall valuation of canal and tube well water for the year 2015-16 is shown in Table-2.6.

**Table 2.6: Valuation of Canal and Tube Well Water 2015-16**

Description	Pakistan
1	2
1. Canal Water (Million Acre Feet, MAF)	89
2. Private tube well Water (MAF)	44
3. Value of Canal Water (Million Rs.)*	2,139
4. Value of tube well Water (Million Rs.) Electricity-driven	81,081
5. Value of tube well Water (Million Rs.) Light diesel oil (LDO)	1,143
6. Total value of Tube well Water (Million Rs) (4+5)	82,224
<b>Total Value Million Rs. ( 3+4+5)</b>	<b>84,363</b>
<b>Unit Value of Canal Water (Rs. / AF)</b>	24
<b>Unit Value of Private tube well Water (Rs. / AF)</b>	2,233

\*Source: Indus River System Authority (IRSA), Government of Pakistan, Islamabad.

#### e. Ploughing and Planking cost

The results used for ploughing and planking coefficients are based on the study. The results have been derived by multiplying the number of ploughs for each crop and the rate of ploughing/ acre for that province. To update the cost of ploughing and planking, some adjustments have been made in light of the studies conducted by the Agricultural Policy Institute (API) and Agriculture Marketing Information Service (AMIS) Punjab. The data for those crops which could not be covered in the survey have been imputed based on similar crops/ fruits/ vegetables for the base year 2015-16. Detail is annexed at Annexure VII & VIII.

#### f. Transport charges

The prices used for fertilizer, pesticides, and seeds do not include any cost of local transport. Thus, some transport charges have been estimated, separately. A uniform rate estimated from the Agriculture Input-Output Study has been applied on fertilizers, pesticides, and seed values to reach market prices.

#### g. Wastage charges

Earlier, a rate of 0.5% was applied to the gross output value of all crops. Efforts were made to compile crop-wise fresh wastage charges, however, it was not possible due to limited data availability. Therefore, the same rate has been applied in the base year 2015-16 on the advice of experts from the Agriculture Census Wing of PBS.

### 2.2.8 Effect of Rebasing of Crops

It is the difference between output and intermediate consumption, as outlined in the previous paras. The present official National Accounts figures of the Agriculture Sector are based on the study results and have been more accurately calculated for the base year 2015-16. Two comparisons of special interest are:

- What is the revised growth of production and value-added during the period between the two base years 2005-06 and 2015-16?
- What is the discrepancy between the extrapolated figures and the currently updated ones for the year 2015-16?

The final figures reflect an increase of 235% when compared with 2005-06 figures (question “a” above). It is observed that based on 2005-06, the value of GVA for the year 2015-16 is over-

estimated by about Rs.86 billion (question “b” above). The details are given in the following Table 2.7.

**Table 2.7: Comparison of output and GVA of Crops only for 2005-06 and 2015-16 as per Base Years 2005-06 and 2015-16 (Rs.in Million)**

Description	Base 2005-06		Base 2015-16	% Change	
	Results 2005-06	Results 2015-16 at prices of 2015-16		Column 4 over 2	Column 4 over 3
1	2	3	4	5	6
<b>A. Output</b>	<b>947,526</b>	<b>3,150,704</b>	<b>3,235,719</b>	<b>241.5</b>	<b>2.7</b>
<b>B. Inputs &amp; other charges</b>	<b>237,169</b>	<b>683,312</b>	<b>854,710</b>	<b>260.4</b>	<b>25.1</b>
i. Seed	49,664	161,605	178,225	258.9	10.3
ii. Fertilizer	98,796	322,807	339,371	243.5	5.1
iii. Pesticides	5,906	61,756	27,703	369.1	-55.1
iv. Water	13,124	33,465	84,363	542.8	152.1
v. Ploughing & Planking	62,732	83,061	200,411	219.5	141.3
vi. Transport charges	1,805	3,370	6,371	252.9	89
vii. Wastage	4,738	15,754	16,177	241.5	2.7
viii. Inputs for Flowers	404	1,494	2,090	417.1	39.8
<b>C. GVA(A-B)</b>	<b>710,357</b>	<b>2,467,393</b>	<b>2,381,009</b>	<b>235.2</b>	<b>-3.5</b>

Table 2.7 indicates an increase of 235% in the value added of crop production in 2015-16 as compared to 2005-06.. This change reflects change in volume as well as in prices (inflation).

### 2.2.9 Extrapolation and Deflators of Crops

The output of crops has been extrapolated at constant prices using data on crops’ area and production, which is provided by the provincial crop reporting services and aggregated at the Agricultural Statistics Section of the PBS. The current output is compiled using crop-specific WPI deflators while data on some inputs e.g. fertilizer off-take, pesticides, water, etc. are provided by the sources annually, the remaining inputs seeds, ploughing are estimated by using updated input-output ratios at constant prices in 2015-16 rebasing. The intermediate consumption at constant prices is converted into current prices by using relevant WPIs. The GVA is the difference between output at basic prices and intermediate consumption at the purchaser’s prices.

### 2.3 Nurseries

A nursery is a place where plants are grown for transplanting. According to PSIC 2010, it falls under class 0130. It was not part of previous estimates of agriculture. A study on the input/output structure of plant nurseries has been conducted for the base year 2015-16. This being an informal activity was estimated by developing a sampling frame of nurseries in urban areas of the country by deploying the field staff of the Regional and Field offices of PBS. A sample of 236 nurseries was selected out of 2,990 nurseries to estimate the output and intermediate consumption. Due to limited resources, it was not possible to conduct this survey on annual basis.

**Table 2.8: Gross Value Added of Nurseries 2015-16 (Rs. Million)**

Description	REGION					
	ICT	KPK	PUNJAB	SINDH	BALUCHISTAN	PAKISTAN
1	2	3	4	5	6	7
OP	814	2,436	3,378	1,144	171	<b>7,944</b>
IC	394	1,337	1,439	417	113	<b>3,699</b>
GVA	421	1,100	1,939	727	58	<b>4,245</b>

### 2.3.1 Extrapolation and Deflators

Keeping in view the informal nature of the activity (nurseries) and data limitations, the value-added is extrapolated by using the inter-census urban dwellings growth rate of 3.72%, which have a strong linkage with urban development. Constant prices are inflated by using WPI General to arrive at current estimates.

## 2.4 Cotton ginning

Cotton phutti is brought to cotton ginning factories for processing. The first mechanical process involved in the processing of cotton is ginning. Ginning is the process of separating lint from seed to cotton. The factories involved in ginning are mostly located in the cotton-growing areas. According to PSIC 2010, it falls under class 0163. The sampling frame of the cotton ginning factories was available from Cotton Ginners Association. A study on cotton ginning was conducted for the base year 2015-16 to estimate gross output, intermediate consumption, gross value addition and gross fixed capital formation. Table 2.9 below shows that Cotton Ginning activity in Pakistan has a value-addition of about Rs.77 billion in 2015-16. According to the old base of 2005-06, it was Rs.115.89 Billion at current prices of 2015-16.

**Table 2.9: Value Added of Cotton Ginning 2015-16 (Rs. Million)**

Description	2015-16 Study
1	2
Output	3,543,20
Taxes less subsidies on products(to producers)	1,495
Output (basic prices)	352,825
Intermediate consumption	275,671
<b>GVA (Basic Prices)</b>	<b>77,154</b>

### 2.4.1 Extrapolation and Deflators

GVA of cotton ginning has been extrapolated by the growth of cotton output at constant basic prices for subsequent years. To arrive at current prices, WPI raw cotton has been applied to constant GVA of cotton ginning.

**Table 2.10: Comparison of GVA of Crops 2015-16 based on 2005-06 with that based on 2015-16 (Rs. in Million)**

Description	2005-06 Base	2015-16 Base	% of revision
	at prices of 2015-16		
1	2	3	4
Output	3,735,818	3,643,114	-2.5
Inputs & other charges	1,105,906	1,134,081	2.5
<b>GVA</b>	<b>2,629,912</b>	<b>2,509,033</b>	<b>-4.6</b>

**Table 2.11: Final Results crops 2015-16 (Million Rs.)**

Description	Crops (Important & Others)	Cotton Ginning	Own account capital formation	Nurseries	Total
1	2	3	4	5	6
Output	3,235,719	352,825	46,626	7,944	<b>3,643,114</b>
Inputs & other charges	854,711	275,671	-	3,699	<b>1,134,081</b>
<b>GVA</b>	<b>2,381,008</b>	<b>77,154</b>	<b>46,626</b>	<b>4,245</b>	<b>2,509,033</b>

## 2.5 Livestock

Livestock is raised and crops are grown by the Pakistani farmers simultaneously. Nevertheless, crops' contribution to Gross Domestic Product (GDP) has been evaluated separately. This part deals with the practice of raising livestock and hence its contribution to output and gross fixed capital formation (GFCF) as *cultivated biological assets*. Poultry and poultry products, animal husbandry, hunting and farm honey are also discussed in this part.

**10.88.** Cultivated biological resources cover animal resources yielding repeat products and trees, crops, and plant resources yielding repeat products whose natural growth and regeneration are under the direct control, responsibility, and management of institutional units.

**10.89.** In general, when the production of fixed assets takes a long time to complete, those assets whose production is not yet completed at the end of the accounting period are recorded as work-in-progress. However, when the assets are produced on their own account, they are treated as being acquired by their users at the same time they are produced and not as work-in-progress. These general principles also apply to the production of cultivated assets such as animals or trees that may take a long time to reach maturity. Two cases need to be distinguished from each other: the production of cultivated products by specialized producers, such as breeders or tree nurseries, and the own-account production of cultivated assets by their users.

**10.91.** However, when animals or trees intended to be used as fixed assets, are produced on their own account by farmers or others, incomplete assets in the form of immature animals, trees, etc. that are not ready to be used in production are treated not as work-in-progress but as gross fixed capital formation by the producing unit in its capacity as an eventual user.

### 2.5.1 Coverage

#### a. Buffaloes and Cattle

For the structural changes, *Figure 2.1* may be referred to. The newborn animals (having age less than one year) have been treated as output and may be assumed safely as own-account capital formation, acquired at the time of production. These have been valued at the average price for

this category and weighted average prices have been derived from “**Agriculture Input-output Survey 2016-17**”.

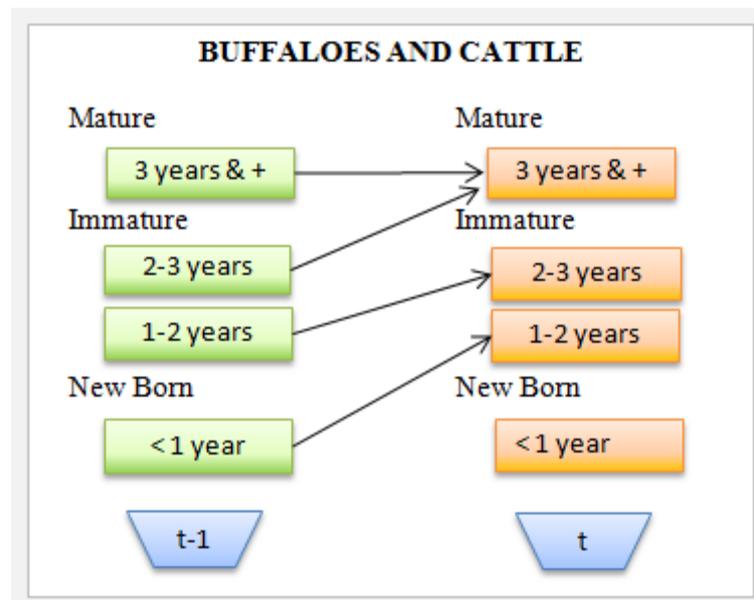
Old data based on the 2005-06 Livestock Census, were used for Livestock population to derive output of livestock. The reason to incorporate old population projection is the non-availability of fresh Census which was planned in 2016-17 with the name of ‘Integrated Agriculture Census. Integrated Agriculture Census was designed by merging three Censuses i.e., Crops, Livestock and Machinery Censuses but got delayed due to the 6<sup>th</sup> Population Census 2017.

The immature category consists of animals with age equal to or greater than 1 & less than 3 years. The weighted average prices (derived from the survey mentioned above) of this group is taken for valuation. The livestock between one to two years of age come forward from the new-born of the previous year excluding the dead and slaughtered animals during the period.

The animals between two to three years of age have come from the category of one to two years net of dead and slaughtered ones. It is assumed that the spread of animals within this group is even. The output of this group is the enhancement in their value from the previous category. It is measured by multiplying one-half of the animals of this group with the price differential of this category with the new-born category. The other half has no price differential and hence no marginal increase in value. The same output has been acquired as GFCF

The second half of immature animals enter into the mature category net of dead and slaughtered ones. This is a broad category and only the enhancement in the value of addition from the immature category is taken as output. The change in stock for this category is the indicator of an increase/decrease in the number in this group.

The contribution towards GFCF is to be recorded as output for own-account capital formation. This method has been applied to calculate the contribution of buffaloes and cattle. It is equivalent to calculating the changes in the value of the capital stock (livestock) between the end and the beginning of the year. Slaughtering is a separate industry that depends upon livestock and is dealt with in manufacturing; however, the major inputs are the livestock animals.



**Figure 2.1: Classification of Buffaloes and Cattle Based on Age-Years**

## b. Sheep and Goats

The data for these animals are available for two age groups:

- i. The new-born animals having age less than one-year
- ii. The animals having age one year or above

The structural movements have been explained in **Figure 2.2**. Animals with age less than one year are treated like a new-born. Next year, these animal are included in the second age group (1-2 years). This group is replaced next year by the new-born ones. However, the animals previously in the second group, are now includes in a combination of “new-entrances from previous group” and the already existing ones. The changes are due to the death and slaughtering during the period.

Category “i” may be assumed safely as own-account capital formation as well as output.

The mature category consists of animals of age equal to or greater than 3 years. This is a broad category. The already existing ones of this group have no incremental value. However, the animals moved from category ‘i’ to ‘ii’ have got the marginal increase which is output. The change in stock for this category is the indicator of an increase/decrease in the number animals in this group. The contribution towards GFCF is the acquisition of this output.

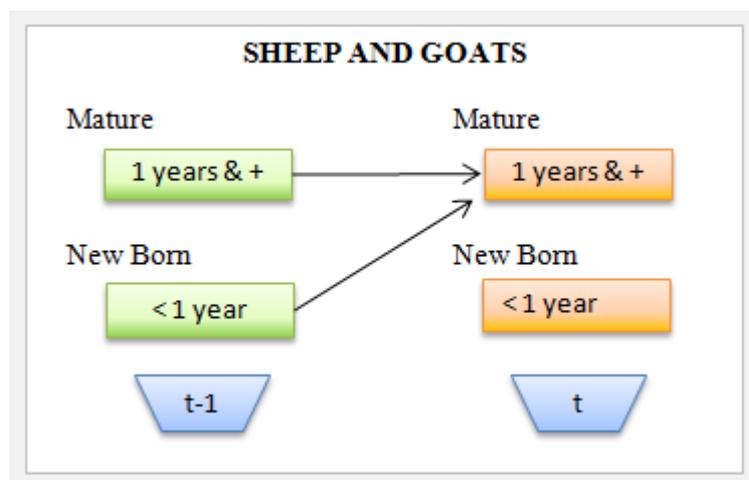


Figure 2.2: Classification of Sheep and Goat Based on Age-Years

## c. Camels, Horses, Mules and Asses

The contribution towards output and GFCF of camels, horses, mules and asses has been worked out through the second approach. The structural movements have been explained in **Figure 2.3**. The second approach is the idea to make the change in stock for each age group and value it with the full price (derived from the survey) of that group. This is the net output/ net fixed capital formation. Valuing dead animals at the average price gives the consumption of fixed capital. Adding this figure to the net output/ net FCF gives the gross output/ GFCF.

Both methods give comparable results. The difference comes from the assumption of an average value for dead animals.

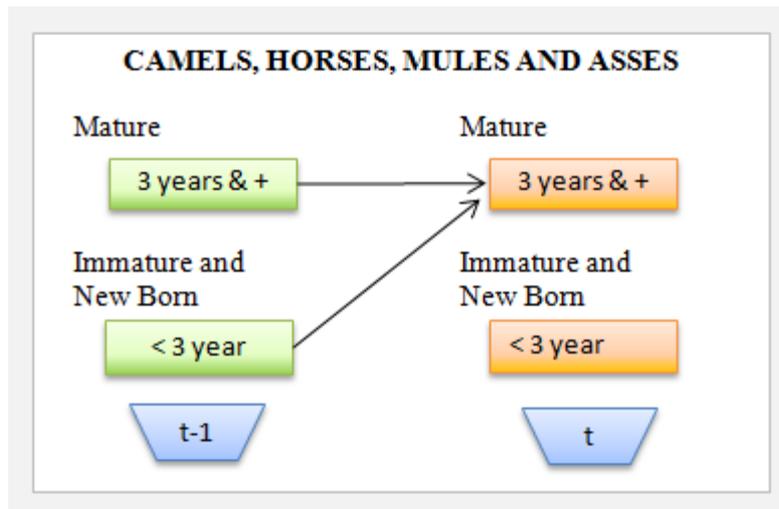


Figure 2.3: Classification of Camels, Horses, Mules and Asses on Age-Years

## 2.5.2 Output of Livestock Products

The other livestock products are milk, draught power, dung and urine, wool and hair and Desi Ghee (homemade substitute for cheese & butter sold by farmers. The data on these products (except “Desi Ghee” which is a new component in 2015-16 base) is being provided by the livestock wing of the Ministry of National Food Security and Research (MNFSR). The missing link is the prices of these items which had been collected through the Agriculture Input-Output Survey 2016-17, cross-checked from other data sources (WPI, CPI etc.). Milk production is valued on quantity of milk available for human consumption after deducting quantity of milk used for breeding calves. Valuation of draught power has been calculated by an indirect method as it is not common to hire animals for ploughing and planking. Equivalent output has been applied for valuation. Unit prices detected through the agriculture input-output survey 2016-17 have been applied to the quantities of dung and urine, wool and hairs. The population of livestock and changes are given at Annexure IX & X. Data on milk production, dung, urine, wool and hairs, poultry and poultry products have been annexed as Annexure XI. Estimation of draught power has been attached as Annexure XII.

### a. Intermediate consumption

Intermediate consumption consists of fodder, including green, dry and concentrates. Green and dry fodder fed to all livestock. Concentrates are generally given to the buffaloes and cows in milk which improve the quantity as well quality of their milk. Poultry feed is provided to poultry farms only. Similarly, the value of chicks and rent of sheds, repairs etc. are also related to poultry farms. However, transportation and medical care costs relate to whole livestock and poultry. The ratios have been revised accordingly. Other inputs include grazing charges, rent of sheds and medical charges etc.

### b. Poultry and Poultry Products

The data are available on farming and domestic poultry separately as a product of the Livestock Census (2006) (to be updated through the Integrated Agriculture Census). Poultry farms are managed on a scientific basis. Data are provided on the number of layers, broilers, breeding stock and chicks and eggs in farming. This segment is called commercial poultry. In domestic poultry, data are provided on hens, cocks, chickens and eggs. This category is generally available in the rural part of the population. The price structure has been adopted from the “Provincial Poultry Research Institutes” and compared with Price Statistics of “Pakistan Bureau of

Statistics”. The major products are eggs and meat. Generally, live birds are sold in the market. Poultry meat is also reported by the MNFSR.

### c. Animal Husbandry

According to PSIC 2010, the provision of services of animal husbandry falls under Agriculture (Group 014, “Agricultural and Animal Husbandry service activities, except Veterinary activities” and 0162 respectively). It includes activities related to promoting propagation, growth and output of animals, herd testing services, poultry caponizing etc. The activities related to artificial insemination, stud services etc. are also covered. Data for the output of these services is not available unless provided by the government. In Pakistan, the provinces are providing data on Animal Husbandry. The contribution of animal husbandry to the GVA of the general government is calculated from the federal, provincial and district budgets. Details are given below in **Table 2.12**. From the National Accounts perspective, these services are covered as a non-market output of the Government under PSIC 014 and 0162 respectively. This figure is captured under the output of livestock. On the expenditure side of GDP, this falls under government consumption (net of very minor payments of farmers for these services). On the input side, the payments of the farmers for Animal Husbandry are covered under “other inputs”. Hence this output is treated as value-added.

**Table 2.12: Components of Animal Husbandry 15-16 base (Rs. in Million)**

Description	Base 2005-06		Base 2015-16	% Change	
	2005-06 Price	2015-16 at prices of 2015-16		Column 4 over 2	Column 4 over 3
1	2	3	4	5	6
<b>A. Output</b>	<b>15,396</b>	<b>16,194</b>	<b>16,194</b>	<b>5.18</b>	<b>0</b>
Federal Govt.	1,250	561	561	-55.12	0
Provincial & District Govt.	14,146	15,633	15,633	10.51	0
<b>B. Intermediate Consumption</b>	<b>6,466</b>	<b>5,049</b>	<b>5,049</b>	<b>-21.91</b>	<b>0</b>
Federal Govt.	789	34	34	-95.69	0
Provincial & District Govt.	5,677	5,015	5,015	-11.66	0
<b>C. GVA (A-B)</b>	<b>8,930</b>	<b>11,145</b>	<b>11,145</b>	<b>24.8</b>	<b>0</b>

Data about animal husbandry are not available. It is assumed, in consultation with industry experts that these are equal to the amount of the government services estimated through budgets. Thus, the figure of this output given in the table above is an estimate at the current price for the year 2015-16 and the same has been adopted for the new base year. On the input side, the payments of farmers for animal husbandry are covered under “other inputs”. The inputs of providers of husbandry services are considered here to be negligible in this context of estimates. Hence the output of government is taken as private animal husbandry services.

### d. Hunting

According to PSIC 2010, hunting falls under *Class 017*. As detailed relevant data is not available, the estimates prepared are based on an input approach assuming that inputs are widely made up of hunting fees as recorded in the Provincial Budget Documents 2016-17. Annual revenue receipts from hunting fees for 2015-16 for each province have been taken, as per the detail given below in **Table 2.13**.

**Table 2.13: Gross Value Added (Value of receipts) of Hunting Activities 2015-16 Base (Million Rs.)**

Description	Base 2005-06	2015-16 Base		% Change	
	2005-06 Price	2015-16 at prices of 2015-16		Column 4 over 2	Column 4 over 3
1	2	3	4	5	6
<b>Punjab</b>	22	0	0	-100	
<b>Sindh</b>	0.015	2.991	2.99	19,840.00	0
<b>KPK</b>	8.585	25	25	191.21	0
<b>Baluchistan</b>	N.A	8.96	8.96		0
<b>Total Receipts/ GVA</b>	<b>30.6</b>	<b>36.95</b>	<b>36.951</b>	<b>20.75</b>	<b>0</b>

Source: Provincial Annual Budget Documents

#### e. Silk Worms

This activity comes under *division 01 group 014 class 0149* “Raising of other animals” with subclass 0149200 “ Raising of silkworms, production of silk cocoons. This activity is the first time covered in this base.

Currently, this activity is being carried out in Punjab and KP province only. Data has been collected from the “**Punjab Sericulture Department**” and “**Non-Timber Forest Department KP**”. The detail is given in *Table 2.14* below.

**Table 2.14: Rearing of Silk worms GVA 2015-16 Base**

Description	2015-16		
	Punjab	KPK	Total
1	2	3	4
1. Quantity of Silk Cocoons (KG)	33,141	3,500	<b>36,641</b>
2. Value of output (Mill. Rs.)	2.34	5.08	<b>7.41</b>
3. Inputs (Mill. Rs.)	0.33	0.32	<b>0.65</b>
<b>4. GVA (Mill. Rs.) (2-3)</b>	<b>2</b>	<b>4.76</b>	<b>6.76</b>

#### f. Honey Bee Keeping (Farm Honey)

This activity is captured the first time in national accounts. Detailed information was collected to understand the honey beekeeping activity as there was no frame and no documented data was available in Pakistan regarding farmers and their production capacity. In this regard, information on the total number of farms, each farm having an average number of boxes, the capacity of each box to produce honey, price per kg and input cost was collected through a study. “Agriculture Research & Development Institute Tarnab, Peshawar” and “All Pakistan Honey Beekeeping Association” have also been consulted. Information on employment cost, the structure of inputs and output have been collected.

Estimates have been drawn based on information taken from all sources mentioned above. Detail is given in *Table 2.15*.

**Table 2.15: Estimation of Honey Bee Keeping 2015-16 Base at Basic Prices**

S. No.	Row Labels	2015-16
1	2	3
1	Estimated Number of farms in the Country (No.)	50,000
2	Per farm boxes (No.)	150
3	Average Price of Barry Honey per kg (Rs.)	750
4	Average Price of others per kg (Rs.)	170
5	Total Boxes (1*2) (No.)	7,500,000
6	Per Box production/anum (kg)	15
7	<b>Total Production of all farms (5*6)( M.Tons)</b>	<b>112,500</b>
8	Ratio of Barry and other in Production	30:70
9	Production of honey from Barry (M.Tons)	33,750
10	Production of honey from others (M.Tons)	78,750
11	Value of Barry honey (Mill Rs.)	25,313
12	Value of other honey (Mill Rs.)	13,388
13	<b>Total value of Honey (11+12) (Mill Rs.)</b>	<b>38,700</b>
14	<b>Input charges (55%) (Mill Rs.)</b>	<b>21,285</b>
15	<b>GVA of Honey (13-14) (Mill Rs.)</b>	<b>17,415</b>

Hence Output has been estimated at Rs.38 billion and inputs are estimated at Rs.21 billion, so the GVA is Rs. 17.4 billion.

### 2.5.3 Effect of Rebasing

The effect of 2015-16 base with those extrapolated for 2015-16 on 2005-06 base prices is shown in **Table 2.16** below. Due to the improvement of coverage and updates of input-output ratios and prices, gross output for the base year 2015-16 has now been assessed at Rs.5,747.9 billion. The intermediate consumption has now been assessed at Rs.1,213.4 billion. As a result of both new assessments, the GVA has been revised 17.52 % upward. The effect of rebasing has an impact on the growth between 2005-06 and 2015-16. Over these 10 years, output has increased by 398.61%. Intermediate consumption increased by 461.03%, at a higher rate than output, due to the inclusion of new components like grazing and higher production estimates of green fodders because green fodders production estimation methodology has changed as per international standards by “Crop Reporting services Punjab”. The increase in GVA of Livestock is 384.20%.

**Table 2.16: Comparison of Components of Value Added of Livestock (Million Rs.)**

Description	2005-06 Base	2015-16 Base		% Change	
	2005-06 Prices	2015-16 Prices	2015-16 Prices	Col.4 / Col.2	Col.4 / Col.3
1	2	3	4	5	6
<b>Output (1 to 8)</b>	<b>1,152,774</b>	<b>4,613,140</b>	<b>5,747,855</b>	<b>398.61</b>	<b>24.6</b>
<b>1. Natural Growth and Regeneration</b>	<b>168,530</b>	<b>673,088</b>	<b>688,300</b>	<b>308.41</b>	<b>2.26</b>
<b>2. Sold for Slaughtering</b>	<b>271,379</b>	<b>1,091,101</b>	<b>1,175,043</b>	<b>332.99</b>	<b>7.69</b>
<b>3. livestock products</b>	<b>621,308</b>	<b>2,477,433</b>	<b>3,364,013</b>	<b>441.44</b>	<b>35.79</b>
Milk	511,783	2,112,544	2,891,350	464.96	36.87
Draught Power	48,723	119,756	137,095	181.38	14.48
Dung & Urine	58,550	237,189	315,000	438	32.81
Wool & Hairs	2,252	7,944	2,648	17.56	-66.67
Desi Ghee			17,921		
<b>4. Poultry and Poultry Products</b>	<b>76,130</b>	<b>355,287</b>	<b>465,561</b>	<b>511.53</b>	<b>31.04</b>
<b>5. Animal Husbandry</b>	<b>15,396</b>	<b>16,194</b>	<b>16,194</b>	<b>5.18</b>	<b>0</b>
<b>6. Hunting</b>	<b>31</b>	<b>37</b>	<b>37</b>	<b>19.2</b>	<b>0</b>
<b>7. Farm Honey</b>			<b>38,700</b>		
<b>8. Silkworm*</b>			<b>7.4</b>		
<b>Intermediate Consumption</b>	<b>216,276</b>	<b>754,809</b>	<b>1,213,366</b>	<b>461.03</b>	<b>60.75</b>
Fodders	173,410	574,714	850,347	390.37	47.96
Other Inputs	19,947	62,915	130,105	552.25	106.79
Poultry Inputs	22,919	117,180	211,628		80.6
Silkworm inputs			21,285		
Inputs farm honey			0.6		
<b>GVA</b>	<b>936,498</b>	<b>3,858,332</b>	<b>4,534,489</b>	<b>384.2</b>	<b>17.52</b>
Animals and Animal Products GVA	883,287	3,620,224	4,263,135	382.64	17.76
Poultry GVA	53,211	238,108	253,932	377.22	6.65
Farm honey GVA			17,415		
Silk Worm GVA			6.8		

#### 2.5.4 Extrapolation and Deflators

The output of livestock at basic prices of 2015-16 is extrapolated through numbers/quantities for the subsequent years given by their respective sources. The result is output at constant prices over the years. Output at constant (basic) prices for subsequent years is multiplied with an appropriate output inflator i.e., WPI for fresh milk, meat, chicken and eggs to get the output of years at current (basic) prices.

Intermediate consumption of the subsequent years at constant prices is calculated directly from the input quantities available and using the input-output ratios of the base year 2015-16 where needed. Intermediate consumption of the subsequent years at constant prices is multiplied by an appropriate inflator; WPIs for the inputs to get intermediate consumption of the years at current prices.

- For Animal husbandry and Hunting, current data from provincial and federal budgets are taken for next years and is deflated by CPI general to get constant estimates.

- For silkworms, output at constant prices is extrapolated through production from the provincial sericulture departments. To estimate output at current prices, WPI (silk and Reyon fabric) is applied to output at constant prices.
- Intermediate consumption at current and constant prices is estimated by applying the input-output ratio of the base year.
- GVA is output less intermediate consumption at constant and current prices separately.
- GVA of farm honey is extrapolated at current prices using the growth rate of honey exports which is converted into constant prices through WPI (honey).

## 2.6 Forestry

### 2.6.1 Coverage

It covers the production of round wood for the forest-based manufacturing industries (PSIC rev. 4, division 16 and 17) as well as the extraction and gathering of wild growing non-wood forest products. Besides the production of timber; forestry activities result in products that undergo little processing such as firewood, charcoal, wood chips and round wood used in unprocessed forms. Natural and planted forests are both included. The activity pertains to PSIC rev. 4, division 02, Section A.

This is a small sector of the economy as far as its contribution to the GDP is concerned which is 0.42%. There are three important types of data sets. Data on timber and firewood from the public forests are provided by the Inspector General, Forests, a government department. It provides quantity, cut and sold. A bulk supply is from the private-owned forests but it is not available directly. The non-wood forest product is another component. The data on this component is also scanty. For estimation of forestry GVA, the methodology of the base year 2005-06 has been applied to the relevant components.

### 2.6.2 Output

The data needed for direct valuation of this sub-sector through the *production* approach is not available; hence it is measured indirectly from the *user* side. The uses of timber and firewood in the industry sector, i.e., mining and quarrying, large scale manufacturing industry, small and household manufacturing industry and construction have been taken from the surveys and census conducted for this purpose in 2015-16 base.

Census of Manufacturing Industries (CMI 2015-16), Small and Household Manufacturing Industries (SHMI 2015-016) Survey, Study on selected minerals (2016-17) in mining industry and Construction survey 2014-15 are the reference sources, adjusted to the base year where needed. To make the output at Producer's Prices, 40% has been deducted as trade and transport margins taken from the "Study on Whole Sale and Retail Trade" used in 2005-06 base. Consumption of firewood in the households has been taken from the Household Integrated Economic Survey (HIES) 2015-16 and adjusted at Producer's prices of the year 2015-16 by deducting 30% trade margin taken from the "Study on Whole Sale and Retail Trade" used in 2005-06 base. The contribution of the non-wood forest products and own-account capital formation has been adopted from the 2005-06 base estimates. The detail of output of forestry is given at Annexure-XIII.

### 2.6.3 Intermediate Consumption

According to SNA 2008, Intermediate Consumption is valued at Purchasers' Prices. The input structure has been taken from the base year 2005-06. The input cost for Timber and Firewood

has been taken as 25% of the output whereas non-wood forest products have no input cost as these components (medicinal herbs, gums and wax etc.,) grow naturally.

#### 2.6.4 Gross Value Added

The gross value added is *output minus intermediate consumption*. The gross value added for forestry for the base year 2015-16 is given below in **Table 2.17**.

**Table 2.17: Gross Value Added in Forestry 2015-16 Base (Rs. in Million)**

Item Description	2005-06 Base		2015-16 Base	% Change	
	2005-06	2015-16	2015-16	4/2	4/3
1	2	3	4	5	6
<b>1. Output (I+II+III)</b>	<b>46,336</b>	<b>224,566</b>	<b>212,498</b>	<b>358.6</b>	<b>-5.4</b>
I) Timber	11,272	39,726	37,234	230.3	-6.3
II) Firewood (a+b)	32,956	173,983	165,590	402.5	-4.8
a. Industry	1,484	11,915	30,112	1,929.10	152.7
b. Households	31,472	162,069	135,478	330.5	-16.4
III) output Non-wood forest Products / Own account Capital formation	2,108	10,857	9,675	358.9	-10.9
<b>2. Intermediate consumption</b>	<b>11,057</b>	<b>53,427</b>	<b>50,706</b>	<b>358.6</b>	<b>-5.1</b>
I) Timber	2,818	9,931	9,308	230.3	-6.3
II) Firewood	8,239	43,496	41,398	402.5	-4.8
<b>3. Gross Value Added (1-2)</b>	<b>35,279</b>	<b>171,139</b>	<b>161,793</b>	<b>358.6</b>	<b>-5.5</b>

#### 2.6.5 Effect of Rebasing

The effect of the rebasing 2015-16 can be shown by comparison of the results 2015-16 according to the new base with those extrapolated for 2015-16 on base 2005-06. It is shown in **Table 2.17** above. Output for the new base year 2015-16 has now been assessed at **Rs. 212.5 billion**. This is 5.4% less than the extrapolated figure based on the 2005-06 base year, as the dominating component of output is firewood by households decreased 16.4%. The intermediate consumption has now been assessed at **Rs.50.7 billion**. This is the percentage of the output, determined from the previous base. As a result of new assessments, the GVA has been estimated at 5.5% downward.

The effect of rebasing also has an impact on the growth between 2005-06 and 2015-16. Over these 10 years, GVA has increased by 358.6%.

#### 2.6.6 Extrapolation and Deflators

*Output, intermediate consumption and value-added* will not be calculated for each year as calculated for the new base year. Value of output at constant prices of timber is extrapolated with production received from provincial forest departments.

The other major component is firewood used in households and it is extrapolated at prices with the growth of rural dwellings estimated from 2017 census. One component is the use of firewood in small industries and it is linked with the growth of small and household manufacturing industries. Non-wood forest products are based on a share of the 2005-06 base. Input-output ratios of the base year are applied for the calculation of intermediate consumption.

The output of timber at current prices is inflated by using WPI timber and the output of firewood is inflated by WPI fuel wood in logs. For non-wood forest products, the base year percentage share are used to derive constant estimates is also used for current estimates. For intermediate consumption input-output ratio is applied to the current value of output to get the value of IC at current prices.

## **2.7 Fishing**

This activity is divided into two categories, marine fishing and freshwater fishing. The input structure and jurisdiction of these activities are different. Freshwater activity is concentrated in the areas where suitable underground tube well water is available. The other location of the activity is where the land is available on the banks of large canals. However marine fishing is concentrated at the coastal belt of Sind and Baluchistan.

### **2.7.1 Coverage**

According to PSIC rev. 4 this activity pertains to PSIC division 03, Section A, which covers Marine Fishing and Freshwater Fishing. It includes the activities of aquaculture, marine as well as freshwater. The data on fish catch, on regular basis, is being supplied by the “Marine Fisheries Department” Ministry of Maritime Affairs, Government of Pakistan. Two studies have been conducted for the base year 2015-16 to estimate price and input-output structure, namely, “Study on Marine fishing 2016-17” and “Study on Freshwater fishing 2016-17”.

### **2.7.2 Output**

It is important to understand the activity (fishing) before valuation. In marine fishing, the crew is often paid a share of the value of landing. The landed fish is auctioned at the port. The fishermen directly pay the auctioneer or the auction hall for marketing their fish catch. Auctioneers or the auction hall have to pay some of this amount as a membership fee to the fishing cooperative society. The activities of the auctioneers belong to the PSIC, ‘other business activities. Auction halls are to be classified under PSIC wholesale and retail trade. A fishing cooperative society is to be classified under PSIC, ‘other community, social and personal services. The fees have been treated as intermediate consumption of fishing as well as output of trade. In terms of the SNA output is the product of volume and price. The volume stands for quantity plus quality. The estimation has been based on both, quantity as well quality. Different species have been evaluated separately. Output is valued using per kg price at the national level captured from study and quantity supplied by the source.

### **2.7.3 Intermediate Consumption**

According to SNA intermediate consumption is valued at purchasers’ prices (at market prices). The input structure regarding marine fishing has been determined through study. It includes fuel, ice, salt, water, medicine, repair and maintenance charges etc. The major components are fuel and ice. For freshwater fishing, the inputs are seed, feed, POL/electricity, water and others. Others include transport charges used for farm inputs, gas, chemicals, medicine, cleaning materials etc. The major inputs are feed, Electricity, Fertilizers, seeds and others (fodders, chemicals and cleaning material etc.).

### **2.7.4 Gross Value Added**

The gross value added is output minus intermediate consumption. The gross value added for fishing for the new base year 2015-16 is given below in Table 2.18 along with base year prices and input-output ratios of the components.

**Table 2.18: Gross Value Added**

Description	Base 2005-06		2015-16 Base	% Change	
	2005-06 Price	2015-16 at prices of 2015-16		Column 4 over 2	Column 4 over 3
1	2	3	4	5	6
<b>A. OUTPUT AT BASIC PRICES</b>	<b>66,090</b>	<b>168,589</b>	<b>175,047</b>	<b>164.86</b>	<b>3.83</b>
Marine	31,001	57,898	57,230	84.60	-1.15
Freshwater	35,088	110,692	117,818	235.77	6.44
<b>B. INTERMEDIATE CONSUMPTION</b>	<b>22,927</b>	<b>56,367</b>	<b>58,781</b>	<b>156.38</b>	<b>3.94</b>
Marine	12,401	23,159	15,189	22.48	-34.42
Freshwater	10,526	33,207	43,593	314.12	31.27
<b>C. GROSS VALUE ADDED (A - B)</b>	<b>43,163</b>	<b>112,223</b>	<b>116,266</b>	<b>169.37</b>	<b>3.6</b>
Marine	18,600	34,739	42,041	126.02	21.02
Freshwater	24,562	77,484	74,225	202.20	-4.21

### 2.7.5 Effect Of Rebasing

The effect of the rebasing 2015-16 can be shown by comparison of the results 2015-16 according to the new base with those extrapolated for 2015-16 on 2005-06 as shown in Table 2.18 above. Due to improvement of coverage and updates of input-output ratios and prices, gross output for the base year 2015-16 has now been assessed at Rs.175.0 billion. The intermediate consumption has now been assessed at Rs.58.8 billion. This increase in the inputs is the result of the new input-output ratios, determined from the studies. As a result of both new assessments, the GVA has been revised 3.6% upward.

The effect of rebasing will also have an impact on the growth between 2005-06 and 2015-16. Over these 10 years, output has increased by 164.9%. Intermediate consumption increased by 156.4%, at a lower rate than output, due to the low Input-output ratio of marine fishing. The increase in GVA of fishing is 169.4%.

### 2.7.6 Extrapolation And Deflators

Output at basic prices of 2015-16 is extrapolated through quantities for the subsequent years given by the sources. The result is output at constant prices over the years. Output at constant (basic) prices of years is multiplied with output inflator (WPI Fishing) to get an output of years at current (basic) prices for subsequent years.

Intermediate consumption of the subsequent years at constant and current prices will be calculated using the input-output ratios of the base year 2015-16.

Gross value added is obtained by subtracting intermediate consumption from the output for the constant prices and the current prices figures, respectively.

## 2.7.7 Effect Of Rebasing On Agriculture

Table 2.19 given below presents the overall impact of rebasing on agriculture in 2015-16 from base year 2005-06. An increase of 8.1% has been observed due to an increase in livestock and fishing. The decline has been witnessed in crops (-4.6%) and forestry (-5.5%). Within crops decline of 4.6% is because of a decline in important crops (-14.8%) and cotton ginning (-23.8%). An increase of 23.4% in other crops is due to the fresh evaluation of green fodder.

**Table 2.19: Comparison of GVA of Agriculture for 2005-06 and 2015-16 as per base years 2005-06 and 2015-16 (Rs. Million)**

Description	Base 2005-06		Base 2015-16	% Change	
	2005-06 Price	2015-16 at prices of 2015-16		column 4	column 4
				over 2	over 3
1	2	3	4	5	6
<b>Agriculture</b>	<b>1,775,346</b>	<b>6,771,606</b>	<b>7,321,581</b>	<b>312.4</b>	<b>8.1</b>
2.1.1 Crops (i+ii+iii)	766,274	2,629,912	2,509,033	227.43	-4.6
i. Important crops	449,025	1,725,837	1,470,354	227.45	-14.8
ii. Other crops	256,777	741,556	914,899	256.3	23.4
iii. Cotton ginning & others	60,472	162,519	123,780	104.69	-23.8
2.1.2 Livestock	930,842	3,858,332	4,534,489	387.14	17.5
2.1.3 Forestry	35,067	171,139	161,793	361.38	-5.5
2.1.4 Fishing	43,163	112,223	116,266	169.36	3.6

# CHAPTER 3

## Industry



**INDUSTRY****Introduction**

The components of this chapter are the producing industries other than agriculture, forestry and fishing. First Part covers the mining and quarrying activities while the second part which is major part covers the manufacturing industry. It is further sub-divided into three components, i.e., large scale manufacturing, small scale manufacturing and slaughtering. Third Part covers electricity, gas and water supply. Gas production is a component of mining and quarrying. Construction activities are covered separately under last part. A detailed description of each industry is given as follows.

**3.1 Mining and Quarrying****3.1.1 Coverage**

According to the Pakistan Standard Industrial Classification (PSIC), 2010, Mining and Quarrying include the extraction of minerals occurring naturally as solids (coal and ores), liquids (petroleum) or gases (natural gas). Extraction can be achieved by underground or surface mining or well operation. This section includes services incidental to mining, e.g. drilling services, derrick erection and the like. This section also includes supplementary activities aimed at preparing the crude materials for marketing, for example, crushing, grinding, cleaning, drying, sorting, concentrating ores, liquefaction of natural gas and agglomeration of solid fuels. These operations are often accomplished by the units that extracted the resource and/or others located nearby. This section excludes manufacturing of gas and distribution of gaseous fuels through mains which in PSIC 2010 is covered under section D “Manufacturing of gas; distribution of gaseous fuels through main”, group 352 and is dealt with in the respective part of the rebasing methodology.

**a. Two approaches**

The data position of mining and quarrying is very good as compared to other industries as the provincial Mines and Mineral Development Departments supply quarterly data regularly on physical production. However, data is supplied commodity-wise and not on basis of establishment or enterprise-level. Therefore, the main approach for Pakistan’s annual National Accounts is a functional (or “commodity”) approach. This means that the compilation of output, intermediate consumption and value-added is based on commodity data. For empirical reasons, they are the better choice than those the mining enterprises or establishments could provide, notwithstanding the fact, that for measuring variables of production and capital formation the SNA recommends the use of data about establishments. The option chosen for this rebasing is a compromise between the SNA recommendation and the empirical prevalence of commodity data in the country.

For the base year census of exploration companies was conducted to compile input-output ratios and basic prices of oil and gas in the base year. Exploration cost which is captured in GFCF as well as GVA of the mining sector has also been evaluated through this census. In this regard, it is fortunate that in Pakistan the production of natural gas – which falls under “mining” - and its distribution through mains (which falls under “gas distribution”) are widely done by specialized companies (Sui Northern and Sui Southern). Only Mari Gas is distributing its

production of natural gas through its own mains. The distribution component of Mari Gas has been included in the distribution activities of gas.

The idea is to sort the oil and gas companies through their main activity and delineate their input-output ratio for the base year as well as their exploration cost and their taxes on products and royalties. The input-output ratios for oil and gas are used to derive value-added as a share of output which is calculated product-wise as explained below. The input-output ratios are assumed to be constant over time till the next rebasing.

Nevertheless, there are some missing links for calculating the value-added which neither the mining departments nor the company reports are providing:

- Product-wise output prices and intermediate consumption of mining and quarrying activity of the minerals under supervision of the mining departments which are natural gas, crude oil, coal and 38 other minerals have been summarized as “other minerals”,
- Output, intermediate consumption and value-added of crushing of stones and gravel.
- Output, intermediate consumption and value-added of oil and gas exploration and allied services incidental to mining.

The above missing links have been filled by the “Study on minerals 2016-17”, “study on stone crushing 2016-17” and “census of exploration companies (oil and gas) 2015-16”. The figures for production (extraction) of surface minerals have been extrapolated from the base 2005-06.

#### **b. The Functional Approach adopted by PBS**

The functional approach comes from the product perspective and is based on the quantities reported by the Provincial Mining Departments. For valuation of the output related to extracted minerals under supervision of the Mining Departments’ pithead prices have been collected through Census of Oil and Gas exploration companies and studies conducted for rebasing. Pithead prices are equivalent to farm gate or factory gate prices. They exclude any taxes on products and include any subsidies on products. The details of output, Intermediate consumption and GVA are given in Table 3.1 below.

**Table 3.1: Consumption Output, intermediate and GVA of mining and quarrying 2015-16 (Rs. in Million)**

Description	Output at basic prices	Intermediate Consumption	GVA (basic Prices)
1	2	3	4
<b>Natural Gas</b>	403,556	21,880	381,676
<b>Crude Oil</b>	111,289	17,730	93,559
<b>Coal</b>	25,244	5,722	19,522
<b>1. Sub total</b>	<b>540,090</b>	<b>45,332</b>	<b>494,757</b>
Other minerals	105,874	16,375	89,499
Surface minerals	13,329	1,226	12,102
Crushing of stone	66,549	29,281	37,267
<b>2. Subtotal of all other minerals</b>	<b>185,752</b>	<b>46,882</b>	<b>138,868</b>
<b>3. Allied services</b>	<b>24,935</b>	<b>11,388</b>	<b>13,547</b>
<b>4. Exploration Services</b>	<b>52,022</b>	-	<b>52,022</b>
<b>Total (1+2+3+4)</b>	<b>802,799</b>	<b>103,602</b>	<b>699,195</b>

### c. Effect of Rebasing

The effect of the rebasing 2015-16 can be shown by comparison of the results 2015-16 according to the new base with those extrapolated for 2015-16 on the 2005-06 base. It is shown in Table 3.1 above that due to improvement of coverage and updates of input-output ratios and prices, gross output for the base year 2015-16 has now been assessed at Rs.802.8 billion, and intermediate consumption has now been assessed at Rs.103.6 billion.

**Table 3.2: GVA of Mining and Quarrying 2005-06 and 2015-16 as per base years 2005-06 and 2015-16 (Rs. in Millions)**

Items	2005-06 base (current prices)		2015-16 base	% Change	
	2005-06	2015-16		Column 4 over 2	Column 4 over 3
1	2	3	4	5	6
1. Natural Gas	143,685	344,336	381,676	165.63	10.84
2. Crude Oil	49,448	109,924	93,559	89.21	-14.89
3. Coal	6,342	10,168	19,522	207.82	91.99
4. Stone Crushing	10,700	38,481	37,267	248.29	-3.15
5. Allied services	6,869	13,043	13,547	97.22	3.86
6. Exploration services	16,273	42,964	52,022	219.68	21.08
7. Other minerals	21,947	89,865	89,499	307.8	-0.41
8. Surface minerals	3,365	12,102	12,102	259.64	0
<b>Total (1 to 8)</b>	<b>258,628</b>	<b>660,884</b>	<b>699,195</b>	<b>170.35</b>	<b>5.8</b>

### d. Extrapolation and Deflators

Output at basic prices of 2015-16 is extrapolated through the production of mineral products provided by the mining departments for the subsequent years which is converted into current prices through product-specific WPIs. For other minerals, surface minerals, crushing of stone and gravel, WPI (Fuel) will be used.

Intermediate consumption is derived by using product-specific base year 2015-16 input-output ratios separately at constant and current prices. Gross value added is obtained by subtracting intermediate consumption from the output for the constant and current prices

## 3.2 Manufacturing

### 3.2.1 Coverage

Manufacturing is one of the key segments of the economy in Pakistan. Currently, it contributes about 12% to GDP. Manufacturing comprises establishments engaged in the physical or chemical transformation of materials, substances or components into new products or Manufacturing is the processing of raw materials or parts into finished goods through the use of tools, human labour, machinery and chemical processing. Materials used in manufacturing are products of agriculture, forestry, fishing, mining & quarrying as well as products of other manufacturing activities.

For empirical reasons (different sources of data) Pakistan's National Accounts capture manufacturing in three different components:

- a. Large Scale Manufacturing
- b. Small Scale Manufacturing
- c. Slaughtering

In Pakistan Standard Industrial Classification (PSIC 2010 (Rev.4), all economic activities concerning manufacturing are covered in section C, Divisions 10 to 33. Data for the manufacturing industries (large & small scale) have been obtained from the Census of Large Scale Manufacturing Industries (CMI 2015-16) and the Survey of Small and Household Manufacturing Industries (SHMI) 2015, respectively.

### **3.2.2 Large-Scale Manufacturing**

#### **a. Sources of Data**

Large Scale Manufacturing covers the establishments having 10 or more employees. The Source of data is the Census of Manufacturing Industries (CMI) for the year 2015-16. Provincial Industry Departments coordinated the field operations of CMI 2015-16 through their focal persons, in their respective provinces. The focal persons were Chief Executive Officer of Urban Unit Punjab, Director General, Bureau of Statistics Sindh, Director, Bureau of Statistics KP and Director General Labour Balochistan. These focal persons were authorized officers/statistical agents of PBS for CMI 2015-16 as per section 22 of the General Statistics (Re-organization) Act 2011. Respective departments provide data on value and quantities of output, inputs, fixed assets, stocks, employment, employment cost, and contribution to GDP and GFCF etc.

The CMI data 2015-16 has been used for the compilation of benchmark National Accounts estimates 2015-16. For further details, the CMI report is available on the official website of PBS ([www.pbs.gov.pk](http://www.pbs.gov.pk)).

#### **b. Methodology**

Gross value added at basic prices is equal to output at basic prices minus intermediate consumption at purchasers' prices. A minor part of the output includes trade services which are carried out as a secondary activity. In National Accounts, the trade services are calculated on a functional basis under PSIC 2010, Division 45 of wholesale and retail trade. Therefore, the trade services are deducted from manufacturing output to avoid double counting.

Table 3.3 shows the sequence of calculations resulting in the gross value added at basic prices. It may be noted that adjustments of GVA at basic prices have been made to bring them into the framework of national accounts as per SNA 2008.

**Table 3.3: Gross Value Added LSM (At Basic Prices) 2015-16 (Rs. in Million)**

PSIC 2010	Industry Groups	Output at Basic Prices	Trade Margin	Output (at B.P) (Col.3-4)	Industrial Cost	Non Industrial Cost	Intermediate Consumption (Col.6+7)	GVA (at BP) (Col.5-8)
1	2	3	4	5	6	7	8	9
10	Food Products	2,489,164	3,011	2,486,152	1,865,026	129,233	1,994,259	491,893
11	Beverages	218,052	27	218,024	123,241	36,102	159,343	58,681
12	Tobacco Products	105,035	-	105,035	31,532	12,345	43,877	61,158
13	Textiles	2,426,545	1,429	2,425,116	1,708,777	129,533	1,838,310	586,806
14	Wearing Apparel	693,095	259	692,835	402,209	52,473	454,682	238,153
15	Leather and Related Products	135,591	337	135,254	84,959	9,927	94,885	40,369
16	Wood, Products of Wood & Cork, Except Furniture; Articles of Straw & Plaiting Materials	42,263	39	42,224	32,227	676	32,903	9,321
17	Paper and Paper Products	184,978	50	184,928	125,126	6,248	131,374	53,554
18	Printing and Recorded Media	62,765	2	62,762	38,656	3,858	42,514	20,248
19	Coke and Refined Petroleum Products	748,869	4,317	744,552	554,504	8,865	563,369	181,184
20	Chemicals and Chemical Products	884,940	20,827	864,113	542,896	86,336	629,232	234,881
21	Pharmaceuticals products	511,921	4,061	507,860	288,861	64,277	353,138	154,722
22	Rubber and Plastics Products	225,200	100	225,100	161,211	5,276	166,487	58,612
23	Other Non-Metallic Mineral Products	655,090	806	654,284	310,942	26,388	337,330	316,954
24	Basic Metals	489,494	1,242	488,252	370,829	11,370	382,200	106,052
25	Fabricated Metal Products, Except Machinery and Equipment	96,779	61	96,718	58,727	3,369	62,096	34,622
26	Computer, Electronic and Optical Products	17,299	-	17,299	11,222	725	11,947	5,352
27	Electric Equipment	257,450	255	257,195	182,638	20,470	203,109	54,087
28	Machinery and Equipment N.E.C.	103,253	203	103,050	68,202	5,829	74,030	29,019
29	Motor vehicles, trailers etc.	430,531	4,265	426,266	322,237	16,298	338,535	87,731
30	Other Transport Equipment	125,856	1	125,855	95,615	8,189	103,804	22,051
31	Furniture	48,503	23	48,480	27,265	1,247	28,512	19,968
32	Other Manufacturing	95,841	27	95,814	52,078	3,853	55,931	39,883
<b>ALL INDUSTRIES</b>		<b>11,048,512</b>	<b>41,344</b>	<b>11,007,167</b>	<b>7,458,982</b>	<b>642,886</b>	<b>8,101,868</b>	<b>2,905,300</b>
<b>1010 -Processing &amp; preserving meat</b>		<b>26,083</b>	<b>-</b>	<b>26,083</b>	<b>16,483</b>	<b>2,954</b>	<b>19,437</b>	<b>6,646</b>
<b>All Industries (Excluding meat)</b>		<b>11,022,429</b>	<b>41,344</b>	<b>10,981,085</b>	<b>7,442,499</b>	<b>639,932</b>	<b>8,082,431</b>	<b>2,898,654</b>

**Table 3.4: Comparison of Industry-wise Gross Value Added at basic prices of 2015-16 and 2005-06 (Rs. in Million)**

PSIC 2010	Industry Groups	CMI				%Change
		2005-06	2015-16	Share 2005-06	Share 2015-16	2015 -16 Over 2005- 06
1	2	3	4	5	6	7
1010	Processing and preservation of Meat	1,009	6,646	0.11	0.23	558.67
<b>10</b>	Food Products (Including meat)	129,445	485,248	13.87	16.7	274.87
<b>11</b>	Beverages	8,987	58,681	0.96	2.02	552.95
<b>12</b>	Tobacco Products	20,123	61,158	2.16	2.11	203.92
<b>13</b>	Textiles	254,322	586,806	27.25	20.2	130.73
<b>14</b>	Wearing Apparel	42,117	238,153	4.51	8.2	465.46
<b>15</b>	Leather and Related Products	8,806	40,369	0.94	1.39	358.43
<b>16</b>	Wood, Products of Wood & Cork, Except Furniture; Articles of Straw & Plaiting Materials	5,755	9,321	0.62	0.32	61.96
<b>17</b>	Paper and Paper Products	27,100	53,554	2.9	1.84	97.62
<b>18</b>	Printing and Reproduction of Recorded Media	2,567	20,248	0.28	0.7	688.78
<b>19</b>	Coke and Refined Petroleum Products	47,026	181,184	5.04	6.24	285.28
<b>20</b>	Chemicals and Chemical Products	89,814	234,881	9.62	8.08	161.52
<b>21</b>	Pharmaceuticals products	32,830	154,722	3.52	5.33	371.28
<b>22</b>	Rubber and Plastics Products	10,672	58,612	1.14	2.02	449.21
<b>23</b>	Other Non-Metallic Mineral Products	62,181	316,954	6.66	10.91	409.73
<b>24</b>	Basic Metals	54,015	106,052	5.79	3.65	96.34
<b>25</b>	Fabricated Metal Products, Except Machinery and Equipment	7,854	34,622	0.84	1.19	340.82
<b>26</b>	Computer, Electronic and Optical Products	5,017	5,352	0.54	0.18	6.68
<b>27</b>	Electric Equipment	18,841	54,087	2.02	1.86	187.07
<b>28</b>	Machinery and Equipment N.E.C.	13,356	29,019	1.43	1	117.27
<b>29</b>	Motor vehicles, trailers etc.	36,892	87,731	3.95	3.02	137.8
<b>30</b>	Other Transport Equipment	11,157	22,051	1.2	0.76	97.64
<b>31</b>	Furniture	416	19,968	0.04	0.69	4700
<b>32</b>	Other Manufacturing	43,845	39,883	4.7	1.37	-9.04
<b>Total (Including meat-1010)</b>		<b>933,140</b>	<b>2,905,300</b>	<b>100</b>	<b>100</b>	<b>211.35</b>
<b>ALL INDUSTRIES (Excluding meat)</b>		<b>932,131</b>	<b>2,898,654</b>			

Table 3.5 summarizes the output (excluding processing meat) at Rs.10,981 billion, intermediate consumption Rs.8,082 billion and Gross value added (GVA) Rs. 2,898.65 billion at basic prices for 2015-16, against the GVA of CMI 2005-06 which stood at Rs.933 billion. This shows an increase of 210.63 %. The published /existing GVA for 2015-16 at 2005-06 base stood Rs.2,874 billion, whereas the CMI result for 2015-16 is Rs.2,899 showing a rebasing effect of 0.87 percent.

**Table 3.5: Comparison of Components of Value Added - LSM (Rs. in Million)**

Description	2005-06	2015-16 (published)	2015-16 (CMI)	%Change	%Change
				Col.(4/2)	Col.(4/3)
1	2	3	4	5	6
Output	3,183,664	9,804,247	10,981,085	244.92	12
Intermediate Consumption	2,250,524	6,930,600	8,082,431	259.14	16.62
Gross Value Added	933,140	2,873,647	2,898,654	210.63	0.87

### c. Extrapolation and deflators

During the past, several users have requested to have figures and growth rates of manufacturing at a more detailed level. The previous method of extrapolation with growth rates in real terms as per production index QIM (Quantum Index of Large Scale Manufacturing) will in principle be maintained. But to match users' needs, the extrapolation will be done for relevant parts of manufacturing, separately. For each of these divisions or groups, thereof the respective output, as well as intermediate consumption, will be extrapolated with the increase or decrease of the output of commodities of the QIM which appropriately fit the output structure of the divisions. This implies that the input-output ratios will remain constant over time.

## 3.2.3 Small Scale Manufacturing Industries

### a. Introduction

Small Scale Manufacturing Industries covers establishments & households units that are engaged in manufacturing activities having less than ten employees. Manufacturing, irrespective of whether a large or small scale is covered in section C of PSIC-2010. The majority of the units are not registered and are part of the informal sector and most of them are difficult to estimate.

Pakistan Bureau of Statistics collected base year information through a special survey called "Small and Household Manufacturing Industries Survey" (SHMI), carried out in 2015 (calendar year). The results have been used in rebasing of National Accounts 2015-16, which are as follows in Table 3.6.

**Table 3.6: Gross value added as per results of SHMI 2015 (Rs. in Million)**

S No.	Description	Pakistan		
		Urban	Rural	Total (2015)
1	2	3	4	5
1	Value of Products & by Products at Producer Prices	600,537	258,729	859,265
2	Non Industrial Receipts	1,030	107	1,137
3	Output Producers, Prices (1+2)	601,567	258,836	860,403
4	Taxes on Production other than Sales Tax	93	34	127
5	Subsidies on Production	-	-	-
6	<b>Output at Basic Prices (3-4+5)</b>	<b>601,474</b>	<b>258,801</b>	<b>860,276</b>
7	Industrial Cost	244,057	114,441	358,498
8	Non Industrial Cost	18,732	6,913	25,645
9	<b>Intermediate Consumption (7+8)</b>	<b>262,789</b>	<b>121,355</b>	<b>384,143</b>
10	<b>Gross Value Added at Basic Prices (6-9)</b>	<b>338,686</b>	<b>137,447</b>	<b>476,133</b>

Reference year of SHMI and base year National Accounts differ by calendar and financial year, which are adjusted by taking two quarters of 2015(July to December) and added two quarters of 2016 (January-June) along with growth and deflator change of (3.87%+8.20% = 12.07%) to adjusting and to calculate the figure for the financial year 2015-16 as given in Table 3.7.

**Table 3.7: Gross value-added of SHMI in Financial Year i.e. 2015-16 (Rs.in Million)**

S No.	Description	Total (2015)	Total	2015-16	2015-16
			(2015)/2	(Jan-Jul)	(July - June)
1	2	3	4	5	6
1	Value of products & by products at Market prices	859,549	429,775	481,649	911,423
2	Non Industrial receipts	1,137	569	637	1,206
3	Sales Tax Levied on the output	284	142	159	301
4	Output producers, prices (1+2-3)	860,403	430,201	482,127	912,328
5	Net Taxes on production other than sales tax	127	64	71	135
6	<b>Output at basic prices (4-5)</b>	<b>860,276</b>	<b>430,138</b>	<b>482,055</b>	<b>912,193</b>
7	Industrial cost	358,498	179,249	200,884	380,133
8	Non Industrial cost	25,645	12,823	14,370	27,193
9	<b>Intermediate consumption (7+8)</b>	<b>384,143</b>	<b>192,072</b>	<b>215,255</b>	<b>407,326</b>
10	<b>Gross value added at basic prices (6-9)</b>	<b>476,133</b>	<b>238,066</b>	<b>266,801</b>	<b>504,867</b>

### b. Rebasing Effect

Gross value added at basic prices amounting to Rs. 505 billion in the new base year 2015-16 is much higher than the value accruing in old base year 2005-06 which was Rs. 92 billion and with the published value of Rs.414 billion. Thus, the effect of rebasing reflects an increase of 449 % as compared to 2005-06 and an increase of 22.11% with respect to published results of 2015-16 on old base of 2005-06. In other words, this activity was grossly underestimated in the old base. Comparison is given in Table 3.8 below.

**Table 3.8: Comparison of gross value added – SHMI (Rs. Million)**

Description	Gross Value Added at Basic Price			% change	
	2005-06 base	2015-16 (Current) Base year 2005-06	Base year 2015-16 SHMI	Column (4/2)	Column (4/3)
1	2	3	4	5	6
<b>Output</b>	205,479	924,257	912,193	343.93	-1.31
<b>Intermediate Consumption</b>	113,557	510,788	407,326	258.7	-20.26
<b>Gross Value Added</b>	91,922	413,469	504,867	449.23	22.11

### c. Extrapolation

For forward extrapolation, we will use annual growth of 8.87 % starting from SHMI 2015-16 base year, whereas from constant to current WPI-SSMI deflator, will be used.

The SHMI survey did not deliver the true and clear picture of data having an equivalent matching long time series of constant values. Hence in special exercise, National Accounts figures have transformed to constant price uniformly into one single base and were decided to choose 1980-81 base years for this purpose as 1980-81 constant base covers all the

SHMI survey results up till now. The main results of subsequent surveys are given in table 3.9 given below.

**Table 3.9: Results of Various SHMI Surveys**

SNo.	Description	SHMI Rs. Million				
		1983-84	1987-88	1996-97	2006-07	2015-16
1	2	3	4	5	6	7
1	Value of products & by-product at market price	25,945	19,683	67,541	230,656	911,423
2	industrial cost	14,665	9,780	33,238	121,723	380,133
3	Census value added (1-2)	11,280	9,903	34,303	108,933	531,290
4	Non-industrial cost - non-indus. Receipts	265	38	265	4,341	25,987
5	Gross value added at market price (3-4)	11,015	9,865	34,038	104,592	505,303
6	Net indirect taxes	17	20	221	327	659
7	GVA at factor cost, current prices (5-6)	10,998	9,845	33,817	104,265	504,645
8	Deflator (1980-81 = 100)	117	157	349	490	1,103
9	Gross value added at factor cost, constant prices (basis 1980-81)	9,410	6,255	9,686	21,294	45,768
10	Growth		-34.0	55.0	120.0	115.0
11	Geometric Growth		-10.0	5.0	8.0	9.0

**Table 3.10: Geometric Growth of SHMI 2015-16 over Previous SHMIs**

No	SHMI over previous SHMI	Geometric Growth	Total No years
1	2	3	4
1	2015-16 over 2006-07	8.87	9 Years
2	2015-16 over 1996-97	8.52	19 Years
3	2015-16 over 1987-88	7.37	28 Years
4	2015-16 over 1983-84	5.07	32 Years
5	Average	7.46	-

Shifting of National Accounts' base year from 2005-06 to 2015-16, alternate geometric annual growth rate were calculated between SHMI 2006-07 and SHMI 2015-16 and then for the longer period between SHMI 1983-84, SHMI 1987-88 and SHMI 1996-97. After analysing different SHMI survey growth and focusing on choosing an appropriate period of two surveys for which the inter-survey annual growth could be calculated and then be taken as a yardstick for extrapolation and also for backward, growth between 2005-06 over 2015-16 i.e. 8.87%, has been taken as yardstick on the recommendations of the technical committee.

## **3.3 Slaughtering**

### **3.3.1 Coverage**

Slaughtering is not easy to define and classify. In Pakistan slaughtering activity can roughly be categorized into three different kinds:

- i. Slaughtering is an activity of large scale manufacturing resulting in commodities delivered at a big scale to wholesale or retail trade for the domestic market or exports.
- ii. Slaughtering is a small scale activity carried out by butchers belonging to the informal sector of the economy.
- iii. Services rendered by slaughterhouses to butchers who use these facilities against paying a fee for this.

Slaughterhouses can be part of the formal or informal sector. A slaughterhouse provides a facility where animals are processed/ slaughtered for consumption as food products. In PSIC rev. 4, the activities of slaughterhouses and butchers are covered in section C, in class 1010 of division 10. Then the meat is cut and sold in specialized shops. For this purpose, the “Retail sale of food in specialized stores” category, 4721 of PSIC rev. 4 is reserved.

The data situation in Pakistan does not encourage an “establishment approach” to cover the output of slaughtering. It is considered to have a “commodity flow approach” instead. This means that annual data about slaughtered animals are the basis for the calculation. The data, on regular basis, are available based on Census 2006 and provided by the “Ministry of National Food Security & Research (MNFSR), Livestock Wing.

The commodity flow approach is a functional one. At first, this means that we do not differentiate among the three kinds of slaughtering mentioned above. Secondly, we calculate slaughtering solely excluding any other secondary activity carried out by the slaughterhouses/slaughter shops. Consequently, PBS does not sub-classify slaughtering into large scale manufacturing and small scale manufacturing.

This functional approach is applied because of the informal nature of slaughtering activity and the non-availability of data from formal establishments. In Pakistan, around 67.9 million animals were slaughtered in 2015-16 in addition to 1016 million chickens, ducks, drakes, ducklings and other birds. In the benchmark year 2015-16, 2.02 million tons of beef, 0.69 million tons of mutton and 1.17 million tons of poultry meat were produced in Pakistan.

### **3.3.2 Output**

The output consists of meat (mutton, beef and poultry), edible offal and other products (blood, bones, horns and hooves, heads and trotters, animal fats, guts, casings, and hides and skins). Prices of these products were collected through a study on Slaughtering in 2016-17. Based on the area sampling method, five villages were selected from each District and, one butcher was selected from each village. In Rural areas, a butcher himself performs all the activities of slaughtering. The butchers purchase animals from village farmers and slaughter & sell the animal meat.

Data on slaughtering Products is provided by MNFSR based on Livestock Census 2006. Due to the non-availability of fresh census data, old projections have been utilized for comparison. A detail of the output is given in Table 3.11.

### 3.3.3 Intermediate Consumption

The major input in the case of the slaughtering industry is the live animals and poultry. Animals and poultry are the output of livestock, where these are treated as “Sold for slaughtering” i.e., the output of the farmer is an input of slaughtering. To estimate intermediate consumption, projections based on Livestock Census 2006 have been used due to the non-availability of fresh data as detailed in table 3.11.

The gross value added is output minus intermediate consumption. The gross value added for the slaughtering of the new base year 2015-16 is given below in Table 3.11 with detail of output and inputs.

**Table 3.11: Output, intermediate consumption and GVA of Slaughtering 2015-16 Rs. Million)**

Description	Output at basic Prices	Intermediate Consumption	GVA at basic prices
			col.2 - col.3
1	2	3	4
Beef & Mutton	1,237,154	1,175,043	62,111
Poultry	274,642	144,953	129,688
Other Product*	157,662	10,685	146,978
<b>Total</b>	<b>1,669,458</b>	<b>1,330,681</b>	<b>338,776</b>

\* Other products include hides, skin, blood, bones, fat and head & trotters etc.

As shown in Table 3.11 above, the output of slaughtering has been assessed at Rs.1,669.5 billion. The intermediate consumption has now been assessed at Rs.1,330.7 billion. As a result of both new assessments in output and inputs, the GVA has been estimated as Rs. 338.8 billion.

### 3.3.4 Effect of Rebasing

The effect of the rebasing 2015-16 can be shown by comparison of the results 2015-16 according to the new base with those extrapolated for 2015-16 on old base 2005-06. It is shown in table 3.12 below. Two comparisons are of special interest:

- What is now the revised growth of value-added during the period between the two base years 2005-06 and 2015-16?
- What would be the discrepancy between the so for extrapolated figures and the new updated ones for the year 2015-16?

The effect of rebasing will also have an impact on the growth between 2005-06 and 2015-16. Over these 10 years output has increased by 320.6%. Both components contributed heavily. Intermediate consumption increased by 313.8%, at a lower rate than output, resulting in a higher increase in GVA which is 349.7%. The changeover 2015-16 as extrapolated according to the base 2005-06 is an increase of 9.03%.

**Table 3.12: Output, IC and GVA of Slaughtering 2005-06 and 2015-16 as per base years 2005-06 and 2015-16 (Rs. Million)**

Description	2005-06 base (Current Prices)		2015-16 base	% increase	
	2005-06	2015-16		Column 4 over 2	Column 4 over 3
1	2	3	4	5	6
<b>A. Output at basic prices</b>	396,910	1,647,504	1,669,458	320.61	1.33
<b>B. Intermediate Consumption</b>	321,572	1,336,795	1,330,681	313.81	-0.46
<b>C. Gross Value Added (A-B)</b>	75,339	310,708	338,776	349.67	9.03

### **3.3.5 Extrapolation and Deflators**

Output at constant basic prices is extrapolated through the production of meat and meat products for the subsequent years. Output at current prices for subsequent years is estimated by applying output inflator WPI (beef, mutton and chicken).

Intermediate consumption of the subsequent years at constant prices is calculated directly from the input data and using the input-output ratios of the base year 2015-16. Intermediate consumption of the subsequent years at constant prices is inflated with WPI (beef, mutton & chicken) to arrive at current prices.

Gross value added is obtained by subtracting intermediate consumption from the output for the constant prices and the current prices.

## **3.4 Electricity Generation & Distribution, Gas Distribution And Water Supply**

This part consists of electricity generation, transmission & distribution, gas distribution and water supply in the private sector. All activities have been discussed separately. The establishment approach has been applied to the electricity and gas industry, whereas water supply has been estimated through study.

### **3.4.1 Electricity Generation And Distribution**

In Pakistan electricity generation, transmission and distribution activities are conducted separately. The calculation of output, intermediate consumption and value-added of generation, transmission and distribution for the base year is done separately using specific data sources. Moreover, the treatment of subsidies on products is taken into consideration at the time of distribution by making it part of the output.

The production of electricity under this heading is confined to Water and Power Development Authority (WAPDA), provincial power development companies, public generation companies often abbreviated as “GENCOs” and independent power producers (IPPS). The production of electricity by other producers like shopkeepers, restaurants etc. and by private households are not included. This generation of electricity is part of the production process of these producers and to be recorded as intermediate consumption (e.g., diesel) or is part of private consumption, respectively.

About the physical conditions of electricity generation in Pakistan, there are four sources, hydel, thermal, nuclear and renewables (mainly solar and wind-based power generation). WAPDA and provincial energy departments supply hydel power, whereas Pakistan Electric Power Company (PEPCO) manages thermal electricity generation all over the country except Karachi and some areas of the Sindh and Baluchistan provinces. These areas fall under the jurisdiction of K-Electric, a Semi-government Company with a 24.63 % share of government.. The company is performing all three tasks i.e. generation, transmission and distribution. However, in the case of generation, the company also purchases power from IPPS and PEPCO. Captive units generate electricity for their use but also supply their surpluses to other distributors. Under the heading of electricity generation and distribution, the activity of the captive units is confined to their input to the public grid

#### **a. Coverage**

According to Pakistan Industrial Classification (PSIC) 2010 the coverage of the activity pertains to Division 35, Group 351, Class 3510.

## **b. Data**

The data on production and intermediate consumption is being supplied by the generation, transmission and distribution establishments regularly. Some establishments publish annual reports which have also been utilized. Pakistan Energy Year Book 2016, published by Hydrocarbon Development Institute of Pakistan (HDIP) is another authentic source for details. It throws light on the physical structure of output and of their inputs, including the primary energy sources like oil, gas or coal used for the production of electricity. For the calculation of the subsidies linked to the distribution of electricity, figures of government expenditures have been used.

## **c. Output**

As indicated it is intended to reconcile and to combine the figures of National Accounts (monetary terms) with those of the physical side (Hydrocarbon Institute). To begin with the physical side: WAPDA and provincial power development companies are major producers of Hydel power. The share of hydropower is 31% in the generated units (GWh) of electricity in 2015-16. Thermal power is being generated in a combination with public generation companies (GENCOs), K- Electric and IPPs and its contribution in the total power generation is 63% during the same year. The share of nuclear energy generation is around 4% only. Due to fluctuation in price and limited availability of fossil fuels (to be used for thermal power generation), the government started promoting renewable electricity mainly from wind and solar power. As a result, the share of renewable electricity increased from negligible in 2005-06 to 1.4% in 2015-16 and this share is continuously increasing. Captive units generally supply what is extra with them.

It is important to note that after the disintegration of WAPDA, the electricity distribution companies (DISCOs) have been taken as separate establishments. Furthermore, National Transmission and Distribution Company (NTDC) is taken as a separate entity. As, all of these establishments (WAPDA, DISCOs and NTDC) are publically owned establishments, therefore in the analysis these have been incorporated under the heading named “WAPDA and Companies”. The detail of units generated during 2015-16 and the respective share of each technology along with the distribution pattern is presented in Table 3.13.

**Table 3.13: Detail of Technology and Sector-wise Power Generation during 2015-16**

Technology	Establishment	GWh	Share	GWh	%
1	2	3	4	5	6
Hydel	WAPDA	33,433	Hydel.	34,633	31.12
	AJKPDO	172	Thermal	70,512	63.35
	PEDO/IPP	1,028	Nuclear	4,606	4.14
	<b>S-Total</b>	<b>34,633</b>	Renewable	<b>1,549</b>	<b>1.39</b>
Thermal	GENCOs	13,917	Total	111,300	100
	K-Electric	10,323			
	IPPs	46,272			
	<b>S-Total</b>	<b>70,512</b>	Auxiliary Consumption Imported Net Supply Consumption T & D losses		
Nuclear	KANUPP	430			
	CHASNUPP-I	1,616			
	CHASNUPP-II	2,560			
<b>S-Total</b>	<b>4,606</b>	Renewable	1,549	17,209	
Renewable	Renewable				
	<b>S-Total</b>	<b>1,549</b>	Losses as % of Net supply = 16		
<b>Grand Total</b>		<b>111,300</b>			

Source: Pakistan Energy Yearbook 2016

Output in monetary terms is given in Table 3.14. It has been determined from the annual reports, questionnaires and correspondence with the establishments. About the generation and distribution of electricity, it is imperative to deal with subsidies and taxes properly.

It is well known and intensively discussed in the media and politics that in Pakistan provision of electricity to consumers is made at prices that do not fully cover the cost. The costs are mainly determined by the prices that the National Electric Power Regulatory Authority (NEPRA) has approved to be paid by the distribution companies. For many years, the DISCOs are running losses. For National Accounts there are two options to deal with these losses:

- i. In case these persistent losses occur “as a matter of deliberate government economic and social policy,” the SNA (7.105c) foresees to treat the compensation of these losses as a subsidy (“other subsidy on products”, transaction code D.319).
- ii. The view is shared that these losses just happen because of poor performance or other economic deficiencies. The government and the management of the companies try hard to overcome these deficiencies.

As both these options persist in Pakistan so for this rebasing of National Accounts and this kind of activity subsidies have been incorporated in the output of the industry. This is consistent with the decision taken during the last rebasing of 2005-06.

#### **d. Intermediate Consumption**

The input structures of the four types of products are different from each other. Hydel generation is a cheaper one as it uses a flow of water as one of the major inputs. Thermal generation requires another input set. Furnace oil and natural gas / LNG are the major inputs. The third component is nuclear power which is being provided by nuclear power plants in the country. Renewable electricity is the fourth source of generation and is mainly provided by wind and solar power. Although solar power is abundantly available in the country, however, due to the

higher initial costs and lower efficiency of solar panels, solar electricity has not been promoted at a higher level as compared to wind power. In terms of fuel consumption, these resources are like hydro and are not fuel dependent. However, the per-unit cost of electricity from wind and solar is high as compared to hydro due to the reason that the government has allowed higher per-unit cost to promote these resources in Pakistan. The intermediate consumption pattern of these resources, therefore, differs accordingly.

Table 3.14 shows the details of input structure in monetary terms (values) using the prices of the base year. The physical composition of the inputs of the various producers remains constant over time. As WAPDA and provincial energy departments along with some IPPs are responsible for hydroelectricity generation, therefore its input structure is entirely different from other generation establishments. In the case of GENCOs, the input structure is heavily dependent on the use of fossil fuels. Generation from GENCOs is therefore almost completely dependent upon the use of natural gas / LNG and furnace oil. Gas is the main fuel for K-Electric. The dependence of IPPs' input is heavily on furnace oil and gas. The remaining are the mixed expenditures. The captive units are supplying to the national system what is surplus with them. The own use of energy in the captive units is being covered in the Census of large scale Manufacturing Industries. Table 3.14 below is referred for details.

#### e. Gross Value Added

It is derived from the output and intermediate consumption estimates. WAPDA & companies are major contributors; their contribution to value added is 83%. IPPs are the second major shareholders in value-addition.

**Table 3.14: Generation and Distribution of Electricity 2015-16**

Category	Output		Intermediate Consumption		Gross Value Added		Subsidy
	Mill. Rs	%	Mill. Rs	%	Mill. Rs	%	Million Rs.
1	2	3	4	5	6	7	8
WAPDA & Companies*	1,028,544	56.6	849,161	63.5	179,383	37.5	117,805**
K-Electric	221,336	12.2	117,725	8.8	103,611	21.6	53,400
IPPs***	494,855	27.2	356,185	26.6	138,671	29	
Captive	18,150	1	13,216	1	4,934	1	
Renewables	18,540	1	935	0.1	17,605	3.7	
Nuclear	34,780	1.9	388	0	34,392	7.2	
<b>Grand Total</b>	<b>1,816,204</b>	<b>100</b>	<b>1,337,608</b>	<b>100</b>	<b>478,596</b>	<b>100</b>	

\* Companies include GENCOs, DISCOs and NTDC\*\* only to DISCOs

The last column to the right shows the subsidies on products, included in the output which is measured at basic prices i.e. excluding taxes on products but including any subsidy levied on the products.

#### f. Effect of Rebasing

Table 3.15 enables a comparison of the results of the rebasing 2015-16 with the figures of the previous base for the same year as well as with the figures of the base year 2005-06. It is clear from the comparison of the previous and the new base for 2015-16 that the output is increased marginally by Rs.4 billion. The difference is attributed to the addition of small hydro operated by provincial public organizations and IPPs.

Column 5 of Table 3.15 indicates a huge increase (412%) in value-added of 2015-16 (new base) over 2005-06. The difference is due to a substantial increase in the consumption of electricity which rose from 67,430 GWh to 90,431 GWh and prices.

Column 6 of Table 3.15 reflects the change in volume accruing from improving data sources and methods. The output for the year 2015-16 on the base year 2005-06 has been underestimated due to the missing hydropower under provincial public organizations (PPDC (Punjab), PEDO (KPK) and AJK PDO).

**Table 3.15: Comparison of output and GVA of electricity generation and distribution for 2005-06 and 2015-16 as per base years 2005-06 and 2015-16 (Rs. Million)**

Description	Base Year 2005-06 (Current Prices)		Base Year 2015-16	% Change	
	2005-06	2015-16		Column 4 over 2	Column 4 over 3
1	2	3	4	5	6
A. Output	487,415	1,811,621	1,816,204	272.6	0.25
B. Input	394,009	1,337,501	1,337,608	239.5	0.01
WAPDA & Companies		849,161	849,161		-
K-Electric		117,725	117,725		-
IPPs*		356,077	356,185		0.03
Captive		13,215	13,215		-
Renewables		935	935		-
Nuclear		388	388		-
C. Gross Value Added (A-B)	93,406	474,120	478,596	412.4	0.94

\* IPPs include all thermal, hydro and hydropower from provincial power departments.

### g. Extrapolation and Deflators

For subsequent years, output and intermediate consumption of electricity generation and distribution are compiled at current prices using data reported by establishments/enterprises. The treatment of subsidies on products is taken into consideration at the time of distribution by making it part of the output. For constant price estimates of electricity generation and distribution, an Implicit Volume Index for Output (IVO) has been applied due to the non-availability of product-specific output and input deflators. Under this method, the current price output is deflated using CPI electricity to obtain output at constant prices which are then used to extrapolate intermediate consumption, derived as base year ratio, at constant prices. The current price subsidies are deflated separately and are added in the output at constant prices to obtain industry output at constant prices.

### 3.4.2 Gas Distribution

Natural gas forms a part of the output of mining. Its contribution to GDP has been discussed in the relevant industry (mining). The distribution activity is being discussed under a separate industry (class 3520 in PSIC 2010) but it should be noted that gas distribution here is confined to distribution through mains while sales of gas as energy for vehicles through CNG-stations does not fall under "gas distribution" but is covered under retail trade-in class 4730 of PSIC 2010. It should further be noted that production of Liquefied Petroleum Gas (LPG) is covered under manufacturing, class 1920 and its distribution is covered under trade-in class 4661 of PSIC 2010.

Sui Northern Gas Pipeline (SNGPL), Sui Southern Gas Company (SSGC) and Mari Gas Company are the major distributors. Mari Gas Company is treated as a special case. The production of gas activity has been covered under a functional approach in the mining and quarrying industry. If the secondary activity is nearly as important as the primary one, then the

secondary activity may also be covered as a separate establishment. First, the gas is produced under one industry (PSIC) and then it is distributed under another industry (PSIC). According to the vertical integration rule, such a situation demands separate establishments be assigned to each activity. For reference, paras of SNA 2008 are given below.

“ 5.15 Although the definition of an establishment allows for the possibility that there may be one or more secondary activities carried out, they should be on a small scale compared with the principal activity. *If a secondary activity within an enterprise is as important, or nearly as important, as the principal activity, then that activity should be treated as taking place within a separate establishment from that in which the principal activity takes place.*”

5.22 Within the SNA, a separate establishment should be identified for each different kind of activity wherever possible.

5.23 *A vertically integrated enterprise is one in which different stages of production, which are usually carried out by different enterprises, are carried out in succession by different parts of the same enterprise.* The output of one stage becomes an input into the next stage, only the output from the final stage is sold on the market. *ISIC* describes vertically integrated enterprises as follows:

*Vertical integration of activities occurs where the different stages of production are carried out in succession by the same unit and where the output of one process serves as input to the next. Examples of common vertical integration include tree felling and subsequent on-site sawmilling, a clay pit combined with a brickworks, or production of synthetic fibers in a textile mill.”*

Vertical integration means to record deliveries between different establishments of Mari Gas “gross” while in the company’s record they are netted out (consolidated). Vertical integration also requires splitting the intermediate consumption as per the company record between the establishments involved. This has been done in the method described below.

#### **a. Coverage**

The coverage according to PSIC 2010 pertains to division 35, group 352, class 3520. In Pakistan, gas distribution only comprises Sui Southern, Sui Northern and Mari Gas companies. The data has been supplied by the distribution companies. The annual reports of the companies are a major source of data. Energy yearbook 2016 and onward are another authentic source for details. Efforts have been made to combine and reconcile these two sources as far as possible.

#### **b. Output**

As a first-round compilation, output has been delineated by using the data provided by the companies. However, in case of non-availability of data, annual reports of Sui Northern, Sui Southern and Mari gas companies have been used. Tables 3.16 and 3.17 show the cost of gas distribution by SSGC and SNGPL.

**Table 3.16: Cost of gas distributed by “SSGC” 2015-16**

Item		Value in Mill. Rs
1	2	3
Stock in pipelines	beginning of the year	342
	end of the year	336
Purchased		180,778
Internally consumed		4,122
<b>Total</b>		<b>180,784</b>

**Table 3.17: Cost of gas distributed by “SNGPL” 2015-16**

Item		Value in Mill. Rs
1	2	3
Stock in pipelines	beginning of the year	1030
	end of the year	967
Purchased		228,353
Internally consumed		2,008
<b>Total</b>		<b>228,416</b>

The quantity distributed by Mari Gas Company and output, intermediate consumption and gross value added has been calculated from the annual reports. It includes the quantities stemming from Mari’s own mining activities.

National Accounts output and value-added are measured at basic prices. This means that any tax levied on the products is excluded while any subsidy given to the distribution of gas is included. In the case of gas distribution taxes on products (here GST, only) is not shown separately in the company reports. These figures are relevant for calculating GDP which is the sum of all value added at basic prices plus taxes on products minus subsidies on products.

### c. Intermediate Consumption

Intermediate consumption is compiled from the company reports at purchaser's price. For Sui Southern and Sui Northern, the major input is the gas it is purchasing from the mining companies. For Mari Gas, the gas it is distributing from its own production in their mining establishments.

### d. Gross Value Added

The gross value added is calculated as output minus intermediate consumption. Gas distribution and its per unit value added by the companies have also been calculated. Table 3.18 shows the results.

**Table 3.18: Output, intermediate consumption and GVA of distribution of gas during FY 2015-16 (Rs. in Million)**

Distributor	Output	Intermediate consumption	Gross Value Added
1	2	3	4
SSGC	183,388	143,032	40,356
SNGPL	254,273	232,925	21,348
Mari Gas Co.	25,874	7,140	18,734
<b>Total</b>	<b>463,535</b>	<b>383,097</b>	<b>80,438</b>

### e. Rebasing Effect

The figures calculated for the new base year 2015-16 as compared with those calculated under the existing base year for 2005-06 show a huge increase of value-added of gas distribution activity by 243%. This is mainly attributed to the increasing prices of gas.

**Table 3.19: Comparison of output and GVA of gas distribution for 2005-06 and 2015-16 as per base years 2005-06 and 2015-16 (Rs. in Million)**

Description	Base 2005-06		Base 2015-16	% Change	
	2005-06 Prices	2015-16 Prices		Column 4 over 2	Column 4 over 3
	1	2		3	4
<b>A. Gross output</b>	<b>185,199</b>	<b>463,535</b>	<b>463,535</b>	<b>150.3</b>	<b>-</b>
<b>B. Intermediate Consumption</b>	<b>161,785</b>	<b>383,097</b>	<b>383,097</b>	<b>136.8</b>	<b>-</b>
SNGPL	95,354	143,032	143,032	50	-
SSGC	66,141	232,925	232,925	252.2	-
Mari gas company	291	7,140	7,140	2,353.60	-
<b>C. Gross Value Added (A-B)</b>	<b>23,414</b>	<b>80,438</b>	<b>80,438</b>	<b>243.5</b>	

### f. Extrapolation And Deflator

Output, intermediate consumption and value-added is calculated for each year at current prices and will be deflated by using WPI gas to arrive at constant prices.

## 3.4.3 Water Supply; Sewerage, Waste Management and Remediation Activities

### a. Coverage

This industry is covered in Section E of the PSIC and is comprised of Divisions 36-Water collection, treatment and supply, 37-Sewerage, 38-Waste collection, treatment and disposal activities; materials recovery, and 39-Remediation activities and other waste management services. It includes the collection, treatment, and distribution of water for domestic and industrial needs. The activities related to the collection, treatment, and disposal of various forms of wastes, such as solid or non-solid industrial or household waste, as well as contaminated sites are also included.

### b. Estimation of Output

In the 2005-06 base series of the GDP, the estimates of this industry are not separately available as it was included in the General Government Services. In 2015-16 rebasing, the contribution of this industry in the private sector has been estimated from the user side as the data needed for direct valuation through production approach is not available. The uses of the water, refuse/waste collection in industries i.e. agriculture, mining and quarrying, large-scale manufacturing industry, small and household manufacturing industry, construction, etc. have been taken from the surveys and census conducted for rebasing purposes. For industries where expenditures on water charges were reported along with electricity and gas, water charges have been estimated by using ratios of reported industries. Among the industries, the major expenditures on the water have been reported in agriculture i.e. Rs.84.363 billion out of which Rs.2.1 billion expenditure on canal water has been deducted. The remaining value of tube well water i.e. Rs.82.224 billion has been further adjusted for both electricity and diesel tube-wells in the public sector. The final overall expenditures on the water in the private sector have been estimated at Rs.81.934 billion

after excluding canal water and public sector tube well water. The expenditure on water charges incurred by households has been estimated through HIES 2015-16 which stands at Rs.65.1 billion. The household's expenditure has also been further adjusted for public sector supply of water using the proportion of piped water (27%) obtained from PSLM 2014-15 which comes out to be Rs.17.57 billion. The remaining amount of Rs.47.51 billion is the estimated value of the private-sector output of the water supply industry. The water supply expenditures in remaining industries have also been adjusted for public sector expenditures using industry-wise public-private employment ratios obtained from Labour Force Surveys which is Rs.29.55 billion. The reported expenditures by industries and households have been adjusted to the base year using CPI Water Supply. The total output/expenditures of the water supply have been estimated at Rs.159.0 billion.

The output of sewerage, waste collection, treatment, and disposal activities for households has also been estimated using expenditures reported in HIICS 2015-16 i.e. Rs.12.5 billion. Thus, the total output/expenditures in water supply; sewerage, waste management, and remediation activities in the private sector have been estimated at Rs.171.5 billion.

#### **c. Intermediate Consumption**

The input structure of water supply; sewerage, waste management, and remediation activities have been estimated from the establishments reported in the non-agricultural establishments part of the HIES Surveys. The input/output ratio has been estimated at 20%, which leads to the figure of intermediate consumption of Rs.34.3 billion. Thus the total GVA for the 2015-16 base years stands at Rs.137.2 billion.

#### **d. Extrapolation and Deflators**

The output is extrapolated at constant prices using inter-census (2017 and 1998) growth of urban dwellings, which is inflated by using CPI Water whereas intermediate consumption will be deflated through combined CPI energy and rent.

After the addition of water supply, the detailed estimates of the sector at both current and constant prices are as under:

**Table 3.20: Comparison of output and GVA of electricity for 2005-06 and 2015-16 as per base years 2005-06 and 2015-16 (Rs. Million)**

Description	Base Year 2005-06		Base Year 2015-16	% Change	
	2005-06 Prices	2015-16 Prices		Column 4 over 2	Column 4 over 3
1	2	3	4	5	6
<b>ELECTRICITY</b>					
A. Gross Output	487,415	1,811,621	1,816,204	272.62	0.25
B. Input	394,009	1,337,501	1,337,608	239.49	0.01
C. Gross Value Added (A-B)	93,406	474,120	478,596	412.38	0.94
<b>GAS</b>					
A. Gross output	185,199	463,535	463,535	150.29	-
B. Intermediate Consumption	161,785	383,097	383,097	136.79	-
C. Gross Value Added (A-B)	23,414	80,438	80,438	243.55	-
<b>WATER</b>					
A. Gross Output		171,518	171,518		-
B. Input		34,304	34,304		-
C. Gross Value Added (A-B)		137,214	137,214		-
<b>TOTAL</b>					
A. Gross Output	672,614	2,275,156	2,451,257	264.44	7.74
B. Input	555,794	1,720,598	1,755,009	215.77	2
C. Gross Value Added (A-B)	<b>116,820</b>	<b>554,558</b>	<b>696,248</b>	<b>496</b>	<b>25.55</b>

## 3.5 Construction

### 3.5.1 Coverage

The construction industry accounts for 2.8% of the total GDP in Pakistan. According to PSIC 2010, Section F deals with general construction and specialized construction activities for building and civil engineering works. It includes new work, repair, additions and alterations, the erection of prefabricated buildings or structures on the site, and also a construction of temporary nature. Further, the section includes the complete construction of buildings (Division 41), the complete construction of Civil engineering works (Division 42) as well as specialized construction activities, if carried out as a part of the construction process (Division 43).

### 3.5.2 Estimation Methodology

Viewed from its products, the construction activity covers land improvement and construction of all types of buildings, roads, bridges, railway lines, utility lines (telecommunication lines, power lines, pipelines) waterways, dams as well as repairs and maintenance of such infrastructure. In the old base i.e. 2005-06, the estimates of construction activity were developed by a product flow approach based on the expenditures incurred by the establishments undertaking the construction or the contractors or the sub-contractors purchasing the construction material. The data on expenditures on construction of these activities were obtained from GFCF reported under various industries. The estimates of construction in 2005-06 base were compiled using input-out ratios of the study conducted for change of base in 1999-2000. For 2005-06, a 'Private Building Construction Survey 2007-08' was conducted but it was only restricted to private construction

covering partial construction activity. Hence, the survey results could not be used for the estimation of value-added of the construction industry primarily due to limited coverage.

For 2015-16 rebasing of national accounts, to overcome the previous rebasing shortcomings in the construction industry, two separate questionnaires were designed for Construction Establishments and Private Buildings under the umbrella of Construction Survey 2014-15 to improve the coverage of formal and informal activities respectively. The sampling frame was based on construction industries incorporated in the Business Register (BR) of the Pakistan Bureau of Statistics (PBS) comprising of contractors and operators registered in the Pakistan Engineering Council (PEC), the statutory body to regulate engineering progression in the country. The frame, comprising of 24,299 establishments, was further stratified by provinces and by eight distinct categories by their capital/working capacity ranging from No limit to 20 million rupees. A sample of 2,566 establishments was selected by the Sample Design Section of the PBS. The response, received from 302 establishments (12%), was low due to security reasons and a general reluctance on the part of establishments. However, the non-response was adjusted through weights derived by the Sample Design Section. The raised output of establishments, comprising of construction of residential, non-residential buildings, other structures, construction work abroad, consultancy services, etc. have been estimated at Rs.661.2 billion whereas intermediate consumption, mainly comprising of cement, iron/steel, PVC pipes, sanitary items, block/bricks, ceramics and marble tiles, etc. has been estimated at Rs.287.9 billion resulting into GVA of Rs.373.7 billion (excluding bank charges and insurance payments) for the survey period i.e. 2014-15.

For private buildings (informal construction activity undertaken by households), all buildings/structures in urban and rural areas of four provinces of Pakistan were considered as the universe of the survey. A two-stage stratified random sampling technique, as applied in other household surveys conducted by the PBS e.g. Pakistan Social & Living Standard Measurement (PSLM), Household Integrated Economic Survey (HIES) and Labour Force Survey etc. was applied. In the first stage, enumeration blocks in urban areas and villages in rural areas were selected. Fourteen large cities in urban areas were considered as Self Representative Cities (SRC) and constituted separate stratum which were further sub-stratified into low, middle, and high-income groups. The remaining urban areas/localities within an administrative Division were considered as a separate stratum. In the rural domain, each administrative district in the provinces of Punjab, Sindh and KP was considered as an independent stratum whereas, in the Balochistan province, each administrative division was taken as a stratum. Keeping in view the objectives of the survey and resource constraints of the PBS, a sample of 2,065 enumeration blocks (PSUs) comprising of 1,245 enumeration blocks from urban areas and 820 from rural areas, was selected. The responses (97.5%) were received from 2013 sample areas. The remaining 52 sample areas had to be dropped due to security reasons. The non-response was adjusted by using weights provided by the Sample Design Section. The raised construction expenditures for private buildings, comprising of construction materials such as cement, iron/steel, PVC pipes, sanitary items, block/bricks, ceramics and marble tiles, etc. and construction related services such as architecture/engineers services, site preparation, electrician, plumbing charges, heat and air conditioning installation costs, painting, building completion and finishing, shuttering charges, cost of hiring machinery, plant & equipment, etc., has been estimated at Rs.836.2 billion. This construction expenditure has been treated as the output of private buildings. The input-output ratio of establishments @0.46 (derived from the construction of buildings by establishments) has been used to derive the estimates of intermediate consumption and GVA of private buildings which stands at Rs.384.1 billion and Rs.452.2 billion respectively. Hence, the total output, intermediate consumption and GVA obtained from the Survey during the reference period i.e. 2014-15 stands at Rs.1497.8 billion, 672.6 billion and

Rs.825.2 billion respectively. The survey results have been adjusted to the base year 2015-16 by using aggregate growth of construction expenditure at current prices reported by producing industries. Hence, output, intermediate consumption and GVA for the construction industry during the base year 2015-16 have been estimated at Rs.1644.3 billion, Rs.737.6 billion and Rs.906.6 billion respectively.

**Table 3.21: Comparison of GVA of the construction industry for 2005-06 and 2015-16 as per base years 2005-06 and 2015-16 (Rs. in Million)**

Description	Base 2005-06 (Current Prices)		Base 2015-16	% Change	
	2005-06	2015-16		column 4 / 2	column 4 / 3
1	2	3	4	5	6
Establishments			410,231		
Households (Private Buildings)			496,383		
<b>Gross Value Added</b>	197,110	608,467	906,614	359.95	49

### 3.5.3 Extrapolation and Deflators

The GVA estimates at current prices for subsequent years have been derived by using aggregate growth of construction expenditures at current prices reported by producing industries. WPI building material has been used to derive the value-added estimates at constant prices.



**SERVICES****4.1 Wholesale and Retail Trade****4.1.1 Coverage**

Wholesale and retail trade (WRT) covers Section (“G”) of Pakistan Standard Industrial Classification (PSIC) 2010, termed as “Wholesale and retail trade; repair of motor vehicles, motorcycles”. This industry is comprised of wholesale & retail trade, repair of motor vehicles & motorcycles, wholesale trade & retail trade except for motor vehicles and motorcycles.

**4.1.2 Estimation Methodology**

For the conceptual clarification and future guidance, the trade activity is briefly described in the light of the 2008 SNA, paras **6.146 to 6.150**: “Although wholesalers and retailers buy and sell goods, the goods purchased are not treated as part of their intermediate consumption when they are resold with only minimal processing such as grading, cleaning, packaging, etc. Wholesalers and retailers are treated as supplying services to their customers by storing and displaying a selection of goods in convenient locations and making them easily available for customers to buy. Their output is measured by the total value of the trade margins realized on the goods they purchase for resale. *A trade margin is defined as the difference between the actual or imputed price realized on a good purchased for resale and the price that would have to be paid by the distributor to replace the good at the time it is sold or otherwise disposed off.*”

According to SNA **6.147**, “*the standard formula for measuring output has to be modified for wholesalers or retailers by deducting from the value of the goods sold or otherwise used the value of the goods that would need to be purchased to replace them. The latter includes the additional goods needed to make goods recurrent losses due to normal wastage, theft or accidental damage. In practice, the output of a wholesaler or retailer is given by the following identity:*

**The value of output =**

the value of sales,

*plus* the value of goods purchased for resale and used for intermediate consumption,

compensation of employees, etc.,

*minus* the value of goods purchased for resale,

*plus* the value of additions to inventories of goods for resale,

*minus* the value of goods withdrawn from inventories of goods for resale,

*minus* the value of recurrent losses due to normal rates of wastage, theft or accidental damage.”

In Pakistan, the trade margins have to be calculated indirectly for the reason that the economy is not well documented and establishment-level data relating to trading activities are not available. However, the results follow the rationale of SNA 2008. The purpose is achieved by determining the marketable supply of the economy and applying ratios of average trade margins. The marketable supply is a commodity-based concept. It is a commodity flow approach and complies

with the “functional” or commodity-wise approach applied for measuring the output of crops, livestock, fishing and slaughtering. The formula is *Marketable supply at basic prices \* ratio for trade margin = output of WRT at basic prices (“trade margin”)*.

The above-mentioned concept of marketable supply is applied to three main groups of commodities. Crops, livestock products other than animals sold for slaughtering, forestry products and fishing are one group. The products produced by domestic large scale manufacturing, small scale manufacturing including slaughtering, are another group. The third group consists of imports of consumer goods, capital goods and intermediate goods. In each of these groups, we estimate the value of goods that are sold to intermediate or final domestic or foreign users via trade.

#### **4.1.3 Data, Sources and Results by Commodity Groups**

##### **a. Agricultural Products, Forestry and Fishing**

The output data for the agricultural products at basic prices, compiled for the value-added estimation of agriculture e.g. crops, livestock, forestry and fishing are subsequently used for the estimation of trade value-added. The marketable supply of agricultural products is estimated using the proportion of output retained by farmers for their own final consumption and wages in kind reported in the Household Integrated Income & Consumption Survey (HIICS) 2015-16 conducted by PBS. The information in HIICS is also available on “Own produced and consumed, retained, wages in kind, received as a gift etc.” on the agricultural commodities. Marketable supply percentages have been determined in this rebasing. Trade and transport margins for crops are computed from the “input/output survey of crops 2016-17”. The harvest prices are subtracted from wholesale prices to get wholesale margin and wholesale prices are subtracted from retail prices to get retail margins. Margins for livestock are derived from the study on “Beopari” conducted in 2016-17.

For fishing industry, the ratio for marketable supply is derived from HIICS 2015-16 and trade margins are calculated by using wholesale & retail prices taken from the price section and producer prices taken from the study on fishing 2016-17. For forestry products, the output is already calculated from the demand side like firewood. Thus, the output is close to the marketable supply. For forestry, the trade margin is repeated as in 2005-06 base.

##### **b. Products of Large Scale Manufacturing**

Ratios for marketable supply have been updated for the base year 2015-16. The output from the “CMI 2015-16” is the base value for the commodity flow approach. However, it has been clubbed according to the groups of the monthly production index “QIM” and the trade margins of the previous base year have been maintained.

##### **c. Products of Small Scale Manufacturing**

Ratios for marketable supply have been updated for the base year 2015-16. Trade margins and intermediate consumption of the previous base year have been maintained and applied to the output.

##### **d. Products of Slaughtering**

Different outputs of slaughtering avail the trading services. Meat hides and skins, fats etc. pass through this channel. Trade margins and ratios have been updated through the study on slaughtering (Butcher) conducted in 2016-17.

**e. Imports**

This group has been divided into three categories, i. e., consumer goods, capital goods and intermediate goods. The data on respective imports is being supplied by the external trade section of PBS. The marketable portions of the commodities and trade margins ratios have been retained from the previous base. The margins of the groups have been compiled based on margins of related commodities falling in the respective group.

**Table 4.1: Application of Ratios of WRT for Trade Value-Added and Extrapolation, base 2015-16**

Sr.No.	Items/commodities	Ratios to output for %			2015-16 (Rs. Million)				
		Market Supply	Trade ( MS)		Output	MS	Trade		
			Output	GVA			Output	GVA	IC
1	2	3	4	5	6	7	8	9	10
1	Wheat	75	37.9	29.3	809,658	607,620	230,365	177,934	52,431
2	Maize	95	37.9	29.3	139,399	132,429	50,207	38,780	11,427
3	Rice	90.2	37.9	29.3	186,884	168,596	63,919	49,371	14,548
4	Barley, Bajra, Jowar	95	37.9	29.3	17,476	16,602	6,294	4,862	1,433
5	Gram	66.3	19.4	15	25,284	16,751	3,251	2,511	740
6	Other pulses	78.7	33.4	25.8	11,991	9,442	3,157	2,439	719
7	Potatoes & Sweet potato	97.3	20	15.5	69,406	67,515	13,535	10,454	3,081
8	Onion	97.7	20	15.5	59,140	57,769	11,581	8,945	2,636
9	All Other Vegetables	94	24.1	19.4	53,455	50,265	12,097	9,769	2,329
10	Vegetables seeds	100	11.4	9.2	24,761	24,761	2,833	2,284	549
11	Fruits	95.7	51.2	45.1	281,274	269,265	137,939	121,496	16,442
12	Oils seeds	89	10.4	9.1	27,882	24,815	2,573	2,266	307
13	Flowers &F.Buds	97	41.1	34.5	10,448	10,135	4,165	3,497	668
14	Spices	97	22.9	20.1	32,249	31,282	7,151	6,299	852
15	Tobacco	40	21	15.6	16,323	6,529	1,373	1,017	356
16	Sugarcane	33	34.8	27.8	302,960	99,977	34,775	27,820	6,955
17	Green Fodders	40	20	16	489,076	195,630	39,126	31,301	7,825
18	Dry Fodders	40	20	15	323,092	129,237	25,847	19,386	6,462
19	Cotton	99	37.9	29.3	322,013	318,793	120,863	93,355	27,508
20	Live animals to be slaughtered	96.8	20.1	15.6	1,175,043	1,137,442	228,892	177,414	51,478
21	Poultry &Eggs (farming)	94.6	9	6.3	439,389	415,519	37,416	26,147	11,270
22	Milk	88.5	25.1	19.1	2,891,350	2,558,503	643,245	487,709	155,537
23	Wool &Hair	100	41.4	31.1	2,648	2,648	1,097	823	274
24	Dung &urine	50	20	18	315,000	157,500	31,500	28,350	3,150

Sr.No.	Items/commodities	Ratios to output for %			2015-16 (Rs. Million)				
		Market Supply	Trade (MS)		Output	MS	Trade		
			Output	GVA			Output	GVA	IC
1	2	3	4	5	6	7	8	9	10
25	Honey	83.4	43.7	39.4	38,700	32,277	14,110	12,722	1,388
26	Forestry	94	58.7	53.1	212,498	199,749	117,252	106,113	11,139
27	Fishing	91.7	42.1	36.8	175,047	160,456	67,594	59,009	8,584
28	Food Products	97	31.6	24.6	2,460,070	2,386,268	754,061	585,905	168,156
29	Beverages	97	31.6	24.6	218,024	211,484	66,829	51,926	14,903
30	Tobacco Products	97	31.6	24.6	105,035	101,884	32,195	25,016	7,180
31	Textiles	97	25.3	19.9	2,425,116	2,352,362	595,148	468,024	127,124
32	Wearing Apparel	97	25.3	19.9	692,835	672,050	170,029	133,711	36,318
33	Leather and Related Products	97	35.2	26.2	135,254	131,196	46,194	34,410	11,784
34	Wood and of Products of Wood and Cork, Except Furniture; Articles of Straw and Plaiting Materials	97	28.9	21	42,224	40,957	11,816	8,608	3,208
35	Paper and Paper Products + Printing and Reproduction of Recorded Media	97	45.6	33.9	247,690	240,260	109,630	81,532	28,098
36	Coke and Refined Petroleum Products	97	27.5	18.8	744,552	722,216	198,320	135,671	62,649
37	Chemicals and Chemical Products	97	34	29.8	864,113	838,190	284,565	249,678	34,888
38	Pharmaceuticals products	97	30.6	23.3	507,860	492,624	150,891	114,918	35,972
39	Rubber and Plastics Products	97	19	17.4	225,100	218,347	41,399	37,904	3,494
40	Other Non-Metallic Mineral Products	97	21.6	16.4	654,284	634,656	136,895	103,986	32,910
41	Basic Metals	97	19.8	16.2	488,252	473,604	93,916	76,936	16,980
42	Fabricated Metal Products, Except Machinery and Equipment	97	19.8	16.2	96,718	93,816	18,604	15,240	3,364
43	Computer, Electronic and Optical Products	97	41.6	34.3	17,299	16,780	6,981	5,763	1,217
44	Electric Equipment	97	41.6	34.3	257,195	249,479	103,783	85,684	18,100
45	Machinery and Equipment N.E.C.	97	31.6	27.9	103,050	99,958	31,597	27,872	3,725
46	Motor vehicles, trailers etc.	97	35.3	25.3	426,266	413,478	145,834	104,461	41,373
47	Other Transport Equipment	97	35.3	25.3	125,855	122,079	43,057	30,842	12,215
48	Furniture	97	28.9	21	48,480	47,026	13,567	9,884	3,683

Sr.No.	Items/commodities	Ratios to output for %			2015-16 (Rs. Million)				
		Market Supply	Trade (MS)		Output	MS	Trade		
			Output	GVA			Output	GVA	IC
1	2	3	4	5	6	7	8	9	10
49	Other Manufacturing	97	31.2	24.4	95,814	92,940	29,029	22,690	6,339
50	Small scale manufacturing	90	52.3	39.7	912,193	820,974	429,369	326,321	103,049
51	SL.Meat	97	9.8	9	1,511,795	1,466,441	144,416	132,083	12,333
52	SI-other products	100	39.6	26.7	157,662	157,662	62,439	42,146	20,293
53	Imp-consumer products	95	31	24.8	870,977	827,428	256,503	205,202	51,301
54	Imp-capital goods	68	22	20.1	1,482,678	1,008,221	221,809	202,622	19,186
55	Imp-intermediate goods	72	25	21.9	2,305,095	1,659,668	414,917	364,090	50,827
56	Natural Gas(CNG station)		80	80	35,214	35,214	35,214	28,171	7,043
57	Maintenance & Repair of Vehicles		90	90	201,685	201,685	201,685	181,516	20,168

#### 4.1.4 Effect of Rebasing

Table 4.2: Gross Value Added of Trade 2005-06 and 2015-16 as per base years 2005-06 and 2015-16 (Rs. Million)

Gross Value Added of Trade-in	Base 2005-06		Base 2015-16	% increase	
	2005-06 Price	2015-16 at prices of 2015-16		Col. 4 over 2	Col. 4 over 3
1	2	3	4	5	6
<b>Agriculture</b>	<b>313,370</b>	<b>1,165,489</b>	<b>1,512,073</b>	<b>382.5</b>	<b>29.7</b>
Crops	154,620	505,438	613,786	297	21.4
Livestock	118,851	505,283	733,164	516.9	45.1
Forestry	23,085	111,879	106,113	359.7	-5.2
Fishing	16,813	42,889	59,009	251	37.6
<b>Manufacturing</b>	<b>791,250</b>	<b>2,586,219</b>	<b>2,911,208</b>	<b>267.9</b>	<b>12.6</b>
LSM	686,937	2,129,208	2,410,659	250.9	13.2
SSM	73,418	330,237	326,321	344.5	-1.2
Slaughtering	30,895	126,773	174,229	463.9	37.4
<b>Imports</b>	<b>271,588</b>	<b>773,628</b>	<b>771,914</b>	<b>184.2</b>	<b>-0.2</b>
<b>Others</b>	<b>34,231</b>	<b>125,956</b>	<b>209,687</b>	512.6	66.5
CNG (special stores)	5,530	17,868	28,171	409.4	57.7
Maintenance and repair of vehicles	28,701	108,088	181,516	532.4	67.9
<b>TOTAL</b>	<b>1,410,439</b>	<b>4,651,292</b>	<b>5,404,882</b>	<b>283.2</b>	<b>16.2</b>

## 4.2 Transport and Storage

### Introduction

It is a vast sector, data sources are multiple and data availability is the main factor to determine the estimation approach. The sources are annual reports and questionnaires received from respective enterprises/establishments. These have been supplemented by studies and surveys. The estimation is a combination of functional, enterprise and establishment approaches. The indicators and ratios have also been taken from the surveys/studies of 2015-16. The sources have been mentioned in the respective sections.

### Coverage

The coverage is according to the PSIC-2010 which includes the provision of passenger or freight transportation, by land, water and air. It includes rail, road, pipeline, water, air and associated activities such as terminal and parking, cargo handling, storage etc. The renting of transportation equipment with operators, postal and courier services are also part of this industry. The sources of data along with PSIC references are given below.

**Table 4.3: Transport and Storage Structure and Sources of Data by PSIC**

PSIC 2010	Description	Company reports	Survey and studies for rebasing
1	2	3	4
491	Railway transport	Pakistan Railways	-
492	Other land transport	-	Road Transport
493	Transport via pipelines	APL,PARCO(Oil Pipeline),FOTCO	-
501	Sea and coastal water transport	Pakistan National Shipping Corporation (PNSC)	-
502	Inland water transport	-	Inland Water Transport (Boats Inland)
511	Air transport	Domestic, airlines (PIA, Sareen Air, Air Blue), Foreign airlines	-
521	Storage and warehousing	-	The Study on warehouses and Storage 2016-17
791	Travel agencies and tour operators	-	Travel agents/Tour operators & Railways franchised booking agents.
522	Other supporting and auxiliary transport activities	KPT,PQA,KICT,QICT,PICT,	Shipping, Goods Forwarding and Custom clearing agents and International freight forwarders
		Engro Vopak Container Terminal	
531	National post activities	Post Office, Pakistan	-
532	Other courier services	-	Courier services & franchised post offices

The company reports serve the enterprise concept. The studies are based on the establishment concept and some data series example mechanized road transport- are compiled by functional approach.

#### 4.2.1 Transport

It has been divided into three main groups, land, water and air transport. These are further subdivided into groups according to their characteristics. Passengers and freight transportation are the main categories according to the PSICs

##### a. Land Transport

This is the major category of the industry. Transportation via railways, road and pipeline are the sub-categories. These are briefly discussed below.

##### i. Transport via Railways

Pakistan Railways (PR) is a commonly used mode of transportation for passengers and freight in the country. The data are collected through questionnaires supplemented by the annual reports. The coverage also includes Railways franchised booking agents and Pakistan Railways Advisory and Consultancy Services (PRACS). For PR, annual estimates are compiled at current prices based on the reports received from the source and converted into constant prices using double deflation. For franchise booking agents, a special survey was conducted in 2016-17. A sampling frame was obtained from PRACS and efforts were made to collect information directly from the franchise booking agents. However, a reasonable response was not received. The matter was

taken up with PRACS and they have started providing annual output and IC of all franchise booking agents along with their report.

### **Extrapolation and Deflator**

For subsequent years output and IC is compiled at current prices based on reports received from sources. For the output of PR, PRACS and franchise booking agents, a specifically developed unit value index by combining passengers and tonnage per kilometer is used as the deflator. For IC, WPI diesel is applied to arrive at constant prices.

#### **ii. Road transport**

It is a major component of transportation activities, which is mostly informal. It contributes 85% to GVA of the transport and storage industry. In the case of road transport, the most reliable figure is that of the number of registered vehicles used for commercial transport. Therefore, the output and the input of road transport have been estimated per vehicle. Because of the informal nature of the industry and the non-availability of the data at the establishment level, the value-added contribution for the base year has been estimated indirectly using the number of vehicles on road obtained from National Transport Research Centre (NTRC). In 2015-16, output and IC per vehicle were estimated through a study conducted in 18 major cities of Pakistan separately for mechanized and non-mechanized road transport. Information was collected for 24 types of mechanized vehicles by the field staff of the Regional / Field offices of PBS. The gross value added of the mechanized road transport industry has been estimated by multiplying the number of vehicles on road obtained from NTRC with category-wise output and IC per vehicle obtained from the study.

A dedicated study for non-mechanized road transport e.g. hand cart, horse cart, donkey cart and camel cart etc. was conducted in 18 major cities of the country. Information on 06 categories was collected and output and IC per vehicle were estimated. Number of non-mechanized categories already in use since 2007-08 provided by PBS, Karachi were extrapolated by growth in several animals for work provided by the Ministry of National Food Security and Research (M/o NFS&R).

### **Extrapolation and Deflator**

Output and IC for mechanized road transport are extrapolated at constant prices by using several mechanized vehicles on road provided by NTRC which are inflated by CPI (mechanized) urban and WPI (diesel) respectively.

Output and IC for non-mechanized road transport are extrapolated at constant prices by using the growth of several animals for work and inflated by using CPI (General) urban.

#### **iii. Transportation via Pipelines**

The pipeline transport industry comprises 03 establishments namely, Asia Petroleum Limited (APL), Pak-Arab Refinery Ltd. (PARCO) (Oil Pipeline) and Fauji Oil Terminal and Distribution Company (FOTCO). Output and IC at current prices are compiled from data received from these sources. CPI (General) is used as the deflator.

#### **b. Water Transport**

The Water Transport industry comprises of Pakistan National Shipping Corporation (PNSC), Karachi Port Trust (KPT), Port Qasim Authority (PQA), Gawadar Port Authority (GPA), Container Terminal Companies, Shipping & Customs Clearing Agents and Goods Forwarding Agencies, International Freight Forwarders and Boats.

PNSC, KPT, PQA, GPA and Container Terminal Companies provide data on output and IC on current prices. A specifically developed unit value index by combining cargo handled at seaports and revenue is used as a deflator for output and IC WPI (diesel) is applied.

For Shipping & Customs Clearing Agents and Goods Forwarding Agencies, a dedicated study was conducted by field staff of PBS to estimate output, IC and GVA in the base year. The sampling frame of 4,016 establishments for Shipping & Customs Clearing Agents was obtained from the Federal Board of Revenue (FBR) and for Goods Forwarding Agencies frame of 10,588 establishments was received from the Goods Forwarding Association.

To estimate, output, IC and GVA of International Freight Forwarders in the base year, a study was conducted by using the sampling frame of 644 establishments, provided by the Pakistan International Freight Forwarders Association.

Boats comprise of inland and marine. This industry is completely informal and its contribution to GDP 2015-16 rebasing has been assessed through a study. A sample frame of inland boats was developed by utilizing the field staff of PBS by visiting commonly used crossing points in their respective areas and 769 crossing points were identified. In their second visit, PBS field staff filled questionnaires from boat operators through the interview method. Output amounting to RS.1,035 million and IC amounting to Rs.460 million were estimated resulting in GVA of Rs.575 million. For Marine boats, the frame was received from the Mercantile Marine Department, Karachi which consisted of 437 passenger water transport boats excluding the fishing boats. For marine, per boat output and IC were estimated in the base year.

### **Extrapolation and Deflators**

For Shipping and Customs Clearing Agents and International Freight Forwarders, output and IC at current prices will be extrapolated by using the growth of trade (import plus exports) other than petroleum products. A specifically developed unit value index by combining cargo handled at seaports and revenue which is used as a deflator for output and IC WPI (diesel) is applied.

For Goods Forwarders, output and IC at constant prices are extrapolated by the growth in the number of trucks on road provided by NTRC. A specifically developed unit value index by combining cargo handled at seaports and revenue is used as an inflator for output and, for IC WPI (diesel) is applied.

For inland boats, output and IC are extrapolated at constant prices by the growth of a number of boats. The output is inflated by CPI (general) and IC by WPI (diesel). Similarly, for marine boats, output and IC are extrapolated at constant prices by multiplying the number of marine boats with per boat output and IC estimated in the base year. To arrive at current prices, CPI (general) and WPI (diesel) are used for output and IC respectively.

### **c. Air Transport**

The Air transport industry comprises domestic airlines, foreign airlines, Sialkot international airport (SIAL) (the only airport in the private sector), Civil Aviation Authority (CAA), travel agents & tour operators. Information regarding output, IC and GVA are compiled from the sources on annual basis at current prices except for travel agents and tour operators. Based on the data provided by Pakistan International Airlines (PIA), a specifically developed unit value index by combining passengers and tonnage per kilometer is used as a deflator for output as well as IC.

To assess the value addition of travel agents & tour operators in the industry, a study was conducted during 2016-17. A Sampling Frame containing 5,716 establishments was provided by Capital Administration and Development Division (CAAD), International Air Transport Association (IATA) and for Non-IATA from Provincial Tourism Departments.

## **Extrapolation and Deflators**

For travel agents and tour operators, output and IC are extrapolated at current prices by using the growth of output of domestic and international airlines. Based on the data provided by PIA, a specifically developed unit value index by combining passengers and tonnage per kilometer is used as a deflator for output as well as IC.

### **4.2.2 Postal and Courier Activities**

This industry contains Pakistan Post, franchise post offices and courier services. Pakistan Post is a public sector entity that provides its financial details at current prices on an annual basis.

Contribution towards the GDP of franchise post offices has been estimated through a study conducted in 2016-17. A sampling frame of 118 establishments was provided by Pakistan Post. Output, IC and GVA were estimated for the base year. For courier companies, no sampling frame was available; hence, the same was developed through the internet. 21 major courier companies were identified and data were collected from these companies by regional / field offices of PBS.

## **Extrapolation and Deflators**

For franchise post offices, output and IC is extrapolated at constant prices by using the growth rate of the number of franchise post offices. Output and IC of courier activities are extrapolated at current prices by using the growth of output and IC of Pakistan Post respectively.

## **Postal Services**

The output of Pakistan Post, franchise post offices and courier services are deflated using CPI (postal services), however for deflating IC different deflators are used. For Pakistan Post, Implicit Volume Index for output (IVO), Franchise Post offices CPI (postal services) and for Courier Companies WPI (Diesel), are used as deflators.

### **4.2.3 Warehousing and Storage**

The warehousing and storage industry is covered under PISIC-2010, Group 52 and Class 5210. This industry comprises refrigerated storage, bulk liquid or gas storage, storage of goods in foreign trade zones and other warehouses and storage activities. Due to the non-availability of a reliable sampling frame, efforts were made to develop a new sampling frame by consulting sources such as Export Processing Zones Authority (EPZA) and the internet, resultantly; a frame of 741 establishments was developed. Data was collected through the field staff of Regional / Field Offices of PBS.

## **Extrapolation and Deflators**

For this industry, output and IC will be extrapolated at constant prices by using the growth of output and IC of wholesale and retail trade. WPI (Food and Energy) will be used as an inflator.

The detailed results for the base year 2015-16 are given in table 4.4 below.

**Table 4.4: Output, IC and GVA by Major Components (Rs. in Million)**

Sub-Sectors	Output	IC	GVA	% Share	I/O Ratio
1	2	3	4	5	6
Railways	45,162	18,467	26,695	0.77	0.41
Pipeline Transport	7,175	2,064	5,111	0.15	0.29
Road Transport	4,786,657	1,833,990	2,952,667	85.14	0.38
Water Transport	177,645	70,946	106,699	3.08	0.4
Air Transport	314,578	136,084	178,494	5.15	0.43
Storage	332,101	174,442	157,659	4.55	0.53
Postal/Courier	54,028	13,173	40,855	1.18	0.24
<b>Total</b>	<b>5,717,348</b>	<b>2,249,166</b>	<b>3,468,182</b>	<b>100</b>	<b>0.39</b>

## Rebasing Effect

**Table 4.5: Comparison of GVA (at bp) for 2015-2016 as per base years 2005-2006 & 2015-2016 (Rs. Million)**

Name of activity	Base 2005-2006		Base Year 2015-2016	Growth Rate		Difference
	2005-2006 Price	2015-2016 Price		Col.4/2	Col.4/3	
1	2	3	4	5	6	7
Railways	7,474	26,869	26,695	257.17	-0.65	-174
Pipeline Transport	5,203	5,112	5,111	-1.77	-0.02	-1
Road Transport	721,597	2,818,007	2,952,667	309.19	4.78	134,660
Water Transport	33,167	79,409	106,699	221.7	34.37	27,290
Air Transport	43,670	172,158	178,494	308.73	3.68	6,336
Storage	28,209	93,026	157,659	458.9	69.48	64,633
Postal/Courier	15,966	35,922	40,855	155.89	13.73	4,933
<b>GVA</b>	<b>855,286</b>	<b>3,230,503</b>	<b>3,468,182</b>	<b>305.5</b>	<b>7.36</b>	<b>237,679</b>

## 4.3 Accommodation and Food Service Activities (Hotels and Restaurants)

### 4.3.1 Coverage

According to PSIC-2010 accommodation and food service activities include the provision of short-stay accommodation for visitors and other travelers and the provision of complete meals and drinks fit for immediate consumption. The accommodation activities are covered under PSIC code 55 and include the provision of short-stay accommodation for visitors and other travelers, typically on a daily or weekly basis provided by hotels, resort hotels, suite/apartment hotels, motels, motor hotels, guesthouses, bed and breakfast units, visitor flats and bungalows, time-share units, holiday homes, chalets, housekeeping cottages and cabins, youth hostels and mountain refuges. In the food and beverage serving activities, all the establishments providing complete meals or drinks fit for immediate consumption, whether in traditional restaurants, self-service, or take-away restaurants, whether as permanent or temporary stands with or without seating have been covered. The establishment engaged in the production of meals not fit for immediate consumption or not planned to be consumed immediately or those producing prepared food that is not considered to be a meal have not been covered here. Under food and beverage service activities establishments like restaurants, cafeterias, fast-food restaurants, pizza delivery,

take-out eating places, ice cream truck vendors, mobile food carts, and food preparation in market stalls have been covered.

The share of accommodation and food service activities (Hotels & Restaurants) in the GDP is 1.90% but was not published separately and was part of wholesale and retail trade. To re-assess the contribution of accommodation and food service activities towards the GDP of Pakistan, the data collection was undertaken in two parts i.e. census part and the survey part. In the census part, big establishments i.e. listed with Pakistan Hotels Association (PHA), Air-conditioned restaurants, and PTDC motels have been covered whereas all remaining establishments including take-out eating places, ice cream truck vendors, coffee shops/fruit juice bars, and mobile beverage vendors have been covered in the survey part i.e. Other Private Services (OPS) 2016-17. The total number of establishments engaged in the provision of accommodation and food service activities stands at 294,044.

### 4.3.2 Output, Intermediate Consumption, and GVA

The survey results have been adjusted to the base year 2015-16 and the total output of the industry at basic prices stands at Rs.864.0 billion whereas intermediate consumption is Rs.437.269 billion yielding a gross value added of Rs.426.7 billion. The estimated GVA in the existing series, on 2005-06 base for 2015-16 at current prices is Rs.521.4 billion. The application of fixed growth rate in 2005-06 rebasing has resulted in an overestimation of Rs.94.7 billion (18.2%) in the value-added of the industry.

### 4.3.3 Extrapolation and Deflators

The GVA of accommodation and food service activities was used to be extrapolated through fixed growth rates i.e. 10% in 1999-2000 rebasing and 4.92% in 2005-06 rebasing due to non-availability of the relevant indicators. In 2015-16 rebasing too, extrapolation of the GVA of this industry is an issue. Keeping in view the current data limitation, a fixed growth rate of 4.08% (an inter-census growth rate of urban-dwelling for 2 and more rooms) is used to estimate output and IC at constant prices. The output of the industry is inflated through CPI Restaurants and Hotels (urban) whereas weighted CPI food, energy and rent (urban) are used for inflation of intermediate consumption. GVA is the difference between output and IC.

### 4.3.4 Rebasing Effect

Table 4.6: Gross Value Added of Hotel & Rest. 2005-06 and 2015-16 as per base years 2005-06 and 2015-16 (Rs. Million)

Gross Value Added	Base 2005-06		Base 2015-16	% increase	
	2005-06 Price	2015-16 at prices of 2015-16		Column 4 over 2	column 4 over 3
1	2	3	4	5	6
<b>Hotel &amp; Restaurants</b>	131124	492449	426719	225.4	-13.3

## 4.4 Information and Communication Services

### Coverage

This is covered under Section “J”. This section includes the production and distribution of information and cultural products, the provision of the means to transmit or distribute the products, as well as data or communication, information technology activities and the processing of data and other information service activities.

The main components of this section are publishing activities including software publishing (division 58), motion picture and sound recording activities (division 59), radio and TV broadcasting and programming activities (division 60), Telecommunication activities (division 61) and information technology activities (division 62) and other information service activities (division 63). In 2015-16 rebasing, the contribution of these activities has been assessed through studies briefly described in the following:

#### **4.4.1 Publishing Activities**

According to the survey “Other Private Services (OPS) 2016-17”, there are 5,655 establishments engaged in the publishing activity in the private sector in Pakistan including 988 units engaged in book publishing, 273 units in the publishing of newspapers, journals and periodicals, 52 units in the publishing of directories and mailing lists and 4,341 units in other publishing activities. The study results have been adjusted to 2015-16. The output of the activity has been estimated at Rs.18.189 billion whereas intermediate consumption is Rs.4.756 billion resulting in a GVA of Rs.13.433 billion for 2015-16. A brief on Survey on OPS is given at Annexure-IV.

#### **Extrapolation and Deflators**

The output and intermediate consumption at constant prices are extrapolated by using the growth rate of student enrolments. The output is inflated by using CPI (Education) and IC by CPI (Energy and rent) urban.

#### **4.4.2 Motion Pictures, Video And Television Programme Production**

A dedicated study was conducted during 2015-16 to capture Motion Pictures, video and television programme production. The sample frame was received from Pakistan Electronic Media Authority (PEMRA). The output of the activity has been estimated at Rs.169.193 billion whereas intermediate consumption is Rs.57.704 billion resulting in a GVA of Rs.111.489 billion for 2015-16.

#### **Extrapolation and Deflators**

The extrapolation of output and IC at current prices is made by using the growth of output and IC of TV channels (ATV, PTV & PBC) and Output is deflated by CPI (Recreation) while IC is deflated by CPI (Energy and rent) urban.

#### **4.4.3 Telecommunication**

This division includes the activities of providing telecommunications and related services i.e. transmitting voice, data, text, sound and video. These activities include wired & wireless telecommunication and satellite telecommunication activities etc. The source agencies are Pakistan Telecommunication Corporation Ltd (PTCL), all other major telecommunication companies and mobile phone companies. The data is collected regularly from these companies. The output of the activity has been estimated at Rs.492.956 billion whereas intermediate consumption is Rs.178.567 billion resulting in a GVA of Rs.314.389 billion for 2015-16.

#### **Extrapolation and Deflators**

The GVA at current prices is compiled from the reports provided by the source agencies. Output is deflated by CPI (Communication) and IC is deflated by using Implicit Volume Index for output (IVO).

#### 4.4.4 Computer Programming and Consultancy

A study was carried out during 2016-17 to estimate the value addition of computer programming and consultancy activities. The sampling frame was received from Pakistan Software Export Board (PSEB). Efforts were made to collect primary data however much success was not attained. After detailed deliberation with PSEB, PSEB agreed to provide valuable information regarding revenues, exports, the core area of expertise and employment size. The identification of establishments was kept confidential by PSEB. PBS utilized this information and also consulted with the Pakistan Software House Association (P@SHA). Results were adjusted to 2015-16. The output of the activity has been estimated at Rs.161.263 billion whereas intermediate consumption is Rs.32.305 billion resulting in a GVA of Rs.128.958 billion for 2015-16.

#### Extrapolation and Deflators

The current output and IC have been extrapolated by using the growth of exports of Information Technology (IT) and Computer Services. CPI (Communication) is used as the deflator.

#### 4.4.5 Information Service Activities

Base year estimates for information service activities have been developed through a study “Computer-related activities 2016-17” with the collaboration of PSEB and P@SHA. Results were adjusted to 2015-16. This activity includes data processing service of web hosting & related activities, news agencies and telephone-based information services. The output of the activity has been estimated at Rs.52.403 billion whereas intermediate consumption is Rs.8.764 billion resulting in a GVA of Rs.43.639 billion for 2015-16.

#### Extrapolation and Deflators

The current output and IC have been extrapolated by using the growth of exports of telecommunication, computer and information services. CPI (Communication) is used as the deflator.

**Table 4.7: Output, Intermediate consumption and GVA of Information and Communication Services for the year 2015-16 Base according to PSICs (Rs. Million)**

PSIC 2010	Name of activity	Output	Input	GVA
1	2	3	4	5
<b>58-63</b>	<b>Information and Communication Services</b>	894,004	282,096	611908
58	Publishing activity	18,189	4,756	13,433
59-60	Motion picture, video and television programme production, sound recording	169,193	57,704	111,489
61	Telecommunication	492,956	178,567	314,389
62	Computer programming, consultancy and related activities	161,263	32,305	128,958
63	Information service activities	52,403	8,764	43,639

## Rebasing Effect

**Table 4.8: Comparison of GVA of Information and Communication services, Base 2005-06 and 2015-16**

PSIC 2010	Name of activity	Base-2005-06 (Current Prices)		Base 2015-16	Change in		
		2005-06	2015-16	2015-16	%		Mill. Rs.
					Col.5/3	Col. 5/4	Col. 5-4
1	2	3	4	5	6	7	8
<b>58-63</b>	Information and Communication Services	170,539	458,339	611908	258.81	33.51	153,569
<b>58</b>	Publishing activities			13433			13,433
<b>59-60</b>	Motion picture, video and television programme production, sound recording			111,489			111,489
<b>61</b>	Telecommunication	114,742	310,136	314,389	174	1.37	4,253
<b>62</b>	Computer programming, consultancy and related activities	55,797	148,203	128958	131.12	-12.99	-19,245
<b>63</b>	Information service activities			43639			43,639

## 4.5 Finance and Insurance Activities

### 4.5.1 Introduction

The finance and insurance sector constitutes financial corporations providing financial services. The production (goods and services) of financial services is the result of financial intermediation, financial risk management, liquidity transformation or auxiliary financial activities. According to SNA 2008 financial intermediation is carried out by financial corporations exclusively. Financial corporations consist of all resident financial institutes that are primarily engaged in providing financial services, including insurance and pension fund services, to other institutional units. The provision of financial services is always subject to strict regulation and financial institutes always provide financial services as “primary production”. The SNA 2008 often uses the term “financial institution” which is a pure synonym for “financial corporation”. Financial production is an economic activity. SNA 2008 describes that there are two main types of output, namely goods and services which are described as products. The output of an enterprise/ establishment is classified as market output or non-market output based upon the nature of production. The market output of financial services is available at economically significant prices while non-market output is provided in the absence of economically significant prices.”

### 4.5.2 Classification Financial Corporations

Finance and insurance activities (Section K) are classified according to PSIC-2010 into three main Divisions i/e Division 64 “Financial service activities except for insurance and pension funds”, Division 65 Insurance, reinsurance and pension funding, except compulsory social security; and Division 66 Activities auxiliary to financial service and insurance activities. A special group 641, “monetary intermediation”, is subdivided into 6411 “central banking” and 6419 “other monetary intermediation”.

#### Sub-classification

The SNA 2008 sub-classifies the financial corporations' sector (S12) into nine sub-sectors according to its activity in the market and the liquidity of its liabilities. These nine subsectors are

shown below. All the subsectors are financial intermediaries of one sort or another except subsector 6 and subsector 7.

- i. Central Bank
- ii. Deposit-taking corporations except for the Central Bank
- iii. Money market funds (MMF)
- iv. Non-MMF investment funds
- v. Other financial intermediaries except for insurance corporations and pension funds (ICPF)
- vi. Financial auxiliaries
- vii. Captive financial institutions and money lenders
- viii. Insurance corporations (IC)
- ix. Pension funds (PF)

The above sectors of financial corporations may also be aggregated to *financial intermediaries, financial auxiliaries and other financial corporations.*

### 4.5.3 Measurement of Financial Services

The financial intermediation services provided by the different financial institutions are separated into two distinct types according to the nature of measurement. Firstly, financial intermediation services directly measured and secondly, financial intermediation services measured indirectly which are termed as Financial Intermediation Services Indirectly Measured (FISIM).

#### a. Financial Services directly measured

The financial services, in return for explicit charges, such as fees, commissions and brokerage which are paid directly by the clients, are provided by different categories of financial institutions and are called financial services directly measured. These services may be paid either explicitly or implicitly or both, for example, deposit-taking institutes (such as banks) may charge households to manage a portfolio. Similarly, specialized financial institutes may also charge non-financial corporations to arrange a flotation of shares. Most probably, the largest direct fee charged is by the credit card issuers to those units which accept credit cards as a means of payments or to the cardholders who pay annual card fees. Such fees constitute the output of the financial services.

#### b. Financial Intermediation Services Indirectly Measured (FISIM)

Financial institutes (e.g., banks etc.) provide financial intermediation services to the clients which are recorded as “services rendered”. Such financial intermediation services are part of the financial output and are included in GDP. The remuneration received against these financial services cannot be measured directly. This remuneration is measured indirectly by imputing a service charge on account of the clients of the banks. According to SNA 2008, such services are called “financial intermediation services indirectly measured” and it’s easy to pronounce the acronym is “FISIM” which is an implicit payment against banking services.

FISIM applies only to loans and deposits, and only when those loans and deposits are provided by, or deposited with, financial institutions. The SNA 2008 calculates the output of FISIM on loans ( $Y_L$ ) and deposits ( $Y_D$ ) only, using a reference rate ( $rr$ ). Assuming these loans and deposits attract interest rates on Loans ( $r_L$ ) and interest rates on Deposits ( $r_D$ ), respectively. The output of FISIM is calculated according to the formula

$$(r_L^i - rr^i)Y_L^i - (r_D^i - rr^i)Y_D^i$$

Or

$$(r_L^i - rr^i)Y_L^i + (rr^i - r_D^i)Y_D^i$$

Where “r” is the actual rate of interest, “rr” is the reference rate which is Karachi Interbank Offer Rate (KIBOR), “D” stands for deposits and “L” for loans, “Y” for total value and “t” for the current period. This formula is applied for all types of assets and liabilities to be covered in the compilation of FISIM. PBS receives data about Loans and Deposits, KIBOR and rates of interest on deposits and Loans from SBP.

The cornerstone in the measurement of FISIM is the “reference rate” which according to SNA 2008 guidelines represents a risk-free rate of interest i.e. (KIBOR in the case of Pakistan). FISIM is also allocated among other producing industries as input based on their respective share in Loans and Deposits.

FISIM on constant prices is calculated using the base year KIBOR rate and interest rates on Loans and Deposits after deflating Loans and Deposits by CPI General.

#### **4.5.4 The Output of Financial Corporations**

The major portion of the output of deposit-taking institutions (approximately 86%) is measured by FISIM. The rest is compiled by direct measurement. The Non-market output of a few financial institutions such as Central bank, House building Finance Corporation, Employees’ old-age benefit institute, Pakistan stock exchange company and Pakistan mercantile exchange company, is compiled using the cost of production approach; the horizontal summation of compensation of employees, consumption of fixed capital and intermediate consumption. However, the market output of the remaining institutes e.g. insurance companies, asset management companies etc. is calculated by subtracting intermediate consumption from their output.

The PBS also conducted two studies to estimate the output, IC and value addition of Exchange companies, and Stock & mercantile exchange brokers for the year 2015-16. The sampling frame of stock exchange companies was provided by SBP while for stock and mercantile exchange brokers it was received from the Securities and Exchange Commission of Pakistan (SECP).

#### **4.5.5 Intermediate Consumption of the Financial Corporations**

According to SNA 2008, Intermediate consumption is strictly consisting of inputs while delivering financial services. These expenses are part of the Profit & Loss Accounts in the financial statement and consist of three positions namely “administrative expenses, other provisions/write-offs net and other charges”. The provisions/write off-net and other charges fall outside the boundary of intermediate consumption and are omitted while calculating intermediate consumption. So SNA-2008 guides that intermediate consumption (IC) is simply that portion of administrative expenses that preclude salaries, allowances, charge for defined benefits plan, non-executive directors’ fees, amortization, depreciation, insurance service charges and any kind of donations. Intermediate consumption of the SBP generally consists of note printing charges, agency commissions, establishment charges and any other charges.

#### **4.5.6 Gross Value Addition**

The GVA of financial institutions is calculated by the production approach.

#### 4.5.7 Extrapolation and Deflators

For the subsequent years, output and IC for all financial institutes except stockbrokers is compiled on current prices from the data directly received from the sources. As discussed above in para 4.5.4 PBS conducted two studies in the base year 2015-16 i.e. Exchanges Companies and Stock and mercantile exchange brokers. The Output and IC of Exchange Companies are extrapolated using the growth rate of workers' remittances received from SBP. However, mercantile exchange brokers' output and IC is extrapolated using the growth rate of "Total traded volume on Pakistan Mercantile Exchange Limited (PMEX). CPI (general) is used as the deflator.

For stockbrokers output and IC is extrapolated at constant prices by using the growth rate of "Number of shares traded" on the Pakistan Stock Exchange (PSX). All share index of PSX is used as an inflator. Results of GVA by Division for the base year 2015-16 and their effects are given in Table 4.9 below.

**Table 4.9: GVA by Division for the base year 2015-16 and their effects**

Division	Description	Base Year 2005-06		Base Year 2015-16	% Increase in GVA	
		2005-06 Price	2015-16 at 2015-16 prices		col. 5 over 3	col. 5 over 4
		GVA				
1	2	3	4	5	6	7
64	Financial service activities, except insurance and pension funding	253,865	451,102	451,034	77.67	-0.01
65	Insurance, reinsurance and pension funding, except compulsory social security	10,384	35,596	35,596	242.8	0
66	Activities auxiliary to financial service and insurance activities	18,671	57,602	43,555	133.28	-24.39
<b>GVA-Total</b>		<b>282,920</b>	<b>544,301</b>	<b>530,186</b>	<b>87.4</b>	<b>-3</b>

The detailed results by source/ group for the base year 2015-16 and their effects are given below.

**Table 4.10: Output, Intermediate consumption and GVA of Finance and Insurance for the year 2015-16 Base by source/ group (Rs. Million)**

Sub-Sectors	Base Year 2005-06						Base Year 2015-16			% Increase in GVA	
	2005-06 Price			2015-16 at 2015-16 Price			Output	IC	GVA	col. 10 over 4	col. 10 over 7
	Output	IC	GVA	Output	IC	GVA					
1	2	3	4	5	6	7	8	9	10	11	12
Central Banking	11,972	6,236	5,736	40,913	19,836	21,077	40,913	19,836	21,077	267.45	-
Other Monetary Intermediation	264,267	25,175	239,092	566,575	147,733	418,842	566,575	147,733	418,842	75.18	-
Financial Leasing	6,007	779	5,228	4,558	588	3,970	4,468	570	3,898	-25.44	-1.81
Other Credit Granting	4,699	890	3,809	11,558	4,346	7,212	11,562	4,346	7,216	89.45	0.06
Insurance, reinsurance and pension funding except compulsory social security	19,666	9,282	10,384	80,621	45,024	35,597	80,621	45,024	35,597	242.81	-
Activities auxiliary to financial service activities, except insurance and pension funding	20,926	6,112	14,814	48,301	18,192	30,110	25,728	9,665	16,063	8.43	-46.65
Activities auxiliary to insurance and pension funding.	4,285	428	3,856	30,548	3,055	27,493	30,548	3,055	27,493	612.99	-
GVA-Total	331,822	48,902	282,920	783,074	238,774	544,301	760,415	230,229	530,186	87.4	-2.59

## 4.6 Real Estate Activities (Including Ownership of dwellings)

### 4.6.1 Coverage

Real estate activities are covered in the Section L of the PSIC- 2010, includes acting as lessors, agents, and/or brokers in one or more of the following: selling or buying real estate, renting real estate, providing other real estate services such as appraising real estate or acting as real estate agents. Activities in this section may be carried out on their own or leased property and may be done on a fee or contract basis. Maintaining ownership or leasing of such structures is also included in the building of structures.

To re-assess the contribution of real estate activities in the GDP of Pakistan under the umbrella of Rebasing of National Accounts of Pakistan from 2005-06 to 2015-16, PBS has broadly divided these activities into two categories including:

- i) "Ownership of Dwellings" i.e. the provision of housing services by the owner of a dwelling to its occupants irrespective of whether the owner is also an occupier
- ii) Activities of real estate agents.

The estimation methodology for these categories is described below:-

### 4.6.2 Ownership of Dwellings

According to SNA 2008 (Para 10.68), *dwellings are buildings, or designated parts of buildings, that are used entirely or primarily as residences, including any associated structures, such as garages, and all permanent fixtures customarily installed in residences*. Houseboats, barges, mobile homes and caravans used as principal residences of households are also included, as are public monuments identified primarily as dwellings. Examples of products are single and multiple dwelling buildings as well as residential buildings for communities, retirement homes, hostels, orphans, etc. described in *CPC 2*, class 5311. The prefabricated buildings, including those intended for housing or buildings associated with housing such as garages described under *CPC 2*(group 387) are also included. Further, incomplete dwellings are included to the extent that the ultimate user is deemed to have taken ownership, either because the construction is on its own account or as evidenced by the existence of a contract of sale or purchase (SNA 10.71). Similarly, dwellings acquired for military personnel are also included because they are used for the production of housing services, in the same way as dwellings acquired by civilian units (SNA, 10.71).

Households that own the dwellings they occupy are formally treated as owners of unincorporated enterprises that produce housing services consumed by those same households. The output of the housing services produced by owner-occupiers is valued at the estimated/imputed rental that a tenant would pay for the same accommodation, taking into account factors such as location, neighbourhood amenities, etc. as well as the size and quality of the dwelling itself. The same figure (output of the service) is recorded under households' final consumption expenditures. In the sequence of the accounts, this is consistent as the households of the owners generate an imputed value-added out of the imputed renting which consequently leads to an imputed increase of the disposable income enabling the owners to purchase the service they are providing to themselves. Finally, they pay only the amount which is to be recorded as intermediate

consumption of the services of owner-occupied dwellings (some repair and maintenance work plus some services of property dealers) and the property tax levied on the buildings.

#### **4.6.3 Sources and Data**

The data sources for implementing 2015-16 rebasing for this industry are:

- a. Housing Census of 1998 & 2017.
- b. Rent Survey 2014-15
- c. Household Integrated Income and Consumption Survey (HIICS) 2015-2016

#### **4.6.4 Output**

The output of ownership of dwellings includes actual rent for rented dwellings, the imputed rent for owner-occupied dwellings, the imputed rent for dwellings on subsidized rent, and the imputed rent for rent-free dwellings. In 2005-06 rebasing, the output of ownership of dwelling was derived by multiplying the number of estimated dwellings by “number of rooms” obtained through inter-census compound growth rates from housing censuses i.e. 1981 and 1998 by average rent obtained from rent survey. However, the rent survey has some limitations:-

- a. It is conducted only in urban areas. Rent for rural areas was estimated at @50% of those in urban areas.
- b. Rent survey covers only rented dwellings. Like the other categories including owner-occupied dwellings, subsidized rent and rent-free accommodation are not covered in the rent survey, therefore, the break-up of the output by-products such as rented, owner-occupied, subsidized and rent-free accommodation is not possible.

In 2015-16, the rental values i.e. output has been directly estimated from HIES 2015-16 using data on housing (Section 3-F) and household expenditures (Section 4-M, Part-D) reported on house rent, the market value of owner-occupied accommodation excluding self-hiring, the market value of subsidized rent (hiring/self-hiring), and market value of rent-free accommodation in two stages. In the first stage, the rental values have been estimated for dwellings having 1 room, 2 rooms, 3 rooms, 4 rooms, and 5 rooms & above by provinces with an urban-rural break-up keeping in view the structure of information provided on the stock of dwellings in the housing censuses.

In the second stage, the rental values obtained from HIES have been adjusted. The reason behind this adjustment was that the estimated number of dwellings based on HIES was significantly lower i.e. 25.919 million as compared to those estimated by using inter-census compound growth rates between 1998 and 2017 Housing Censuses i.e. 30.605 million. Hence, the total rental value i.e. the output in ownership of dwellings has been estimated at Rs.1800.5 billion (Rs.1211.2 billion in urban areas and Rs.589.4 billion in rural areas). Most of the output i.e. Rs.1474.8 billion (82%) pertains to owner-occupied dwellings followed by Rs.206.3 billion (11.5%) to rented dwellings, Rs.81.8 billion (4.5%) to rent-free accommodation and Rs.37.6 billion (2.1%) to subsidized house rent. Further, the break-up of output into the number of rooms suggests that contribution of dwellings with 5 & more rooms stands at Rs.487.2 billion followed by those with 2 rooms (Rs.398.8 billion), 3 rooms (Rs.380.8 billion), 4 rooms (Rs.286.7 billion), and 1 room (Rs.247.1 billion).

To check the consistency and reliability of the estimation methodology, an alternative approach was also used to estimate the output of the ownership of dwellings. Under this approach, weighted average rents by “number of rooms” and provinces, were calculated separately for urban and rural areas using the number of households living in rented, owner-occupied dwellings, subsidized accommodation and rent-free accommodation as a measure of weight. In the second, these rents were applied to an estimated number of dwellings compiled by using inter-census compound growth rates between 1998 and 2017 Housing Censuses by “number of rooms” and further disaggregated by provinces and urban & rural areas. The total estimated value of rentals i.e. the output in ownership of dwellings under this approach stands at Rs.1799.0 billion. Hence, the margin of variations between the two approaches is 0.1%. However, output estimates of the first approach i.e.Rs.1800.5 billion have been used in the final estimates being close to recommendations of the 2008 SNA relating to the compilation of imputed rental of owner-occupied dwellings.

#### **4.6.5 Intermediate Consumption**

The intermediate consumption of this industry is the cost of repairs and maintenance of dwellings during the reference year, commission paid to real estate agents for rented dwellings, and imputed consumption of bank and insurance services i.e. FISIM. In 2015-16 rebasing, the expenditure on repair and maintenance comprising of materials such as whitewash, cement, bricks/blocks, bajri/sand, etc. and expenditure on services provided by carpenters, masons, unskilled labourers, plumbers, electricians, and painters, etc. have also been estimated from HIES 2015-16 (Section 6 M, Part-D) and further adjusted to the census number of dwellings by categories mentioned for the output and stands at Rs.82.74 billion. The commission paid to real estate agents has been taken from Rent Survey of Dwellings 2014-15 and has been adjusted to the base year 2015-16 by using CPI (Rent). The estimated amount of commission paid to real estate agents stands at Rs.9.4 billion which has been allocated to urban dwellings as the activities relating to renting of dwellings are mostly carried out in the urban areas. The third component of intermediate consumption i.e. FISIM is allocated to producing industries at the aggregation stage. Hence, the total intermediate consumption for ownership of dwelling has been estimated at Rs.92.1 billion. Resultantly, GVA in the ownership of dwellings for the new base year 2015-16 comes to Rs.1708.4 billion.

#### **4.6.6 Activities of Real Estate Agents**

For 2015-16 rebasing of national accounts, the activities of real estate agents have been covered in the Survey on “Other Private Services” (OPS) 2016-17. The number of establishments engaged in real estate activities stands at 32,824. The total output of the activity during 2016-17 stands at Rs.45.6 billion whereas intermediate consumption was Rs.9.1 billion. Thus, the total GVA is Rs.36.5 billion which has been adjusted for the 2015-16 base year using the growth of ownership of dwellings, which stands at Rs.32.5 billion.

**Table 4.11: Summary of output, IC and GVA of the industry (Rs. Million)**

S. No.	Description	Urban	Rural	Total
1	2	3	4	5
<b>Ownership of Dwellings</b>				
1	Number of Dwelling units	11428430	19176911	30605342
2	Gross Rentals/ Output (at basic prices)	1,211,161	589,354	1,800,514
3	Intermediate Consumption (4+5)			92,140
4	Repair & Maintenance			82,735
5	Commission paid to Real Estate Agents			9,405
<b>6</b>	<b>GVA - I (Ownership of dwellings)</b>			<b>1,708,374</b>
<b>Activities of real estate agents</b>				
7	Output			40,547
8	Intermediate Consumption			8,082
<b>9</b>	<b>GVA - II (Real estate agents)</b>			<b>32,465</b>
<b>10</b>	<b>Total Gross Value Added (6+9)</b>			<b>1,740,839</b>

#### 4.6.7 Rebasing Impact

The total output and intermediate consumption for the Housing Services industry during 2015-16 rebasing have been estimated at Rs.1,841.1 billion and Rs.100.2 billion respectively. So, the GVA for the new base year i.e. 2015-16 stands at Rs.1,740.8 billion, which is higher by 15.4% over existing estimates of Rs.1,509.0 billion.

**Table 4.12: Comparison of output and GVA of housing services for 2005-06 and 2015-16 as per base years 2005-06 and 2015-16 (Rs. Million)**

Description	Base Year 2005-06		Base Year 2015-16	% Change	
	2005-06 Price	2015-16 at 2015-16 Price		Col. 4/2	Col. 4/3
1	2	3	4	5	6
<b>Ownership of dwellings</b>					
Output	518422	1,549,939	1,800,514	247.31	16.17
IC	16342	52,776	92,140	463.82	74.59
GVA – I	502100	1,497,164	1,708,374	240.25	14.11
<b>Real estate agents</b>					
Output			40,547		
IC			8,082		
GVA-II	3,568	11,871	32,465	809.89	173.49
<b>Housing Services</b>					
Output			1,841,061		
IC			100,222		
GVA- Total	<b>505,668</b>	<b>1,509,034</b>	<b>1,740,839</b>	<b>244.27</b>	<b>15.36</b>

#### **4.6.8 Extrapolation and Deflators**

The base year results relating to ownership of dwellings is extrapolated separately at constant prices for urban and rural areas by applying inter-census growth of dwellings @4.08% and 2.77% comprising of 2 & more rooms which represent 74.3% and 65.2% of urban and rural dwellings respectively. CPI Rent (urban) and CPI Rent (rural) is used as deflators to convert constant price estimates of urban and rural areas separately into current prices. The GVA of real estate agents is extrapolated at constant by applying inter-census growth of urban dwellings @4.08% comprising of 2 & more rooms which is converted into current prices by applying CPI Rent (urban).

### **4.7 Public Administration and Social Security (General Government)**

#### **4.7.1 Coverage**

The public administration and defence; compulsory social security is also known as “General Government” are described in Section O of the PSIC-2010. The “General Government” is one of the institutional sectors other than non-financial corporations, financial corporations, households, and non-profit institutions serving households (NPISH). The activities of the general government are dispersed over various industries, including public administration and defence, education, health, and many others. In 2015-16 rebasing, all the figures of variables of production have been calculated in a way that both purposes are served i.e. figures by PSIC as well as figures by COFOG for the government sector are available.

The general government in Pakistan includes Federal, Provincial, District governments, Local bodies, Cantonment boards and Social security funds. Apart from this, in the base year 2015-16, a dedicated census of autonomous bodies engaged in education, health and social work activities were conducted. It was ensured that autonomous bodies other than education, health and social work having market output were covered in their respective industries. Autonomous bodies are considered as institutional units of their own but being market producers (e.g. Pakistan Railways, Pakistan International Airlines, Shipping Corporation) are belonging to the non-financial corporations' sector. The State Bank of Pakistan, by definition of the SNA for central banks, belongs to the financial corporations' sector. However, those autonomous bodies having non-market output were compiled along with the general government.

#### **4.7.2 Output**

The output of the General Government is non-market. According to SNA 2008, “Non-market output consists of goods and individual or collective services produced by non-profit institutions serving households (NPISHs) or government that is supplied free, or at prices that are not economically significant, to other institutional units or the community as a whole”. Such output is recorded at the time it is produced, which is also the time of delivery in the case of non-market services. In general, however, it cannot be valued in the same way as goods or services produced for their own final consumption or own capital formation that are also produced in large quantities for sale in the market. The value of the non-market output provided without charge to households is estimated as the sum of costs of products comprising of

- a. Intermediate consumption,
- b. Compensation of employees,

- c. Consumption of fixed capital, and
- d. Other taxes (less subsidies) on production.

The budget documents of federal, provincial, district government, tehsil municipal administrations, cantonment boards, and autonomous bodies are the universe for the coverage, most of which have been taken into account. The non-market output of the sector is comprised of employee remuneration which covers wages and salaries of all employees (regular, contract, ad hoc, etc.). It also includes in-kind payments, rations, entertainments, gifts, scholarships, etc. to employees including residential accommodation facilities and allowances. Actual and imputed welfare contributions are also part of remuneration. Other taxes on production less other subsidies are negligible in the government structure. Consumption of fixed capital is taken as 10% of the gross fixed capital formation of the sector. In the first step, the output of the autonomous bodies, operating under federal and provincial governments, having non-market output engaged in education, health and social work activities has also been included but separately identified. The output in the general government sector for the base year 2015-16 has been estimated at Rs.3, 432.916 billion. The detail is given in Table 4.13.

#### 4.7.3 Intermediate Consumption

According to SNA intermediate consumption is to be valued at purchasers' prices. For this sector, it includes the expenditures on utilities, stationery, repair and maintenance, fees, occupancy charges (excluding residential component), etc. The data are available from the budget documents including the aforementioned object codes. Subsidies are not a part of intermediate consumption. Intermediate consumption for the base year 2015-16 has been estimated at Rs. 1,280.114 billion detail of which is given in table 4.13 below.

#### 4.7.4 Gross Value Added

The gross value added is output minus intermediate consumption. However, for this sector value added is measured directly through the cost of production approach. Compensation of employees (Rs.2065.850billion) and consumption of fixed capital (Rs.86.951 billion) are added together to have the value-added estimate. The gross value added for this sector for the new base year 2015-16 is given below in *table 4.13* which gives the details of the estimates developed. The table shows Financial Intermediation Services Indirectly Measured (FISIM) amounting to Rs.54.116 billion. It represents the intermediation services provided by banks to the government.

**Table 4.13: GVA, Intermediate consumption and Output of General Government by components Rebasing (Rs. Million, 2015-16)**

Description	Compensation of Employees	Consumption of Fixed Capital	GVA (Basic prices)	Intermediate Consumption	Output
1	2	3	4	5	6
<b>Federal</b>	792,962	20,694	813,656	643,529	1,457,185
<b>Provincial</b>	806,047	52,746	858,793	446,276	1,305,069
<b>District/TMA/CB</b>	365,552	10,501	376,053	56,514	432,567
<b>Others</b>	101287	3,007	104,294	79,679	183,973
<b>FISIM</b>				<b>54,116</b>	<b>54,116</b>
<b>Total (G. Govt.)</b>	<b>2,065,850</b>	<b>86,951</b>	<b>2,152,801</b>	<b>1,280,114</b>	<b>3,432,916</b>

#### 4.7.5 Results by Industrial Classification (PSIC)

In the second step, the figures for output, intermediate consumption, and value-added, are classified by PSIC, also. For this purpose, the budget data by function codes have been used. PBS has developed a bridge table assigning each function code used by the government authorities for performing their budgets to one class of the industrial classification of PSIC. The results are given in **Table 4.14** below which includes the non-market output of autonomous bodies engaged in their respective industries. It should be noted that education, health services and other classes of the PSIC are frequented by other sectors of the economy, also, e.g. corporations, households and Non-Profit Institutions (NPIs). However, class “Public Administration and Defence” of the PSIC division 84 can only be assigned to institutional units of the sector general government, by definition of the SNA.

**Table 4.14: GVA, Intermediate Consumption and Output of General Government (Rs. in Million)**

PSIC 2010 (Codes and description)	GVA	Intermediate Consumption	Output
1	2	3	4
84- Public administration & defense	1,458,465	1,021,584	2,480,049
85-Education	537,585	105,434	643,019
86-88 Health & Social Work activities	156,751	98,981	255,732
FISIM		<b>54,116</b>	<b>54,116</b>
<b>Total (General Government)</b>	<b>2,152,801</b>	<b>1,280,114</b>	<b>3,432,916</b>

#### 4.7.6 Effect of Rebasing

The effect of the rebasing 2015-16 can be shown by the comparison of the results for the year 2015-16 according to the new base and the base 2005-06. It is shown in Table 4.15 below. The differences are negligible as the source data are the same. The improvement in the base year 2015-16 is due to better coverage of non-market autonomous bodies.

**Table 4.15: Output, IC and GVA of General government 2005-06 and 2015-16 as per base years 2005-06 and 2015-16 (Rs. Million)**

Description	Base 2005--2006		Base 2015-16	% change	
	Results 2005-2006	Results 2015-16 at prices of 2015-16		Column 4 over 2	Column 4 over 3
1	2	3	4	5	6
A. Output at basic prices	845,933	3,248,893	3,432,916	305.81	5.66
B. Intermediate consumption	420,717	1,198,332	1,280,114	204.27	6.82
<b>C. Gross Value Added (A-B)</b>	<b>425,216</b>	<b>2,050,561</b>	<b>2,152,801</b>	<b>406.28</b>	<b>4.99</b>

#### 4.7.7 Extrapolation and Deflator

The GVA in the General Government sector is compiled directly at current prices from the data obtained/extracted from budget documents of the governments. The GVA of autonomous bodies engaged in education and health is extrapolated through the aggregate growth rate of wages and salaries reported by federal, provincial and district governments relating to education and health

respectively. The estimates at constant prices are compiled using CPI (General), CPI (Education) and CPI (Health) as the deflators for respective activities.

## **4.8 Education**

### **Coverage**

Education is primarily described by level in the PSIC-2010. To re-assess the contribution of education in 2015-16 Rebasings of National Accounts, PBS has broadly divided education into four major categories including i) Public sector education provided by institutions of federal, provincial, and district governments purely on a non-market basis covered in the budget of respective governments ii) Autonomous bodies engaged in education and falling under federal and provincial governments but with separate budgets iii,) Education provided by non-profit institutions purely on anon-market basis and iv) Education provided in the private sector on a market basis. The value-added contribution of autonomous bodies providing educational services at economically significant prices i.e. with market output; has been combined with private sector education and those with non-market output have been added to the general government.

#### **4.8.1 Education in the Private Sector**

To have a better assessment of the contribution of private-sector education, it was further divided into census and survey parts. In the census part, private sector universities and industry leaders have been covered separately. In the survey part, the educational establishment operating in the selected block was covered under Survey “Other Private Services 2016-17”. For the census part, a predefined list of the establishment was provided to PBS Regional/Field offices with clear instructions not to cover any establishment twice, if it falls in a block selected for the survey. The results of both census and survey parts have been combined to represent the private sector education as a whole.

The total number of establishments engaged in the provision of education in the private sector stands at 89,897 in 2016-17 all over Pakistan. The survey results have been adjusted to the base year 2015-16. Output for the base year 2015-16 has been estimated at Rs.476 billion whereas intermediate consumption is Rs.83 billion. The GVA is Rs.393 billion during 2015-16 which is extrapolated at constant prices through the growth rate of enrolments of students. The (CPI) education will be used as a deflator for output and CPI (energy and rent) urban for IC.

#### **4.8.2 Education in the Public Sector**

The output, intermediate consumption, and GVA of education in the public sector, as described under the General Government part above, stands at Rs.643.019, 105.434, and 537.585 billion respectively. The GVA of education is compiled directly along with estimates of the general government.

#### **4.8.3 Education by NGOs**

Alongside the PSIC, the economy is also divided into institutional sectors including non-financial corporations, financial corporations, households, general government, and Non-Profit Institutions Serving Households (NPISH). NPISH is covered under two categories i.e. Non-Profit Institutions (NPIs) and Membership Organizations. The PBS conducted a special survey i.e.

NGOs Survey 2015-16 to assess the value-added contribution of NPIs engaged in education, health, social work, and other activities based on the frame provided by the Pakistan Centre for Philanthropy. In the NGOs survey, 1,1781 NGOs were covered including 676 in the census part; 10,967 in the survey part and 138 international NGOs.

As the general government, the output of the NGOs is non-market and is comprised of compensation of employees, consumption of fixed capital, and intermediate consumption. The output and intermediate consumption of NGOs engaged in education have been estimated at Rs.35.848 billion and Rs.9.931 billion respectively resulting in GVA of Rs.25.918 billion during 2015-16. Extrapolation of education at constant prices is done by the growth rate of the number of enrolments of students linked with private sector education. NGOs' education is deflated through CPI (Education).

### Effect of Rebasing

The effect of 2015-16 rebasing is shown in *Table 4.16* below. The GVA of education in the private sector has increased substantially by 462.4% as compared to that in the existing series in base 2005-06. The GVA of public sector education has also increased by 6.89% due to the improvement in coverage of non-market output of autonomous bodies. However, the GVA of NGOs providing education has decreased by 8.8%.

**Table 4.16: Output, IC and GVA of Education 2015-16 as per base years 2005-06 and 2015-16 (Rs. Million)**

Institutional Sector	2015-16 on 2005-06 base (current prices)			2015-16 base			% change
	Output	IC	GVA	Output	IC	GVA	Col. 7 / Col.4
1	2	3	4	5	6	7	8
<b>Private corporations and households</b> (Private sector)	100,826	30,883	69,943	476082	82,726	393,356	462.4
<b>General government</b> (Public sector)	565,052	62,105	502,947	643,019	105,434	537,585	6.89
<b>NPISH</b> (NGOs)			28,432	35,848	9,931	25,918	-8.8
<b>Total (Education)</b>			<b>601,326</b>	<b>1154949</b>	<b>198091</b>	<b>956,859</b>	<b>59.12</b>

## 4.9 Human Health and Social Work Activities

### Coverage

Human health and social work activities are described in Section Q of the PSIC and are comprised of three distinct Divisions i.e. 86-Human health activities, 87-Residential care activities, and 88-Social work activities without accommodation. For coverage in the rebasing of national accounts from 2005-06 to 2015-16, human health and social work activities have been broadly divided into i) Human health and social work activities provided by public sector institutions of federal, provincial, and district governments purely on the non-market basis and covered in the budget of respective governments ii) Autonomous bodies engaged in the provision of human health and social work activities and falling under federal and provincial governments but with separate budgets, iii,) Human health and social work activities are provided by non-profit institutions purely on anon-market basis and iv) Human health and social work activities

are provided in the private sector on a market basis. The value-added contribution of autonomous bodies providing human health and social work activities at economically significant prices i.e. with market output; has been combined with the private sector and those with non-market output have been added to the general government.

#### **4.9.1 Health and Social Work in the Private Sector**

The contribution of private sector human health and social work activities has been assessed through census and survey parts. In the census part, private sector hospitals have been covered separately. In the survey part, health and social work establishments operating in the selected blocks were covered under Survey on “Other Private Services 2016-17”. For the census part, a predefined list of establishments was provided to PBS Regional/Field offices with clear instructions not to cover any establishment twice, if it falls in a block selected for the survey. The results of both census and survey parts have been combined and adjusted for 2015-16 to represent the private sector human health and social work activities as a whole.

According to the data, the number of establishments engaged in human health and social work activities in the private sector stands at 118,892. The output is Rs.255.543 billion and intermediate consumption is Rs.61.177 billion. The GVA for the 2015-16 base year stands at Rs.194.367 billion, which is extrapolated through the growth of health personnel at constant prices. The CPI (Health services) is used for inflating output and CPI (health, rent and energy) urban for IC.

#### **4.9.2 Health and Social Work in the Public Sector**

The output, intermediate consumption, and GVA of health and social work in the public sector, as described under the General Government part above, stands at Rs.255.731, 98.981 billion, and 156.750 billion respectively. For subsequent years, the GVA is compiled directly along with estimates of the general government.

#### **4.9.3 Health and Social Work Activities by NGOs**

The contribution of NGOs engaged in health and social work activities has been assessed through NGOs Survey 2015-16, described above in the education part. The non-market output has been estimated at Rs.161.331 billion whereas intermediate consumption is Rs.91.408 resulting in GVA of Rs.69.924 billion during 2015-16. The extrapolation of GVA is proposed to be linked with the growth in the number of health personnel engaged in health and social work activities at constant prices. The CPI (Health) is used as a deflator.

#### **Effect of Rebasing**

The effect of 2015-16 rebasing in health and social work activities is presented in the table below. The overall GVA of the industry has increased by 12.20% over the existing estimates on 2005-06 rebasing. A substantial increase i.e. 10.21% is noted in the GVA of the private sector whereas the public sector has increased by 23.77%, (which is mainly due to the better coverage). However, the GVA of NGOs engaged in health and social work has decreased by 3.23%.

**Table 4.17: Output, IC and GVA in Health and Social Work Industry (Rs. Million)**

Institutional Sector	2015-16 on 2005-06 base (current prices)			2015-16 base			% change
	Output	IC	GVA	Output	IC	GVA	Col (7 /4)
1	2	3	4	5	6	7	8
Private corporations and households (Private sector)	284,842	108,475	176,367	255,543	61,177	194,367	10.21
General government (Public sector)	199,222	72,572	126,650	255,731	98,981	156,750	23.77
NPISH (NGOs)			72,259	161,331	91,408	69,924	-3.23
Total (Health & social work)			<b>375,276</b>	<b>672,605</b>	<b>251,566</b>	<b>421,041</b>	12.2

## 4.10 Other Private Services

Other Private Services (OPS) deals with diverse economic activities comprising of various industries (PSIC). The data sources vary accordingly. Activities have been picked up from components of different surveys/studies, covering different sections of the PSIC. The services described in this industry represent the remnants of the services as general government services, wholesale and retail trade services, transport services, financial services, owner-occupied dwellings, health, education and information & communication services covered in respective sections. Nevertheless, they represent a vibrant part of the economy of Pakistan.

In 2015-16 rebasing, Other Private Services will comprise of:

- a. Professional, scientific, and technical activities
- b. Administrative and support services
- c. Arts, entertainment and recreation
- d. Other service activities (activities of membership organizations, repair of computers and personal household goods and other personal service activities including washing, dry cleaning etc.)
- e. Activities of households as employers of domestic services.

### 4.10.1 Professional, Scientific and Technical Activities

The professional, scientific, and technical activities include specialized professional, scientific and technical activities, which require a high degree of training and make specialized knowledge and skills available to users. These are covered in the Section M of the PSIC and include Divisions 69- Legal & Accounting Activities, 70-71 Activities of Head Offices, Management Consultancy Services& Architects and engineers' activities, 72-Scientific research and development, 73- Advertising and market Research, 74-Other professional, scientific and technical activities and 75-Veterinary activities. In 2015-16 rebasing, the contribution of these activities has been assessed through studies briefly described in the following:-

#### a. Legal & Accounting Activities

A study was conducted to assess the contribution of accounting activities. The frame comprising of 641 establishments was obtained from the Institute of Cost and Management Accountants Pakistan (ICMAP) and data was collected from 490 establishments. The value-added share of legal activities has been estimated through input-output ratios of accounting activities and those

already in use in the existing GDP series. The combined output of legal and accounting activities have been estimated at Rs.267 billion whereas intermediate consumption is Rs.27 billion resulting in a GVA of Rs.239 billion.

### **Extrapolation and Deflator**

Output and Intermediate Consumption of these activities are extrapolated at constant prices through the growth of the number of Punjab Bar Council Registered Advocates. However, accounting activities are extrapolated by the number of Chartered Accountants. CPI (General) has been used as an inflator for both of the activities.

#### **b. Activities of Head Offices, Management Consultancy Services & Architects and Engineers activities**

These activities are covered in the PSIC Division 70 – Activities of head offices; management consultancy activities and 71-Architectural and engineering activities; technical testing and analysis. In 2015-16 rebasing, the activities of head office have been estimated using input-output ratios of existing series whereas architectural and engineering activities; technical testing and analysis have been estimated through a study. A sampling frame was obtained from the Securities and Exchange Commission of Pakistan (SECP). The total output of the activities has been estimated at Rs.3, 186 billion whereas intermediate consumption is Rs.1,808 billion. The GVA of these activities is Rs.1,378 billion.

### **Extrapolation and Deflator**

Output and Intermediate Consumption of these activities are extrapolated at constant prices through the growth of the number of Engineers registered with the Pakistan Engineering Council (PEC). CPI (General) is used as an inflator.

#### **c. Scientific Research and Development**

The contribution of scientific research and development has been estimated through a study for the year 2016-17 comprising of 109 establishments. The frame was developed through the internet as no other reliable source was available. The output of the activity has been estimated at Rs.7 billion whereas intermediate consumption is Rs.4 billion resulting in a GVA of Rs.3 billion.

### **Extrapolation and Deflator**

Output and Intermediate Consumption of these activities are extrapolated at constant prices through the growth of the number of Engineers registered with the Pakistan Engineering Council (PEC). CPI (General) is used as an inflator.

#### **d. Advertising and Market Research**

The contribution of the advertising and market research industry has been assessed through a study in 2016-17 based on the frame of 791 establishments developed through the internet. The output of the industry has been estimated at Rs.15 billion whereas intermediate consumption is Rs.1 billion. The base year GVA of the industry stands at Rs.13 billion.

### **Extrapolation and Deflator**

Output and Intermediate Consumption of these activities are extrapolated at constant prices through the growth of the number of Engineers registered with the Pakistan Engineering Council (PEC). CPI (General) for output and CPI (Rent) for Intermediate Consumption is used as an inflator.

#### **e. Other professional, scientific, and technical activities**

A study comprising 191 establishments was conducted to assess the contribution of other professionals, scientific and technical activities. The frame was developed through the internet and SECP. The study was conducted during 2016-17. The output, intermediate consumption, and GVA of these activities stand at Rs.0.23 billion, Rs. 0.04 billion, and Rs.0.19 billion respectively.

### **Extrapolation and Deflator**

Output and Intermediate Consumption of these activities are extrapolated at constant prices through the growth of the number of Engineers registered with the Pakistan Engineering Council (PEC). CPI (General) is used as an inflator.

#### **f. Veterinary activities**

The share of veterinary activities has been estimated through a study based on the frame of 107 establishments during 2016-17. The frame was developed through the internet and SECP. The output of these activities has been estimated at Rs.0.05 billion, intermediate consumption is Rs.0.02 billion and GVA is Rs.0.03 billion.

### **Extrapolation and Deflator**

Output and Intermediate Consumption of these activities are extrapolated at constant prices through the growth of the number of veterinary doctors and graduates registered with the Pakistan Veterinary Council (PVC). CPI (General) is used as an inflator.

#### **4.10.2 Administrative and Support Service Activities**

The administrative and support service activities, covered in the Section M of the PSIC-2010, include a variety of activities that support business operations. These activities differ from Professional, Scientific and Technical activities described in Section M above. This includes renting machinery, employment activities, private security services and office support activities. The coverage of these activities in 2015-16 rebasing is described in the following:

##### **a. Rental and Leasing Activities**

The renting of machinery and equipment has been covered in the Survey “Other Private Services 2016-17”. The survey results have been adjusted to the base year 2015-16. Overall, 25,555 establishments have been covered in the survey. The output and intermediate consumption of renting of machinery and equipment have been estimated at Rs.19.5 billion and Rs.4.9 billion respectively. The 2015-16 base year GVA stands at Rs.14.6 billion.

### **Extrapolation and Deflator**

Output and Intermediate Consumption of these activities are extrapolated at constant prices through the growth of enrolment of vocational institutes obtained from the Social Statistics Section, PBS. CPI (General) for output and CPI (Rent and Energy) Urban for Intermediate Consumption has been used as an inflator.

#### **b. Employment Activities**

The contribution of establishments engaged in the provision of employment activities has been assessed through the Survey “Other Private Services 2016-17”. In the survey, 161 establishments have been enumerated. Output and Intermediate consumption of this activity stand at Rs.271 billion and Rs.108 billion respectively. The GVA of the industry has been worked out at Rs.163 billion.

### **Extrapolation and Deflator**

Output and Intermediate Consumption of these activities are extrapolated at constant prices through the growth of enrolment of vocational institutes obtained from the Social Statistics Section, PBS. CPI (General) for output and CPI (Rent and Energy) Urban for Intermediate Consumption is used as an inflator.

#### **c. Security and Investigation Activities**

The private security services have been covered in Survey “Other Private Services 2016-17”. During the survey, 127 establishments have been covered. The output of the industry for the base year 2015-16 has been estimated at Rs.24.7 billion, whereas intermediate consumption is Rs.11.5 billion resulting in a GVA of Rs.13.2 billion.

### **Extrapolation and Deflator**

Output and Intermediate Consumption of these activities are extrapolated at constant prices through the growth of enrolment of vocational institutes obtained from the Social Statistics Section, PBS. CPI (General) for output and CPI (Rent and Energy) Urban for Intermediate Consumption is used as an inflator.

#### **d. Office Support Activities**

The contribution of office support activities has been assessed through Survey “Other Private Services 2016-17”. The number of establishments covered was 16,375. The output and intermediate consumption of the industry for the base year 2015-16 have been estimated at Rs.24 billion and Rs.11 billion respectively. The GVA of the industry is Rs.13 billion.

### **Extrapolation and Deflator**

Output and Intermediate Consumption of these activities are extrapolated at constant prices through the growth of enrolment of vocational institutes obtained from the Social Statistics Section, PBS. CPI (General) for output and CPI (Rent and Energy) Urban for Intermediate Consumption is used as an inflator.

### **4.10.3 Arts, Entertainment and Recreation**

The arts, entertainment, and recreation activities are covered in the Section R of the PSIC 2010 and are comprised of Creative, arts and entertainment activities; Libraries, archives, museums and other cultural activities; Sports activities and amusement & recreation activities. The PSIC Divisions 91 and 92 are not covered in 2015-16 due to the non-availability of relevant frames. Divisions 90 and 93 have been covered in Survey “Other Private Services 2016-17” and results have been adjusted to the base year 2015-16. According to the data, the total number of establishments engaged in arts, entertainment, and recreation activities stands at 33,905. The output and Intermediate consumption are Rs.15 billion and Rs.5 billion respectively. The GVA of creative arts, entertainment, sports activities, amusement, and recreation activities stands at Rs.10 billion.

#### **Extrapolation and Deflator**

Output and Intermediate Consumption of these activities are extrapolated at current prices through growth in output and IC of TV channels (PTV, ATV and PBC). CPI (Recreation) for output and CPI (Rent and Energy) Urban for Intermediate Consumption is used as a deflator.

### **4.10.4 Other Service Activities**

The other service activities are covered in Section S of the PSIC 2010 and are comprised of three Divisions i.e. 94-Activities of membership organizations, 95-Repair of computers and personal and households goods, and 96-Other personal service activities (Washing, dry-cleaning, hairdressing and other beauty treatment, shoe shiners, etc.). In 2015-16 rebasing, the contribution of activities falling under PSIC 95 and 96 has been assessed through Survey “Other Private Services 2016-17”. The detail follows.

#### **a. Membership Organizations**

The activities of membership organizations include PSIC classes’ 9411-Activities of business and employer’s membership organizations, 9412-Activities of professional membership organizations, 9420-Activities of trade unions, 9491-Activities of religious organizations, 9492-Activities of political organizations, and 9499- Activities of other membership organizations n.e.c. The contribution of activities of member organizations has been assessed through the cost of production approach. The output, intermediate consumption and GVA of membership organization for the base year 2015-16 stand at Rs.100 billion, Rs.51 billion and Rs.49 billion respectively.

#### **Extrapolation and Deflator**

Output and Intermediate Consumption of these activities are extrapolated at constant prices through a fixed growth rate of 3.01% based on inter-census urban population obtained from population censuses 2017 and 1998. The CPI (General) is used as an inflator.

#### **b. Repair of Computers and Personal & Household Goods**

The contribution of these activities has been assessed through the Survey “Other Private Services 2016-17” in which 271,129 establishments were covered. The results of the survey have been

adjusted to 2015-16. The output has been estimated at Rs.191 billion, intermediate consumption is Rs.53 billion and GVA is Rs.138 billion.

### **Extrapolation and Deflator**

Output and intermediate consumption of these activities are extrapolated at constant prices with a fixed growth rate of 3.01% based on inter-census urban population obtained from population censuses 2017 and 1998. The CPI (General) is used as an inflator.

#### **c. Other Personal Services**

The Survey “Other Private Services 2016-17”, based on 246,343 establishments, provides estimates of the GVA of other personal service activities. The output, intermediate consumption, and GVA, adjusted to the base year 2015-16 of these activities stands at Rs.176 billion, Rs.36 billion and Rs.140 billion respectively.

### **Extrapolation and Deflator**

Output and intermediate consumption of these activities are extrapolated at constant prices with the fixed growth rate of 3.01% based on inter-census urban population obtained from population censuses 2017 and 1998. The output is inflated by CPI (General) and IC by combined CPI (rent and energy) urban.

#### **4.10.5 Activities of Households as Employers of Domestic Staff**

The activities of households as employers are covered in Section T of the PSIC-2010 under Division 97-Activities of households as employers of domestic staff. The GVA of these activities is comprised of the compensation paid by households to their domestic staff and has been estimated at Rs.149 billion using the number of employees and average wage rate reported in the labour force survey.

### **Extrapolation and Deflator**

The GVA is extrapolated at constant prices with the fixed growth rate of 3.01% based on inter-census urban population obtained from population censuses 2017 and 1998. The CPI (General) is used as an inflator.

**Table 4.18: Results of Other Private Services for the year 2015-16**

<b>PSIC-2010</b>	<b>Name of Activity</b>	<b>Output</b>	<b>IC</b>	<b>GVA</b>
1	2	3	4	5
<b>69 – 75</b>	<b>Professional Scientific &amp; Technical activities</b>	<b>3,475,294</b>	<b>1,841,020</b>	<b>1,634,274</b>
69	Accounting and legal activities	266,741	27,257	239,484
70	Head offices, Management Consultancy activities	62947	6871	56076
70 – 71	Architecture & Engineering & Head offices activities	3,123,376	1,801,108	1,322,268
72	Scientific Research & Development	7,347	4,366	2,981
73	Advertising and Market research	14,604	1,353	13,251
74	Other professional scientific & technical activities(Photographic activities)	231	44	187
75	Veterinary activities	49	22	27
<b>77 – 82</b>	<b>Administrative Support Services</b>	<b>339,373</b>	<b>135,897</b>	<b>203,476</b>
77	Renting of machinery	19,475	4,879	14,596
78	Employment activities	270,903	108,361	162,542
80	Private security services	24,722	11,466	13,256
82	Office support activities	24,273	11,191	13,081
<b>90 – 93</b>	<b>Arts, entertainment &amp; recreation</b>	<b>15,088</b>	<b>4,698</b>	<b>10,390</b>
<b>94 – 96</b>	<b>Other Service Activities</b>	<b>466,463</b>	<b>139,883</b>	<b>326,581</b>
94	Membership Organization	99,543	51,159	48,384
95	Repair of computers	191,005	52,630	138,375
96	Other personal Services activities	175,915	36,094	139,821
<b>97</b>	<b>Activities of households as employees-Domestic staff</b>	<b>148,744</b>	<b>-</b>	<b>148,744</b>
<b>TOTAL</b>		<b>4,444,962</b>	<b>2121499</b>	<b>2323464</b>

### **Effect of Rebasing**

The comparison of overall GVA in Other Private Services sector for the base year 2005-06 and 2015-16 is given below:

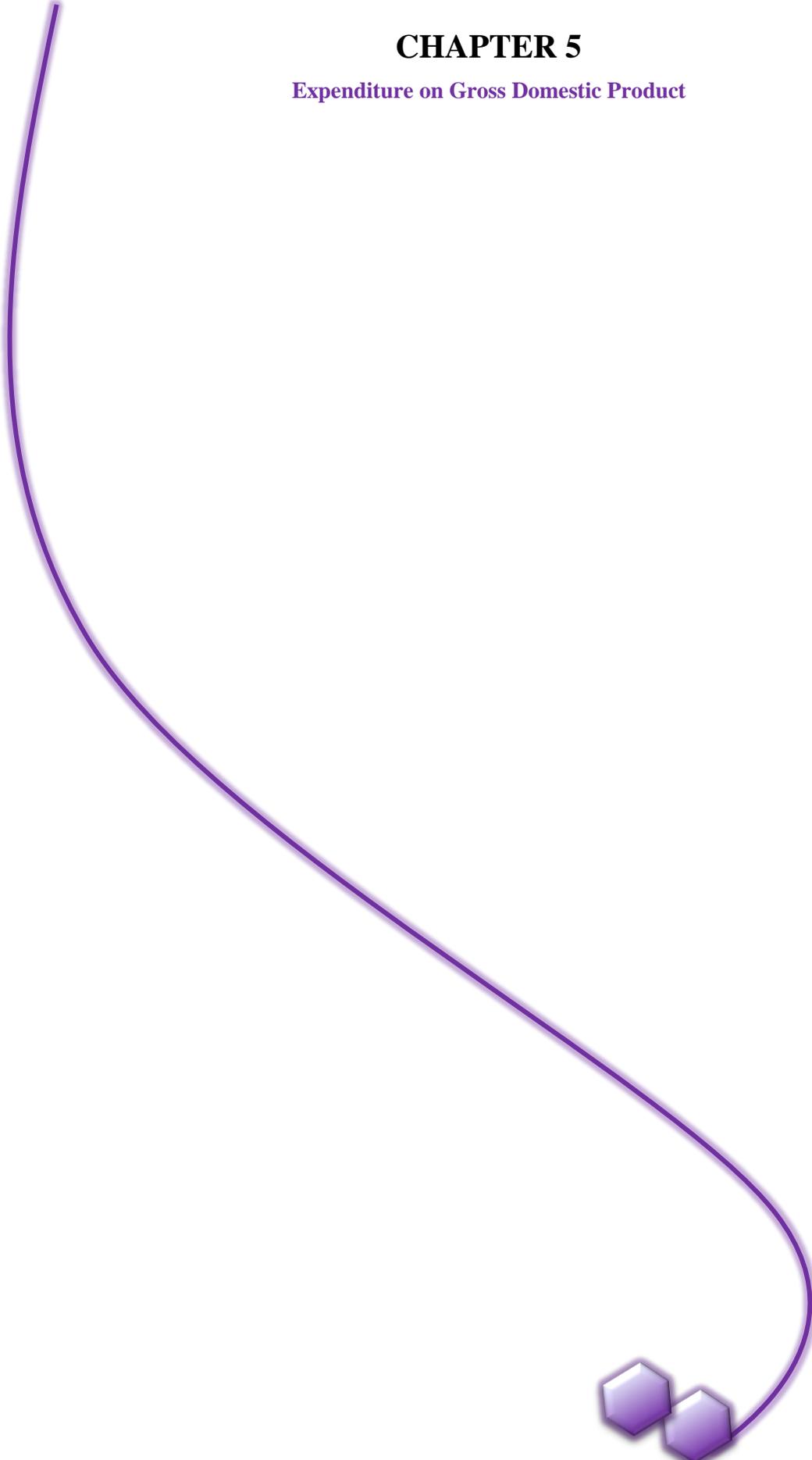
**Table 4.19: Comparison of GVA of Other Private Services for the year 2005-06 & 2015-16 Base (Rs. Million)**

PSIC 2010	Name of activity	Base 2005-06		Base Year 2015-16	Change in		
		2005-06 Price	2015-16 Price		%		Mill. Rs
					Col 5/3	Col 5/4	Col. 4-5
1	2	3	4	5	6	7	8
<b>69-75</b>	<b>Professional Scientific &amp; Technical activities</b>	<b>354,231</b>	<b>1,672,735</b>	<b>1,634,274</b>	<b>361.36</b>	<b>-2.3</b>	<b>-38461</b>
69	Accounting and legal activities	-	-	239,484			239484
70	Head offices, Management Consultancy activities			56076			56076
<b>70-71</b>	<b>Architecture &amp; Engineering &amp; Head offices activities</b>	<b>354,231</b>	<b>1,672,735</b>	<b>1,322,268</b>	<b>273.28</b>	<b>-20.95</b>	<b>-350467</b>
72	Scientific Research & Development		-	2,981			2981
73	Advertising and Market research		-	13,251			13251
74	Other professional scientific & technical activities(Photographic activities)		-	187			187
75	Veterinary activities		-	27			27
<b>77-82</b>	<b>Administrative Support Services</b>	<b>3,728</b>	<b>2,777</b>	<b>203,476</b>	<b>5358.05</b>	<b>7227.19</b>	<b>200699</b>
77	Renting of machinery	3,728	2,777	14,596	291.52	425.6	11819
78	Employment activities		-	162,542			162542
80	Private security services		-	13,256			13256
82	Office support activities		-	13,081			13081
<b>90-93</b>	<b>Arts, entertainment &amp; recreation</b>	<b>47,651</b>	<b>110,412</b>	<b>10,390</b>	<b>-78.2</b>	<b>-90.59</b>	<b>-100022</b>
<b>94-96</b>	<b>Other Service Activities</b>	<b>75,012</b>	<b>312,217</b>	<b>326,581</b>	<b>335.37</b>	<b>4.6</b>	<b>14364</b>
94	Membership Organization	3,091	12,866	48,384	1465.32	276.06	35518
95	Repair of computers		-	138,375			138375
96	Other personal Services activities	71,920	299,351	139,821	94.41	-53.29	-159530
97	Activities of household as employees-Domestic staff	13,560	56,440	148,744	996.93	163.54	92304
<b>Total Other Private Services</b>		<b>494,181</b>	<b>2,154,581</b>	<b>2323464</b>	<b>370.16</b>	<b>7.84</b>	<b>168883</b>



# CHAPTER 5

## Expenditure on Gross Domestic Product



**EXPENDITURE ON GROSS DOMESTIC PRODUCT****5.1 Coverage**

The estimates of expenditure on the gross domestic product (GDP) are the total of final uses of goods and services measured in purchaser's value less the value of imports of goods and services. According to SNA 2008, the principal components of final uses of GDP are:

- i. Individual consumption expenditure (P31-Sector Households,S14)
- ii. Collective consumption expenditure (P32-Sector General Government,S13)
- iii. NPISH's individual consumption expenditure (P31-Sector NPISH,S15)
- iv. Gross fixed capital formation (P51)
- v. Changes in inventories (P52)
- vi. Acquisition less disposal of valuables (P53)
- vii. Exports (P6)
- viii. *Minus* Imports (P7)

The bracket indicates the SNA's transaction code ("P") and in some cases, the institutional sector code, the transactions by definition are allocated to. In a lot of countries, including Pakistan, the individual consumption expenditure of households and of Non-profit Institutions Serving Households (NPISH) cannot be calculated separately and is accordingly shown as a single aggregate. This aggregate also includes the acquisition of valuables/consumer durables such as gold and silver products, wristwatches, wall and table clocks, precious stones and metals etc. However, valuables have been estimated separately in 2015-16 rebasing for the first time in Pakistan. The expenditure on GDP is presented in the following equation:-

$$GDP (Expenditure) = P31 + P32 + P51 + P52 + P53 + P6 - P7$$

Where P31 is individual consumption expenditure, P32 is collective consumption expenditure, P51 is gross fixed capital formation, P52 is changes in inventories, P53 is valuables, P6 is exports of goods and services, P7, is imports of goods and services. The codes are those of the respective transactions in the SNA 2008. If the net factor income from the rest of the world (R) is added, it becomes the Gross National Income (GNI).

Moreover, in the SNA the term "sector" is reserved for the five institutional sectors of the domestic economy: non-financial corporations (S11), financial corporations (S12), general government (S13), household sector (S14) and non-profit institutions serving households (NPISH) (S15):

Changes in final uses of GDP determine the growth of real GDP in the short term. There are three target variables that governments try to influence with their fiscal and monetary policy instruments to maintain growth at a rate that keeps inflation and employment at the desired level:

- i. Individual consumption expenditure
- ii. Collective consumption expenditure and
- iii. Gross fixed capital formation.

Exports are also a major component of final uses which in this case is based on external demand. It is conventional to show external demand as being equal to exports minus imports, the result being known as net exports. In the SNA increases in inventories (stocks), however, are recorded as gross capital formation. Gross capital formation is the sum of gross fixed capital formation, changes in inventories and net acquisition of valuables.

It is important to note that the GDP viewed from the expenditure side captures uses only in case they are “final”. In the national accounts, the uses of resources are described as intermediate or final. Intermediate uses consist of goods and services that are consumed, used up or transferred in the production process within the economic territory during the accounting period. Final uses comprise all other goods and services which are used for final consumption, for capital formation or exports (net of imports). Most of the expenditure by the general government or NPISH is conventionally regarded as “final”, either as final consumption expenditure or as gross capital formation. Conversely, all spending by firms on goods and services is “intermediate” apart from capital formation. Exports are considered as “final” because they are final sales from the point of view of the exporting country.

Methodological issues and data resources are explained in the subsequent paragraphs. The estimates of the expenditure on GDP for the base year 2015-16 are given in table 32. In general, the methods, as well as the results are given in this chapter; do not differ substantially from those of the National Accounts about the previous base.

## **5.2 Household Final Consumption Expenditure**

The final consumption of goods & services of households and non-profit institutions serving households (NPISHs) is made up of outlays on new durable and non-durable goods & services, reduced by net sales of second-hand goods, scraps and wastes and is estimated at purchasers’ value i.e. by including any taxes on products that may be payable at the time of purchase by households. Expenditures by residents abroad constitute imports, while expenditures by non-residents are exports.

In summary, the final consumption expenditure of the household generally includes;

- i. Purchases of the goods and services used by households to meet their everyday needs,
- ii. Partial payments for goods and services provided by the general government,
- iii. Payment to the general government for various types of licenses and permits for services
- iv. Owner occupier’s imputed rents
- v. Own-account consumption, i.e., the imputed value of consumption goods produced and consumed by households themselves
- vi. Income in kind, valued at their cost to the employer
- vii. Financial intermediation services indirectly measured (FISIM)

In principle, the aggregate on household final consumption expenditure can be measured in two ways:

- In a commodity flow approach, we would look at the domestic supply and import of products and delineate thereof those which are absorbed for the

final consumption purpose of households and NPISHs.

- In special surveys, we directly survey the consumption of households and NPISH by asking them. In Pakistan, this is done in the Household Integrated Economic Survey (HIES).

In Pakistan, as in some other countries, we apply a third variant which is an assessment of this aggregate as the residual of GDP. In other words, it is calculated as GDP as determined from the production side minus the aggregates which can be calculated on empirical evidence (final consumption of the government, capital formation and exports minus imports). The reason for refraining from the use of figures from HIES is that there are large gaps between HIES and the residual of GDP. A lot of countries face the problem that household surveys drastically understate the final consumption as defined in the SNA. Conceptual issues have been highlighted in the 2005-06 rebasing document.

A comparison of figures of households final consumption expenditure as reported in HIES surveys and those derived residually in the National Accounts, as per results of the base year 2005-06, is presented below:-

**Table 5.1: Comparison of Household Final Consumption Expenditure in HIES and National Accounts (Rs. in Million)**

Financial Year	HIES Survey (Households only)	National Accounts (2005-06 base)	HIES % age of National Accounts
		(HHs + NPISH)	
1	2	3	4
2007-08	3,169,577	8,709,574	0.36
2010-11	4,836,926	14,831,293	0.33
2013-14	8,362,474	20,391,214	0.41
2015-16	10,455,229	23,266,454	0.45
2018-19	15,055,810	31,547,687	0.48

Due to the huge gap in the household final consumption figures compiled through HIES surveys and in National Accounts, the estimates are derived through residual approach in 2015-16 rebasing as was being done in 2005-06 base.

### **5.3 Final Consumption Expenditure Of Non-Profit Institutions Serving Households (NPISH)**

Non-Profit Institutions Serving Households (NPISH) is a small sector in the national accounts. NPISH are units formed by groups of households to supply services to them or other households on a non-commercial basis. Included are political parties, trade unions, religious organizations, sports clubs, cultural associations, charities associations with philanthropic aims and certain charitable foundations. NPISH do not include all institutions with non-commercial aims. To be defined as NPISH, the funding source should be the household's donations or regular subscriptions. Those non-profit institutions that are not directly financed by households but are financed and controlled by the enterprise (Chambers of commerce, professional associations, mutual insurance companies etc.) or government are classified as being in the respective sector. NPISH provide non-market services, hence their treatment is similar to that of the government.

By convention, NPISH consumes the services they produce. Therefore final consumption expenditure of NPISHs is equal to their operating costs and all being individual consumption expenditure in nature.

In Pakistan, NPISHs is comprised of NGOs and membership organizations. The final consumption expenditure of NPISHs is equal to their operating costs and all being individual consumption expenditure in nature. In 2015-16 rebasing, final consumption expenditure of NPISH has been estimated separately through the known values of output for the first time. Due to its non-market nature, the output of NPISH has been imputed through the intermediate consumption expenditure (e.g. electricity, gas, water, fuel, transport, rent, etc.), compensation of employees, and consumption of fixed capital reported by NGOs for the base year survey and membership organizations. The base year output of NPISH i.e. Rs.296.7 billion has been treated as the final consumption expenditure of the NPISH which accounts for 0.91% of the GDP for the new base estimates. The NPISH is extrapolated through the combined output of NGOs and membership organizations.

## **5.4 General Government Final Consumption Expenditure**

### **5.4.1 Collective Consumption Expenditure (General Government)**

For short, the collective consumption is the output of the general government which has neither been utilized for own-account capital formation (e.g. in-house produced software) nor has been sold. Thus, the calculation of the collective consumption expenditure of the general government is just a few steps further than the calculation of its output, its intermediate consumption and its value-added. Collective consumption expenditure is derived as follows:

The value of all types of output of general government,

- less* the value of output for own-account capital formation,
- less* the value of sales of goods and services at both economically insignificant prices and economically significant prices,
- plus* the value of goods and services purchased from market producers for delivery to households free or at economically insignificant prices.

The latter position is relevant for countries with a well-developed system of social security funds where these funds cater for health insurance by purchasing health services and medical goods on behalf of their member households who in return pay social contributions. These countries, most of the industrialized ones, make use of an option of recording a “social transfer in-kind” to shift these high amounts of expenditures from collective consumption to individual consumption of the households the medical goods and services are meant for. Similarly, some other services provided by the government (education) are also shifted this way. Especially for this option the SNA 2008 foresees a special deviation in the sequence of accounts and in the balancing items (“adjusted disposable income”). This option has not been chosen for Pakistan. Conceptual issues have been highlighted in the 2005-06 rebasing document. Chapters 9 and 10 of the SNA 2008 are referred for details. Though the calculation of collective consumption is straightforward some conceptual discussion and clarification are given in the following paragraphs.

Expenditures on a wide range of consumer goods and services are incurred by the general government, either on collective services or on selected individual goods or services. The

collective consumption expenditures can be classified in several ways. In particular, they may be classified:

- i. According to whether the goods or services have been produced by the market or non-market producers;
- ii. According to whether the expenditures are on collective services or individual goods or services;
- iii. By function or purpose according to the classification of the functions of government (COFOG); or
- iv. By type of good or service according to the CPC.

Options “ii” and “iv” are not materialized for Pakistan. Option “ii” stands for the above mentioned “social transfers in kind” while option “iv” cannot be applied due to lack of data and resource constraints.

For countries like Pakistan whose central banks are providing surveillance services and thus are producing non-market output, the new SNA foresees a special addition to collective consumption. According to SNA 2008 (6.153 and 8.130), a current transfer (“current transfer between the central bank and general government” under “miscellaneous current transfers”) has to be recorded. The underlying convention is a virtual transfer from the State Bank to the central government which enhances the government’s disposable income by the amount of the collective consumption dedicated to the surveillance service of the State Bank. In other words: with the provision of this virtual money from the State Bank, the government is in a position to virtually purchase the non-market output from the State Bank. As a result of these virtual transactions the balancing items saving and net lending both of general government as well as of State Bank remain unaffected. In the base year, 2015-16 the collective consumption resulting from the State Bank’s non-market activity was Rs.39,037 million.

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 collective consumption expenditure. The government may produce output for its own final use and some market output but most production by units of the general government is non-market. The value of the non-market output is estimated by the sum of the costs involved in production. Although government delivers some goods and services to individually identifiable persons, the costs of so doing are shown as collective consumption expenditure. The value of collective consumption expenditure on non-market goods and services is not necessarily exactly equal to the value of government output of these goods and services. The values of these expenditures are equal to the estimated values of all types of output less the value of production for own capital formation and 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). Examples for the latter cases are sales from statistical yearbooks or tickets of public museums and the like. These can safely be assumed as negligible as compared to the volume of non-market output. The results according to option “iii” are given below.

**Table 5.2: Final Consumption Expenditure of the General Government for the Base Year 2015-16**

Functions of Government (COFOG)	Final Consumption Expenditure	Collective Consumption Expenditure	Individual Consumption Expenditure
1	2	3	4
01. General public service	503,258	503,258	-
02. Defence	640,552	640,552	-
03. Public order and Safety	311,493	311,493	-
04. Economic Affair	479,168	479,168	-
05. Environmental Protection	29,363	29,363	-
06. Housing and community amenities	29,642	29,642	-
07. Health	255,729	25,706	230,023
08. Recreation, culture and religion	22,028	17,039	4,989
09. Education	643,016	15,320	627,696
10. Social Protection	464,555	11,391	453,164
<b>Total</b>	<b>3,378,806</b>	<b>2,062,935</b>	<b>1,315,872</b>

Collective consumption expenditure is the second-largest final use after household consumption. Expenditures by the general government are, by convention, considered as forming part of the final uses (consumption or GFCF) of the general government itself. In accounting terms, final consumption expenditure by the government is equal to its cost, defined by the following sum:

Collective consumption expenditure = Compensation of employees of the government,

*Plus* purchases by the government of materials and other intermediate consumption items,

*Plus* consumption of government fixed capital,

*Plus* purchases of goods and services by the government for the benefit of households

*Plus* other taxes on production

*minus* partial payments by households or firms for services provided by the government

*Plus* non-market output of the central bank

## 5.5 Gross Fixed Capital Formation (GFCF)

Gross fixed capital formation (GFCF) is measured by the total value of a producer's acquisitions, less disposals, of fixed assets during the accounting period plus certain specified expenditures on services that add to the value of non-produced assets. GFCF is precisely defined in the national accounts as the net acquisition of produced fixed assets, i.e. assets intended for use in the production of other goods and services for more than one year. The word fixed is used to indicate that additions to inventories are not included in GFCF. It does not mean that the equipment in question cannot move. The term "fixed" was chosen in contrast to "variable" capital which consists of inventories. The net acquisition signifies that GFCF records the purchases of fixed assets after the deduction of sales of fixed assets. The term produced assets signify that only

those assets are included in GFCF that are the result of a production process recognized by the national accounts. Transactions in non-produced assets are included in balance sheet accounts. Conceptual issues have been highlighted in the 2005-06 rebasing document. Chapter 10 of the 2008 SNA is referred for details.

GFCF can be broken down by the nature of the product or by investing industry or by type of asset. Their cross-classification may also be useful for analysis purposes. In Pakistan, we classify the GFCF by investing industry and by type of assets. The types of assets are:

**a. Material fixed assets**

- Dwellings,
- Other buildings and structures
- Machinery and equipment
- Cultivated assets

**b. Intangible fixed assets**

- Mineral exploration
- Research and development
- Software
- Literary and artistic originals

GFCF is valued at purchasers' prices, which for the capital goods include transportation and installation charges as well. For the measurement of GFCF in Pakistan all four possibilities or a mixture of them are exploited:

- i. Primary data from surveys by asking the investor
- ii. Secondary data (i.e. without special survey) by utilizing data that are already available (government budgets and government finance statistics, banking statistics, company reports)
- iii. Commodity flow approach: If information of the investor is not available the amount is derived from the domestic output or import of goods or services which presumably are an object of the capital formation.
- iv. Proxy estimates from variables that are considered to correlate strongly with capital formation: loans from banks and other sources.

This has been materialized in Pakistan in the questionnaire below which as a standard document is utilized for surveys on GFCF in various industries. This does not withstand the fact that for empirical reasons we also have classifications of assets that follow other criteria as, for example, in agriculture.

Questionnaire Applied for data Collection is Given Below:

**Table 5.3: Data On Gross Fixed Capital Formation**

<b>1. Name and Address of establishment / Enterprise:</b>				<b>2. Major kind of activity:</b>		
<b>3. Average number of persons engaged during the year:</b>						
<b>Rs. "000"</b>						
Code	Type of assets		Acquisition, addition, alteration & major improvements	Sale Proceeds of fixed assets disposed off	*Own account capital formation	GFCF
						Col. (3-4+5)
1	2		3	4	5	6
<b>10</b>	Dwellings (Residential buildings)					
<b>21</b>	Other buildings and structures	Buildings other than dwellings				
<b>22</b>		Other structures				
<b>22-1</b>		i.				
<b>22-2</b>		ii.				
<b>22-3</b>		iii.				
<b>22-4</b>	iv. Others n.e.c					
<b>23</b>	Land improvements & cost of land transfer					
<b>31</b>	Machinery and equipment	Transport Equipment (vehicles etc.)				
<b>32</b>		ICT (computer hardware & telecommunication) equipment**				
<b>33</b>		Furniture & Fixture				
<b>33a</b>		Other machinery & equipment				
<b>50</b>	Cultivated biological resources (Animals / trees etc.)***					
<b>71</b>	Intellectual Property Products	Research and Development				
<b>72</b>		Mineral exploration & evaluation ****				
<b>73</b>		Computer software and database				
<b>74</b>		Other intellectual property products				
* Fixed assets produced for own use ** Information, Computer and Telecommunications *** for agriculture only						
**** for mining only						
<b>Note: Assets, acquired on a financial lease, should be included in the respective category.</b>						
<b>Name and Position:</b> _____				<b>Signature</b> _____		

## **5.6 Estimation of GFCF**

Estimates of the private sector are computed by a combination of commodity flow, expenditure (survey method) and financial approaches. The commodity flow approach which uses the net availability of capital goods in value terms from domestic production and imports and exports duly adjusted for various margins is applied to the following three sectors.

- a. Agriculture (Crops in the private sector)
- b. Construction (Private sector)
- c. Transport (Private sector)

### **5.6.1 Expenditure Approach (Survey Method):**

Expenditure approach is applied to following industries.

- i. Mining and quarrying
- ii. Large scale manufacturing industries (In-production units)
- iii. Small and household manufacturing industries
- iv. Electricity generation and distribution, gas distribution, Water supply
- v. Wholesale and retail trade
- vi. Accommodation and food service activities (Hotels and restaurants)
- vii. Warehousing and storage activities
- viii. Information and communication
- ix. Financial and insurance activities
- x. Real estate activities (Housing services ownership of dwellings)
- xi. Education
- xii. Human health and social work activities
- xiii. Other private services
- xiv. General government sector

A financial approach is used to estimate GFCF in under-construction large scale manufacturing industries and loans disbursed to different industries. Industry-wise detailed methodology is given below.

### **5.6.2 Results of GFCF by Industry**

#### **a. Agriculture, Forestry and Fishing**

The GFCF estimates in the agriculture, forestry and fishing industry are compiled separately for crops (Private and public sectors), cotton ginning (new addition in 2015-16 rebasing), livestock, forestry and fishing. The details are discussed below:-

#### **i. Crops**

Because of different sources of data, GFCF in agriculture has been calculated for the private sector and for the public sector separately. The main components of GFCF in private sector agriculture are:

- i. Imports and domestic production of agriculture machinery
- ii. Tube wells installed
- iii. Cultivated Biological Resources (Animals, trees, crops and plants resources yielding repeat products)
- iv. Land improvement and cost of land transfer
- v. Farms and buildings
- vi. Wells and bundats
- vii. Farm transport
- viii. Water courses
- ix. Orchards and
- x. Non-monetized GFCF (Own account capital formation).

The public sector estimates are based on data supplied by the public sector organizations. Data on land improvement, farm buildings & sheds, wells & bundats, farm transport, watercourses and orchards have been taken from Agriculture Census 2010 and extrapolated by the growth rate of the respective items between the two censuses, i.e. 2000 and 2010 to have the constant estimates. It is converted into a current estimate by applying the deflator for agriculture. This estimate has been adopted for the base 2015-16. This practice is being continued for extrapolation in the new base.

To estimate GFCF expenditure on farm machinery and implements, in the private sector, the “commodity flow approach” is applied, using domestic production of agricultural machinery and implements, adjusted for imports and exports. As the values of this approach are at output prices of the respective manufacturers or at import values, respectively, the figures have to be enhanced by the trade margins to arrive at GFCF at purchasers’ prices. For this purpose, custom duty and sale tax has been worked out at 24% based on FBR publication “Pakistan Custom and Tariff 2015-16”. The handling charges and trade margins, adopted from 2005-06 rebasing, have been applied @ 3% and 37% respectively on the total value of imports, inclusive of all taxes. It is worth noting that handling charges are neither trade margin nor transport margin. These are the services rendered by special agents but not independently covered, so special cases are included over here. A flat rate of 43.7%, adopted from 2005-06 rebasing, of total (other) monetized GFCF was used to derive the non-monetized GFCF. In the SNA terminology, it is the own-account capital formation and is also a part of the output.

The GFCF in non-monetized i.e. own-account capital formation has been estimated using a ratio of 2005-06 rebasing. It has also been extrapolated like the above-mentioned items and the same practice is being continued in the base 2015-16. The primary activity is crop production in Pakistan, therefore, this component of GFCF has been allocated to crops part instead of distributing it between crops and livestock activities.

GFCF of plant nurseries has also been estimated in 2015-16 rebasing for the first time through the study on Plant Nurseries. The base year GFCF estimates for this industry stand at Rs.337.2 million. The detail for the base year is given below in the table.

**Table 5.4: Gross Fixed Capital Formation (GFCF) in Agriculture Crops -Base 2015-16**

S No.	Heads	Value
		Rs. Million
1	2	3
1	CIF value of Imports Agricultural Machinery	8,884
2	Add custom duty and sale tax (24%)	1,954
3	Less Exports (-)	1,523
4	Less Re-exports	1
5	Balance of Imported Equipment available for domestic use	9,315
6	Add. Handling Charge @3% (on item 1)	267
7	Trade Mark-up to Wholesale and Retail dealers @37% of value (on item 5)	3,446
8	Total (5 + 6+7)	13,028
9	Domestic Sale of Tractors & Agricultural Machinery	26,323
10	Trade Mark-up @32.5% (on item 9)	8,555
11	Total Value of Imported Equipment and Domestic Production under large scale (8+9+10)	47,906
12	Value of Production under Small Scale Mfg.	340
13	Trade Mark-up @ 66% under Small Scale Manufacturing (on item 12)	224
14	Total Value of Equipment, Imported and Domestic Production (11+12+13)	48,470
15	Value of Tube wells only	25,707
16	Total Value of Agricultural Machinery and Tube wells (14+15)	74,177
17	Miscellaneous GFCF in Agriculture	102,108
<b>Components of "Miscellaneous GFCF"</b>		
1	Land Improvement (Monetized)	39,470
2	Farms, Building and Sheds	17,556
3	Wells and Bandit	2,696
4	Farm Transport	2,272
5	Water Courses	2,842
6	Orchards	2,237
7	Non-Monetized Investment	28,608
8	Tube wells construction	6,427
9	GFCF of nurseries	337.2
	<b>Total Miscellaneous GFCF</b>	<b>102,445</b>
	<b>Private GFCF Crops</b>	<b>176,622</b>
	<b>Public GFCF crops</b>	<b>205</b>
	<b>Total GFCF Crops</b>	<b>176,490</b>

For subsequent years, GFCF in crops is estimated using the information on imported and domestically produced and sold machinery and equipment used for agriculture purposes. The imports and sales of tractors are estimated at current prices while the remaining components are estimated at constant prices. GFCF related to tube wells are extrapolated at constant prices using

growth in the number of tube wells obtained from M/O National Food Security & Research (NFS&R). The miscellaneous component is estimated at constant prices but by using inter-census growth rates. WPI (Machinery & equipment) is used as the deflator.

## ii. Cotton Ginning

The GFCF of the cotton ginning industry has been estimated for the first time through a study conducted in 2016-17 under the umbrella of Rebasing of National Accounts. The study results have been adjusted and base year GFCF in the Cotton Ginning Industry stands at Rs.1042 million. The GFCF is be extrapolating at current prices by applying the growth of buildings reported in the crops sub-sector which is converted into constant prices by applying the WPI (Machinery and equipment).

## iii. Livestock

The GFCF in livestock has been measured as the value of acquisitions less disposals. It is, therefore, equal to the total value of all mature animals and immature animals produced on own account, acquired by users of the livestock less the value of their disposals. Disposals consist of animals sold or otherwise disposed off including those sold for slaughter, plus those animals slaughtered by their owners. The GFCF has been valued separately for each species of livestock. The livestock part of the agriculture industry is referred to, detail is given below. For the base year 2015-16, the cultivated assets have been calculated species-wise. For the detailed method chapter 2, the livestock part where the output/ GVA have been estimated is referred. Comparative results show improvements.

**Table 5.5: GFCF in Livestock, 2015-16 Base and 2005-06 Base at current prices (Rs. Million)**

Cultivated Assets 2015-16 base		Cultivated Assets 2015-16 (2005-06 base)	Cultivated Assets 2005-06
1	2	3	4
Buffalo	212,072	225,786	55,531
Cattle	215,870	231,634	54,477
Sheep & Goats	235,968	191,092	51,396
Others	24,389	24,577	7,127
<b>Total</b>	<b>688,300</b>	<b>673,088</b>	<b>168,530</b>
Imports of animals	866	866	
<b>Grand Total</b>	<b>689,166</b>	<b>673,954</b>	<b>168,530</b>

The GFCF in livestock in the following years will be estimated at constant prices using updated figures of stock of various species of livestock obtained from M/O NFS&R. A weighted-WPI (Milk and Meat) is used to derive GFCF figures at current prices.

## iv. Forestry

The contribution of the forestry industry is estimated through an indirect approach due to the non-availability of data on establishments. Therefore, the benchmark estimates of GFCF in the forestry industry have been adopted by applying capital-output ratio from 2005-06 base which

stands at Rs.1392 million. Own account capital formation is like logging camps, temporary roads etc. developed by the contractors. The figures of GFCF are given below:

**Table 5.6: GFCF in Forestry, 2015-16 Base and 2005-06 Base (Rs. Million)**

<b>Fixed assets GFCF</b>	<b>2015-16 Base</b>	<b>2005-06 Base at prices of 2015-16</b>	<b>2005-06 Base</b>
1	2	3	4
<b>A) Buildings &amp; structures (Construction)</b>	<b>669</b>	<b>330</b>	<b>121</b>
i. Land Improvement & cost of land transfer	266	131	48
ii. Building and construction	232	115	42
iii. Other structure	171	84	31
<b>B) Machinery &amp; Equipment</b>	<b>724</b>	<b>357</b>	<b>131</b>
i. Transport Equipment	302	149	55
ii. Furniture & fixture	61	30	11
iii. Other machinery & equipment	360	178	65
<b>C) Cultivated biological resources</b>			<b>0</b>
<b>Total (A+B+C)</b>	<b>1392</b>	<b>687</b>	<b>252</b>

The extrapolation of GFCF in the forestry industry is made at constant prices by using inter-census growth of rural dwellings. WPI (Machinery and equipment) is used to derive GFCF figures at current prices.

#### **v. Fishing**

GFCF for the base 2015-16 has been taken from the inland and marine fishing studies. Fishing crafts, gears and equipment added annually are the major part of GFCF in fishing. GFCF for the new base year 2015-16 amounts to Rs.35824 million as compared to Rs.2950 million in the year 2015-16 for 2005-06 base. The detail is given below.

**Table 5.7: GFCF in Fishing Sector, 2015-16 Base and 2005-06 Base (Rs. Million)**

<b>Description</b>	<b>2015-16 Base</b>	<b>2005-06 Base at prices of 2015-16</b>	<b>2005-06 Base</b>
1	2	3	4
A. Marine Fishing	34,027	2,912	1,472
B. Freshwater Fishing	1,798	37	17
<b>Total Fishing (A+B)</b>	<b>35,824</b>	<b>2,950</b>	<b>1,489</b>

The extrapolation of GFCF in the fishing industry is carried out separately for inland and marine fishing activities at constant prices by using the information on fishing crafts obtained from M/O NFS&R. WPI (Machinery and equipment) is used to derive GFCF figures at current prices.

**Table 5.8: GFCF in fishing by type of assets 2015-16 base (Rs. Millions)**

Fixed assets GFCF	2015-16 Base	2005-06 Base at prices of 2015-16	2005-06 Base
1	2	3	4
<b>A)Buildings &amp; structures (Construction)</b>	<b>4,613</b>	<b>231</b>	<b>115</b>
i. Land Improvement & cost of land transfer	577	16	7
ii. Building and construction	469	9	4
iii. Other structure	3,568	207	104
<b>B) Machinery &amp; Equipment</b>	<b>31,212</b>	<b>2,719</b>	<b>1,373</b>
i. Transport Equipment	139	2	1
ii. Furniture & fixture	47	-	-
iii. Other machinery & equipment	31,025	2,717	1,372
<b>Total (A+B)</b>	<b>35,824</b>	<b>2,950</b>	<b>1,489</b>

The GFCF of the agriculture sector for 2015-16 has thus been estimated at Rs. 904,250 million as compared to Rs.850,088 million for the 2005-06 base methodology. The detail of GFCF by sector and by assets is given below:

**Table 5.9: GFCF in Agriculture Forestry and Fishing, 2015-16 base and 2005-06 base (Rs. Million)**

Sector	2015-16 Base	2005-06 Base at prices of 2015-16	2005-06 Base
1	2	3	4
<b>Private sector</b>	<b>904,045</b>	<b>849,943</b>	<b>254,746</b>
Crops (Exc. CG)	176,622	172,352	84,348
Cotton Ginning	1,042		
Livestock	689,165	673,954	168,657
Forestry	1,392	687	252
Fishing	35,824	2,950	1,489
<b>Public sector</b>	<b>205</b>	<b>145</b>	<b>50</b>
<b>Total</b>	<b>904,250</b>	<b>850,088</b>	<b>254,796</b>

**Table 5.10: GFCF (By Assets) in agriculture for the year 2015-16 (Rs. Million)**

Assets	2015-16 base			2015-16 (2005-06 base)		
	Private	public	Total	Private	public	Total
1	2	3	4	5	6	7
Agriculture	904,045	205	904,250	849,943	145	850,088
Fixed assets	211,784	205	211,989	173,038	145	173,183
Cultivated assets	692,261		692,261	676,906		676,906

This change is attributed to the following factors

- The private GFCF in the new base year 2015-16 has increased due to improvement in crops (2.3%), livestock (2.3%). A significant increase has been witnessed in fishing from Rs.2.950 billion to Rs.35.8 billion due to improved coverage.

- GFCF in cultivated assets has increased to Rs.692 billion in the new base year 2015-16 as compared to Rs. 677 billion in 2005-06bases.

## **b. Industrial Activities**

The term “industrial sector” is well embedded in Pakistan’s common language of describing the economy. However, it is not a term used in the SNA or the classifications of the UN. On the contrary: it confuses as in the SNA the terms “industry” and “sector” have a very specific meaning. The term “industry” stands for a certain kind of major economic activity and is not confined to mining, quarrying, manufacturing, production of electricity and gas and water or construction. In the language of SNA and the UN classifications, even the services consist of “industries”. The term “sector” has already been specified as standing for the 5 institutional sectors of the economy. Nevertheless, for the convenience of the users, the respective industries are grouped here as if the familiar term “industrial sector” were still in place.

### **i. Mining and Quarrying**

The estimates of GFCF for the new base year of this industry have been derived using the information from annual reports of the individual companies. GFCF has been estimated separately for coal, gas, oil and other minerals by capital assets (tangible & intangible) in line with SNA-2008. Acquisition of capital assets netting out their disposal at the current price has been recorded as changes in fixed assets. According to the SNA 2008, (10.107) exploration costs undertaken to discover new deposits of minerals are also treated as GFCF. Deflators are used to convert the estimates at constant prices. The GFCF in the mining and quarrying sector is given in table 5.11 while bifurcation by type of assets is given in table 5.12.

**Table 5.11: GFCF in Mining and Quarrying, 2015-16 Base and 2005-06 Base (Rs. Million)**

<b>Description</b>	<b>2015-16 Base</b>	<b>2005-06 Base at prices of 2015-16</b>	<b>2005-06 Base</b>
1	2	3	4
Public Sector	28,053	28,053	6,133
Private Sector	94,113	77,365	22,829
<b>Total</b>	<b>122,165</b>	<b>105,418</b>	<b>28,962</b>

The GFCF by type of asset in the mining and quarrying industry is presented below:-

**Table 5.12: GFCF in Mining and Quarrying, 2015-16 Base and 2005-06 Base (Rs. Million)**

Fixed Assets	2015-16 Base	2005-06 Base at prices of 2015-16	2005-06 Base
1	2	3	4
Land & land improvement	14	0	36
Building (Residential)	1,911	103	358
Building ( Non-Residential)	709	688	
Other Construction	1,926	0	1,424
Plant and Machinery	43,625	40,075	5,091
Transport & Equipment	1,612	512	96
Furniture & Fixture	347	328	265
Pipeline	933	1,011	
ICT Computer hardware & Telecom. Equipment)	658	654	
Intellectual Property Products (IPP)	18,408	18,095	1,739
Exploration cost	52,022	42,964	19,953
Other Fixed Assets		988	
<b>Total</b>	<b>122,165</b>	<b>105,418</b>	<b>28,962</b>

## ii. Manufacturing

The total GFCF in the manufacturing industry in 2015-16 rebasing has been estimated at Rs.723,845 million as compared to Rs. 485,495 million for 2015-16 in 2005-06 rebasing, showing an increase of 49.1 per cent. The revised estimates consist of Rs. 633,494 million in large scale manufacturing (compared to 2005-06 based estimates at Rs.456,222 million) and Rs. 86,351 million in small scale manufacturing (compared to Rs. 29,238 million in 2005-06 rebasing). The GFCF in slaughtering in 2015-16 rebasing has been estimated as Rs. 4,000 million.

### • Large Scale Manufacturing Industries

GFCF of LSMI has been estimated by using a combination of expenditure & financial approaches. The expenditure approach is applied for 'in production' units, i.e., the units which have started production. The estimates are prepared for the public and private sectors separately. The financing approach is applied for the units under construction and is not covered in the category of in production units.

#### - In production units

For the new base year, the GFCF by units in production has been estimated through the Census of Manufacturing Industries (CMI) 2015-16. For the subsequent years, the companies listed on Pakistan Stock Exchange are covered through a census approach. Non-listed companies are covered through a sample survey. The results of both segments are combined. The GFCF may be a balancing, modernizing and replacing (BMR) of the existing assets. The total GFCF by units in production has been computed Rs. 465,367 million whereas the largest share comes from plant and machinery followed by non-residential buildings.

#### - Under construction units

GFCF by under-construction units is estimated through financing approach i.e. loans disbursed by Development Financing Institutions (DFI's) / Scheduled Banks, Leasing & Modaraba companies. It is treated as new capacity building and expansion. The existing practice is to use 50% of these loans for GFCF purposes. Further, the equity equivalent to 50% loans was also assumed as part of GFCF in the 2005-06 rebasing. The same practice has been continued for the new base year 2015-16 as well. The rationale is that especially in LSMI the big chunk of capital formation is done during the start-up phase while production (and thus reporting to statistics) has not yet commenced.

The figures for the public sectors comprise of GFCF of public sector/state-owned enterprises like Heavy Electrical Complex Ltd, Heavy Mechanical Complex Limited, Pak Arab Refinery Ltd, etc. and others whose major activity is in manufacturing. The census approach is applied to the public sector. The deflator is being applied to compile the estimates at constant prices. Details are given in the following table.

**Table 5.13: GFCF by Sector in LSMI (Rs. Million)**

Sectors	2015-16 Base	2005-06 Base at prices of 2015-16	2005-06 Base
1	2	3	4
<b>Private Sector</b>	<b>632,161</b>	<b>454,508</b>	<b>277,719</b>
A. In Production*	465,367	287,714	193,677
B. Under construction (C+D+E)	166,794	166,794	84,042
C. Under Construction (bank loans startups, 50%)	74,982	74,982	38,557
D. Loan Disbursed by Leasing & Modarba Companies, (50%)	8,415	8,415	3,464
E. Self-financing / owners' equity (C+D)	83,397	83,397	42,021
<b>Public Sector</b>	<b>1,333</b>	<b>1,714</b>	<b>3,609</b>
<b>Total</b>	<b>633,494</b>	<b>456,222</b>	<b>281,328</b>

\* Source: CMI 2015-16

- **Small and Household Manufacturing Industries**

The estimates of GFCF in the small-scale manufacturing industry for the new base year 2015-16 have been derived from the survey on Small and Household Manufacturing Industries 2015 conducted for the change of base of National Accounts. The reference period of the SHMI was the calendar year i.e. 2015. Therefore, the survey results i.e. Rs.81,984 million have been adjusted to the base year 2015-16. For this purpose, 50% of the GFCF has been enhanced @ 10.655% i.e. the sum of the growth of weighted WPI (Food, beverage, textile and leather products) and growth rate of GFCF at constant prices between 2014-15 and 2015-16 (7.36%) in 2005-06 based series. Hence, the total GFCF for the new base year in small-scale manufacturing stands at Rs. 86,351million. Most of the GFCF i.e. Rs. 51,204 million (59.3%) pertain to non-residential buildings followed by Rs.26,714 million (30.9%) in machinery and equipment, Rs.2,576 million (2.98%) in furniture and fixtures, Rs.2,206 million (2.55%) on account of the improvement of land and cost of ownership transferred and Rs.1,929 million (2.23%) in residential buildings. The comparison of GFCF in 2015-16 and 2005-06 bases is presented below:-

**Table 5.14: GFCF in SHMI (Rs. Million)**

Industry	2015-16 Base	2005-06 Base	2005-06 Base	change	
	At 2015-16 prices		At 2005-06 prices	col. 2 / col. 3	col. 2 / col. 4
1	2	3	4	5	6
<b>SHMI</b>	86,351	29,238	6,084	195.34	1,319.32

For subsequent years, the annual estimates at constant prices are extrapolated by applying the constant growth rate of 9.67 %, an inter-survey annual average growth rate of GFCF between 2015-16 and 1999-2000. The estimates at constant prices are converted into current prices by applying the WPI deflator.

- **Slaughtering**

This industry is comprised of operations of slaughterhouses (formal part) and other activities relating to production, dressing, and packing of fresh, chilled, dried, salted, smoked or frozen meat carried out in the informal sector. This activity is described in the PSIC class 1010-Processing and preserving of meat and is covered in the CMI. However, figures relating to this class are deducted from CMI and LSM to avoid double counting (the GVA part is referred for details). The GFCF in slaughtering is made in the construction of buildings, transport equipment, furniture and fixtures, and machinery and equipment. In the absence of direct establishment-based data in the slaughtering industry, the GFCF (Rs.2,000 million) reported in the 2015-16 CMI under PSIC class 1010-Processing and preserving of meat has been doubled to account for the informal component of the industry. Hence, the total GFCF of the slaughtering industry has been at Rs. 4,000 million for the new base year 2015-16. Most of the GFCF i.e. Rs.3,736 million (93.4%) pertains to machinery and equipment whereas the remaining Rs.264 million relates to buildings. For subsequent years the estimates of GFCF at constant prices for the slaughtering subsector are extrapolated by using the growth rate of meat production. Deflator (WPI meat) is used to convert the constant prices GFCF estimates into current prices.

### **iii. Electricity generation and distribution, Gas distribution and Water supply**

These industries cover expenditure on fixed assets by:

- WAPDA, K-Electric, IPPs, CPPs, small hydel-power plants, for electricity generation & distribution
- SNGPL, SSGC & Mari gas for gas distribution including for CNG.
- Water supply in the private sector

Note that the supply or distribution of natural gas to gas stations for compression through mains is a component of SNGPL and SSGC systems. However, the further distribution of CNG is a component of wholesale and retail trade. The other point to mention is that the GFCF of the general government sector cannot be bifurcated according to the functions because it is available for the total government. Therefore, the public sector GFCF of water supply cannot be taken separately. The rebased GFCF estimates for the year 2015-16 for electricity and gas industries

stand at Rs.178,264 million. The production of LPG is covered in the large scale manufacturing sector. The detailed GFCF estimates for the bases 2015-16 and 2005-06 are given below.

**Table 5.15: GFCF in Electricity and gas, 2015-16 base and 2005-06 base (Rs. Million)**

Sector	2015-16 Base (at 2015-16 prices)			2005-06 Base (at 2015-16 prices)		
	Electricity gen. & distribution	Gas distribution	Total	Electricity gen. & distribution	Gas distribution	Total
1	2	3	4	5	6	7
<b>Public</b>	113,734	41,374	155,108	113,734	41,374	155,108
<b>Private</b>	23,156	-	23,156	23,156	-	23,156
<b>Total</b>	<b>136,890</b>	<b>41374</b>	<b>178,264</b>	<b>136,890</b>	<b>41374</b>	<b>178,264</b>

### Water Supply in the Private Sector

In the 2005-06 base series, the GDP estimates of this industry were included in the General Government Services. In 2015-16 rebasing, the contribution of this industry in the private sector has been estimated separately. The 2005-06 rebasing document contains information on GFCF by type of assets, which has been used to derive the GFCF estimates using existing capital-output ratios. The GFCF estimates for the new base year 2015-16 stands at Rs.23,387 million. Most of the GFCF i.e. Rs.21,680 million (92.7%) pertains to PSIC Division 36-Water collection, treatment and supply and the remaining Rs.1707 million (7.3%) relates to PSIC Divisions 37-39 Sewerage, Waste collection, treatment and disposal activities. The detail of GFCF in the water supply industry in the private sector by type of assets is presented in table 5.16 below:-

**Table 5.16: GFCF in Water Supply, 2015-16 base (Rs. Million)**

Year	Dwellings (Residential buildings)	Buildings other than dwellings	Other structures	Transport Equipment (vehicles etc.)	ICT (computer hardware & telecomm.) equipment	Furniture & Fixture	Other machinery and equipment	Total
1	2	3	4	5	6	7	8	9
2015-16	118	26	22,397	10	442	57	338	23,387

The GFCF estimates in the electricity, gas and water supply & sanitation by type of fixed assets are as under.

**Table 5.17: GFCF in Electricity, Gas & Water Supply Sector, 2015-16 & 2005-06 bases (Rs. Million)**

Asset type	2015-16 Base (at 2015-16 prices)			2005-06 base (at 2015-16 prices)		
	Public	Private	Total	Public	Private	Total
1	2	3	4	5	6	7
Land improvement	461	1	462	461	1	462
Residential Building	4,200	118	4,318	4200	0	4,200
Non- Residential Building	1,909	426	2,335	1909	401	2,310
Transmission Dispatch Equipment	31,811	22,396	54,207	31811	0	31,811
Telecom	350	0	350	350	21	371
Pipelines	10,616	594	11,210	10616	0	10,616
Other Construction	221	0	221	221	1	222
Transport Vehicle/Equipment	2,039	1	2,040	2039	184	2,223
Machinery & Equipment	101,715	194	101,909	101715	22321	124,036
Furniture & Fixture	466	22,659	23,125	466	82	548
IPPs	0	139	139	0	14	14
Computers	1,126	14	1,140	1126	131	1,257
Other Fixed Assets	194	0	194	194	0	194
<b>Total</b>	<b>155,108</b>	<b>46,543</b>	<b>201,651</b>	<b>155,108</b>	<b>23,156</b>	<b>178,264</b>

For subsequent years, GFCF of electricity and gas industries at current prices based on annual data provided by the sources are converted into constant prices by applying WPI (metal product, machinery & equipment). GFCF of the water supply industry is extrapolated at current prices by applying the growth of financing for fixed investment to private businesses engaged in the industry compiled by SBP which are converted into constant prices through WPI (general).

#### iv. Construction

GFCF in the construction industry is computed separately for private and public sectors. GFCF estimates of public sector construction include GFCF by capital assets i.e., expenditure on land improvement, machinery & transport equipment, furniture & fixture from reported on an annual basis by autonomous bodies such as development authorities e.g. Capital Development Authority, Lahore Development Authority, Karachi Development Authority, etc. and National Construction Company, Indus Basin, etc. The Public Sector estimates of GFCF in the construction sector amounts to Rs 5,178 million.

In the 2005-06 rebasing, the private sector GFCF was used to be estimated through the commodity flow approach due to the non-availability of data at the establishment level. In 2015-16 rebasing, the private sector GFCF has been estimated through the Construction Survey 2014-15 (Establishment part). The GFCF reported by establishments engaged in the construction activity during the reference period i.e. 2014-15 was Rs.52, 558 million which, have been adjusted to the base year 2015-16 by applying the growth of GFCF at current prices between 2014-15 and 2015-16 and stands at Rs. 64,882 Million. As the public sector, GFCF is estimated directly based on annual data on construction expenditure reported by development authorities, therefore, public sector GFCF amounting to Rs.5178 million has been deducted from the survey-based estimates of Rs.64,882 million. Hence, private sector GFCF for the base year 2015-16 has been estimated at Rs.59,704 million.

Total GFCF for the new base year 2015-16 in the construction industry has been estimated at Rs.64,882 million against 2005-06 based estimates of Rs.49,009 million as shown in the table below along with by a type of assets.

**Table 5.18: GFCF in Construction, 2015-16 Base & 2005-06 Base (Rs. Million)**

Description	2015-16 Base	2015-16 (2005-06 Base)	2005-06 Base
1	2	3	4
Private	59,704	43,831	14,597
Public	5,178	5,178	6,375
<b>Total GFCF</b>	<b>64,882</b>	<b>49,009</b>	<b>20,972</b>

**Table 5.19: GFCF in Construction by type of assets 2015-16 Base (Rs. Million)**

Asset Type		Public	Private	Total
1		2	3	4
<b>Dwellings (Residential buildings)</b>			2,578	2,578
<b>Other Buildings and structures</b>	Buildings other than dwellings	1,082	6,934	8,016
	Other structures		142	142
	i. Telephone/Power lines, Cables etc.	3,245	6,336	9,581
	ii. Others n.e.c		15,250	15,250
	Land improvements & cost of land transfer	74	1,824	1,898
<b>Machinery and Equipment</b>	Transport Equipment (vehicles etc.)	303	1,637	1,940
	ICT (computer hardware & telecommunication) equipment		194	194
	Furniture & Fixture	58	44	102
	Other machinery and equipment	373	24,557	24,930
<b>Intellectual Property Products</b>	Research and Development		-	
	Computer software and database	43	207	250
	Other intellectual property products		-	
<b>Total (GFCF) Current</b>		<b>5,178</b>	<b>59,704</b>	<b>64,882</b>

For subsequent years the estimates of GFCF for the construction industry is compiled at current prices by using the information on imported machinery and equipment for construction purposes. The GFCF of the public sector is compiled at current prices through the annual census of development authorizes e.g. Capital Development Authority (CDA), Lahore Development Authority (LDA), etc. following the practice of 2005-06 rebasing. WPI (Building material) is used to convert the current GFCF estimates into constant prices.

### c. Services

#### i. Wholesale, Retail Trade

The GFCF in this industry is comprised of wholesale and retail trade (WRT) and the repair and maintenance of motor vehicles. The GFCF estimates of repair and maintenance of motor vehicles have been estimated through Survey on “Other Private Services 2016-17” and stands at Rs.6252 million. The survey figures have been adjusted to the base year i.e. 2015-16 and stand at Rs.4031 million for repair and maintenance of motor vehicles. The GFCF estimates of wholesale and retail trade part in the new base year 2015-16 have been derived using GFCF (excluding machinery and equipment) to a value-added ratio of warehouse and storage industry obtained from the specifically conducted study for the change of base of national accounts from 2005-06 to 2015-16. The GFCF in wholesale trade has been estimated at Rs.59,351 million whereas, in retail trade, it has been worked out at Rs. 13,954 million. Thus the total GFCF for WRT including repair and maintenance of vehicles for the base year 2015-16 stands at Rs. 202,799 million as compared to Rs.63,419 million for 2015-16 in 2005-06 rebasing as shown in the table below.

**Table 5.20: GFCF in wholesale, retail trade bases 2015-16 & 2005-06 (Rs. Million)**

Activities	2015-16 Base	2015-16 (2005-06 Base)	2005-06 Base
1	2	3	4
Repair and Maintenance of Motor Vehicles (Exc. Sales)	3,494	8,355	2383
Wholesale Trade (Inc. sale of motor vehicles)	59,351	16,397	4677
Retail Trade (Inc. sale of motor vehicles)	139,954	38,666	11029
<b>Wholesale &amp; Retail Trade</b>	<b>202,799</b>	<b>63,419</b>	<b>18,089</b>

For subsequent years the estimates of GFCF of WRT industry are extrapolated at current prices by applying the growth of financing for fixed investment to private businesses engaged in the industry compiled by SBP which are converted into constant prices through WPI (general).

#### ii. Accommodation and Food Service Activities (Hotels and Restaurants)

The GFCF of accommodation and food service activities was used to be included in the WRT in 2005-06 rebasing, which has now been estimated separately through a survey. The total GFCF for the new base year 2015-16 of this industry stands at Rs.74,922 million out of which Rs.42,250 million (56%) pertains to hotels, motels, inns, and hostels and Rs.32,672 million relates to restaurants, cafes, canteens and other eating & drinking places. The details are given in the below table.

**Table 5.21: GFCF in Hotels & Restaurants, bases 2015-16 & 2005-06 (Rs. Million)**

Activities	2015-16 Base	2015-16 (2005-06 Base)	2005-06 Base
1	2	3	4
Hotels, Motels, Inns, Hostels, etc.	42,250	12,072	3443
Restaurants, Cafes, Canteens & other eating & drinking places	32,672	1,971	562
<b>Total (Hotels and Restaurants)</b>	<b>74,922</b>	<b>14,043</b>	<b>4,005</b>

For subsequent years the estimates of GFCF of accommodation and food service activities are extrapolated at current prices by applying the growth of financing for fixed investment to private businesses engaged in the industry compiled by SBP which is converted into constant prices through WPI (general).

### iii. Transportation and Storage

This industry has witnessed a structural change in 2015-16 rebasing. The communication, which was used to be included under the heading of “Transport, storage and communication” has been grouped with information as per PSIC 2010. The GFCF in the transportation and storage industry has been estimated at Rs.416,691 million (up by 10% over the estimates of Rs.381,876 million for 2015-16 in 2005-06 rebasing at current prices) including public sector GFCF of Rs.26,905 million and private sector GFCF of Rs. 389,786 million constituting mainly in the acquisition of machinery and equipment relating to transportation activities. The summary is shown below in the table.

**Table 5.22: GFCF in Transportation and Storage, 2015-16 base and 2005-06 base (Rs. Million)**

Sector	2015-16 Base	2015-16 (2005-06 Base)	2005-06 Base
1	2	3	4
<b>Private Sector</b>	389,786	354,972	110,281
<b>Public sector</b>	26,905	26,904	52,171
<b>Total</b>	<b>416,691</b>	<b>381,876</b>	<b>162,452</b>

The methodology for the compilation of GFCF in the transportation and storage industry is presented in the table below:-

**Table 5.23: GFCF in Transport and Storage for the base year 2015-16 (Rs. Millions)**

Sr. No.	Description	Value
1	2	3
<b>Private Sector</b>		
1	CIF value of imports of transport machinery	33,010
2	Add Custom Duty and sale tax (61.71 %)	20,371
3	Less exports	1,005
4	Less re-exports	568
5	Balance of imported equipment available for domestic use	51,808
6	Add handling charges @ 3 % of value (on item 5)	990
7	Trade mark-up to wholesale and retail dealers @ 37 % of value (on item 5)	19,169
8	Total (5+6+7)	71,967
9	Domestically produced under LSMI transport machinery	206,748
10	Trade mark-up @ 32.5% (on item 9)	67,193
11	Total value of imported equipment and domestic production under large scale (8+9+10)	345,908
12	Value of production under small scale manufacturing	2,619
13	Trade mark-up @ 66% under small scale manufacturing (on item 12)	1,729
14	Other private enterprises (including warehouses & storage)	39,530
<b>Total value of equipment, imported and domestic production (11+12+13+14)</b>		<b>389,786</b>
<b>Public sector (Transport)</b>		
1	Pakistan Railways	5,825
2	National Logistic Cell	1,207
3	Pakistan International Airline	1,224
4	Civil Aviation Authority	1,606
5	Pakistan National Shipping Corporation	376
6	Port Qasim Authority	34
7	Karachi Port Trust	16,204
8	National Highway Authority	314
9	Pak Arab Refinery Ltd.(Pipeline)	114
10	Post Office	0
<b>Total</b>		<b>26,905</b>
<b>Total Transport and Storage (Public + Private)</b>		<b>416,691</b>

The detail of GFCF in Transportation and storage by type of assets is given in the table below:-

**Table 5.24: GFCF in Transport and Storage bases 2015-16 & 2005-06 (Rs. Millions)**

Description	2015-16 Base	2015-16 (2005-06 Base)	2005-06 Base
1	2	3	4
<b>Private Sector</b>	<b>389,786</b>	<b>354,972</b>	<b>110,282</b>
Transport & storage	42,379	7,298	4,397
Transport	9,998	6,209	3,939
Storage	28,894	0	0
Postal & Courier activities	637	1,089	458
Imports & Domestic Production	350,256	347,674	105,885
<b>Public Sector</b>			
Transport & storage	26,905	26,905	52,171
Transport	26,905	26,905	52,064
Storage	0	0	0
Postal & Courier activities	0	0	107
<b>Transport (Public + Private)</b>	<b>416,691</b>	<b>381,876</b>	<b>162,453</b>

**Table 5.25: GFCF in Transport and Storage bases 2015-16 & 2005-06 (Rs. Millions)**

Fixed Assets	2015-16 Base	2015-16 (2005-06 Base)	2005-06 Base
1	2	3	4
Land Improvements	1,093	772	712
Buildings	6,528	4,160	639
Other Constructions	11,163	10,972	26,526
Transport Equipment	361,669	355,927	79,516
Machinery and Equipment	29,181	5,861	34,966
Computers	2,419	1,096	18,769
Others	2,022	1,458	602
Furniture & Fixture	2,616	1,632	720
<b>Total GFCF (Public + Private)</b>	<b>416,691</b>	<b>381,878</b>	<b>162,450</b>

For subsequent years the estimates of GFCF for the transportation and storage activities are compiled at current prices by using the information on imported and domestically produced and sold machinery and equipment for transportation purposes. The GFCF of other private enterprises including warehouses and storage is extrapolated at current prices by applying growth of financing for fixed investment to private businesses engaged in the same industry compiled by SBP. The GFCF of the public sector is compiled at current prices through the annual census of enterprises/establishments following the practice of 2005-06 rebasing. WPI (General) is used to convert the current GFCF estimates into constant prices.

#### iv. Information and Communication

The information and communication industry is comprised of publishing activities, motion pictures, programming and broadcasting, telecommunications, computer programming, consultancy, and information service activities. In 2005-06 rebasing, the information part was used to cover under “Other Private Services” whereas communication was covered under “Transport, storage and communication”. The activities have been re-arranged following the demand of users and industry stakeholders in the wake of the growing importance of IT and allied services as well as the structure of the PSIC 2010. The GFCF in the information and communication industry has been estimated at Rs.158,037 million including public sector GFCF of Rs.28,307 million and private sector GFCF of Rs.129,730 million. The summary table of GFCF is presented below:

**Table 5.26: GFCF in Information and Communication, 2015-16 base and 2005-06 base (Rs. Million)**

Sector	2015-16 Base	2015-16 (2005-06 Base)	2005-06 Base
1	2	3	4
Private Sector	129,730	128,245	110,456
Public sector	28,307	14,077	27,932
<b>Total</b>	<b>158,037</b>	<b>142,322</b>	<b>138,387</b>

The details are discussed below.

- **Publishing activities**

The separate contribution of the industry has been assessed through OPS Survey 2016-17 for the first time and stands at Rs.1,837 million. The GFCF for software publishing activities has been covered in the study on computer-related activities and stands at Rs. 652 million. Results of two sources have been combined after adjustment for the base year 2015-16 and stand at Rs.1,887 million. For subsequent years the estimates of GFCF of publishing activities are extrapolated at current prices by applying the growth of financing for fixed investment to private businesses engaged in the industry compiled by SBP which is converted into constant prices through WPI (General).

- **Motion Pictures, Programming, and Broadcasting**

The GFCF contribution of motion pictures, programming, and broadcasting activities has been assessed through annual reports of establishments and stands at Rs.4770 million for the new base year 2015-16. For subsequent years the estimates of GFCF of motion pictures, programming and broadcasting activities are extrapolated at current prices by applying the growth of financing for fixed investment to private businesses engaged in the industry compiled by SBP which are converted into constant prices through WPI (General).

- **Computer Programming, consultancy, and information service activities**

The GFCF contribution of this industry has been assessed through the study on “Computer-related activities 2016-17” and stands at Rs.33,094 million. The survey results have been adjusted by applying the growth of financing for fixed investment to private businesses of the

same industry and stands at Rs.25,086 million for the new base year 2015-16. For subsequent years the estimates of GFCF of computer programming, consultancy and information service activities are extrapolated at current prices by applying the growth of financing for fixed investment to private businesses engaged in the industry compiled by SBP which is converted into constant prices through WPI (General).

- **Telecommunications**

The GFCF of this industry is compiled directly from data provided by PTCL, other major telecom companies, and mobile phone companies on annual basis separately for private and public sectors. The contribution of cable operators and internet service providers (ISPs) has been assessed through a separate study. The GFCF in the private sector for the telecommunication industry has been estimated at Rs.97,987 million while for the public sector the GFCF is Rs.28,307 million. In the private sector, major contributors are mobile phone companies while Pakistan Telecommunication Company Ltd. and Pak Telecom Mobile (U-Phone) are leading contributors in the public sector. The summary is presented below:

**Table 5.27: GFCF in Telecommunication bases 2015-16 & 2005-06 (Rs. Millions)**

Description	2015-16 Base	2015-16 (2005-06 Base)	2005-06 Base
1	2	3	4
Private Sector	97,987	111,903	104,347
Public Sector	28,307	14,077	27,932
<b>Total Telecommunication</b>	<b>126,294</b>	<b>125,980</b>	<b>132,279</b>

The detail of GFCF by sources in the private and public sectors is presented in the following table:-

**Table 5.28: GFCF in Telecommunication for the base year 2015-16 (Rs. Millions )**

Sr. No.	Description	Value
1	2	3
<b>Private Sector</b>		<b>97,987</b>
1	Mobile Phones(Telenor + Jazz + Zong)	87,666
	Cable Operator & Internet Service Providers	9,115
2	Others (World call + Telecard + Wateen + Wise communicaton etc.,)	1,206
<b>Public sector</b>		<b>28,307</b>
1	Pakistan Telecommunication Company Ltd.	13,644
2	Pak Datacom	18
3	National Telecommunication Corporation	389
4	Telecom Foundation	11
5	Pak Telecom Mobile (U-Phone)	14,230
6	Pakistan Telecommunication Authority	15
<b>Total GFCF (Private +Public)</b>		<b>126,294</b>

The GFCF by type of fixed assets in the telecommunication is presented in the below table:-

**Table 5.29: GFCF in Telecommunications base 2015-16 & 2005-06 (Rs. Millions)**

Fixed Assets	2015-16 Base	2015-16 (2005-06 Base)	2005-06 Base
1	2	3	4
Land Improvements	702	545	57
Buildings	3,208	3,247	1,786
Other Constructions	6,390	6,390	4,388
Transport Equipment	1,545	263	469
Machinery and Equipment	84,317	88,021	121,440
Computers	13,742	12,708	1,511
Others	14,173	14,022	489
Furniture & Fixture	2,216	784	2,139
<b>Total GFCF</b>	<b>126,294</b>	<b>125,980</b>	<b>132,278</b>

#### v. Financial and Insurance Activities

The composition of the Financial Corporate Sector has been highlighted in the GVA estimation. GFCF of Financial corporations (private & public) is estimated through the census of establishments/enterprises annually at current prices. The GFCF for the 2015-16 base year of the industry has been estimated at Rs. 56,520 million. The comparative GFCF estimates of financial corporations regarding existing and incipient bases are given below in the table.

**Table 5.30: GFCF in financial Corporation 2015-16 Base and 2005-06 Base**

Description	2015-16 Base	2015-16 (2005-06 Base)	2005-06 Base
1	2	3	4
Private Sector	49556	50811	20360
Public Sector	6964	6964	1878
<b>Total</b>	<b>56520</b>	<b>57775</b>	<b>22238</b>

The detail of GFCF by sources is presented in the following table:-

**Table 5.31: GFCF in Financial sector for the base year 2015-16 (Rs. Million)**

Sr. No.	Sub-sector	Value
1	2	3
1	State Bank of Pakistan	1,184
2	Banks	44,956
	<i>a. Scheduled</i>	42,872
	<i>b. Non-scheduled</i>	2,084
3	Other credit granting	4,992
4	Insurance, Reinsurance and Pension funding except compulsory social security	3,870
5	Activities auxiliary to financial service activities and insurance activities	1,518
<b>Total GFCF</b>		<b>56,520</b>

The detail of GFCF in the Financial Corporate Sector by type of assets is given in the table below:-

**Table 5.32: GFCF in Financial Corporations, 2015-16 Base and 2005-06 Base (Rs. Million)**

<b>Fixed Assets</b>	<b>2015-16 Base</b>	<b>2015-16 (2005-06 Base)</b>	<b>2005-06 Base</b>
1	2	3	4
Land	911	911	479
Building	8,542	9,163	6,053
Other Constructions	5,085	5,260	193
Transport Equipment	11,389	11,527	3,935
ICT (Computer Hardware & telecommunication equipment)	3,187	3,139	2,883
Machinery and Equipment	13,396	13,563	4,342
Furniture & Fixture	8,170	8,378	3,256
Others	5,840	5,835	1,097
<b>Total GFCF</b>	<b>56,520</b>	<b>57,776</b>	<b>22,238</b>

#### **vi. Real Estate Activities (Housing Services)**

Real estate activities are comprised of two sub-sectors i.e. Housing services (Ownership of Dwellings) and activities of real estate agents. GFCF of this sector is compiled through expenditure on following by type of fixed assets.

- i. New Buildings
- ii. Cost of ownership transferred
- iii. Alterations/Additions
- iv. Major Repair & Maintenance

The methodology for the compilation of Gross Fixed Capital Formation in each component of the housing services is explained below. Other types of assets like computers, furniture and fixture etc. are components acquired by the real estate and cooperative housing societies and have been included in these sub-components.

- **Housing Services (Ownership of Dwellings)**

The estimates of GFCF for the new base year 2015-16 for the ownership of dwellings have been developed by using the information from Construction Survey 2014-15 (Household part) conducted by the Pakistan Bureau of Statistics for the change of base of National Accounts from 2005-06 to 2015-16. The ratios have been developed from the said survey. The detail of the methodology is given below in the table.

**Table 5.33: GFCF in Ownership of Dwellings 2014-15 (Rs. Million)**

S No.	Items	Value
1	2	3
1	New Construction	345,367
2	New Construction for Residential Buildings, Flats & Structures @ 87.74%	303,025
3	Purchase of Buildings	31,839
4	Cost of ownership transferred @ 10% of purchase of buildings	3,184
5	Alterations/Additions	125,361
6	Repair and Maintenance	44,789
7	<b>GFCF 2014-15 (2+4+5+6)</b>	<b>476,359</b>

The GFCF for the survey year 2014-15 at current prices stands at Rs.476,359 million, which have been adjusted for the base year 2015-16 by applying the growth rate of aggregate construction expenditure reported by industries at current prices. The GFCF estimates for the new base year 2015-16 stands at Rs.522,947 million. The detail is given in the table below:-

**Table 5.34: GFCF Ownership of Dwellings, 2015-16 base and 2005-06 base (Rs. Million)**

Activity	2015-16 Base	2015-16 (2005-06 Base)	2005-06 Base
1	2	3	4
New Construction	332,661		123,011
Cost of ownership transfer	3,495		606
Alterations/ Additions	137,621		44,504
Repair and Maintenance	49,169		15,900
<b>Total</b>	<b>522,947</b>	<b>577,278</b>	<b>184,021</b>

The GFCF of housing services is extrapolated at constant prices by applying the growth rate of inter-census dwellings with 2 rooms and more and is converted into current prices by using the WPI building material deflator.

- **Activities of Real Estate Agents**

The estimates of GFCF for the new base year 2015-16 for the Real Estate Agents have been developed by using the information from Survey of Survey on “Other Private Services 2016-17” conducted for the change of base of National Accounts from 2005-06 to 2015-16. The GFCF in the year 2016-17 stands at Rs.1257 million, which has been adjusted to the base year by applying growth of financing for fixed investment to private businesses and stands at Rs.872 million.

The total GFCF in Real Estate Activities (Housing Services including ownership of dwellings) for the new base year 2015-16 stands at Rs.523, 819 million.

For subsequent years the estimates of GFCF of activities of real estate agents are extrapolated at current prices by applying the growth of financing for fixed investment to private businesses engaged in the industry compiled by SBP which is converted into constant prices through WPI (building material).

## vii. Education

Education was used to be covered under “Other Private Services” in 2005-06 rebasing. However, in 2015-16 rebasing, it has been assessed separately under i) Education provided in the private sector on a market basis estimated through Survey on “Other Private Services 2016-17” ii) Public sector education estimated through budget documents of federal, provincial, and district governments iii) Education provided by non-profit institutions estimated through “NGOs Survey 2015-16” purely on the non-market basis. The GFCF of autonomous bodies, estimated through a census, having market output has been combined with the private sector and those with non-market output have been added to the general government. The combined GFCF of the education industry by institutional sectors is presented in the below table:-

**Table 5.35: GFCF in Education Industry 2015-16 base and 2005-06 base (Rs. Million)**

Institutional sector	2015-16 Base	2015-16 (2005-06 Base)	2005-06 Base
1	2	3	4
Private corporations and households (Private sector)	82,122	7,705	2,495
NPISH (NGOs)	17,466	31,837	7,649
Private Section ( Inc. NGOs)	99,588	39,542	10,144
General government (Public sector)	80,403	80,253	16,680
<b>Total</b>	<b>179,991</b>	<b>119,795</b>	<b>26,824</b>

The total GFCF in the education industry for the new base year 2015-16 stands Rs.179,991 million with a major contribution from private sector enterprises at Rs.82,122 million followed by the public sector at Rs.80,403 million and Rs.17466 million by the NGOs. The GFCF in private and NGOs are extrapolated by applying the growth of several persons engaged in the same industry at constant prices which will be converted into current prices by applying WPI (Building material). For the public sector, GFCF is estimated at current prices through budget documents of federal, provincial and district governments and WPI (General) is used as the deflator.

## viii. Human Health and Social Work Activities

The GFCF in human health and social work activities, which was part of “Other Private Services” in 2005-06 rebasing, has been estimated separately in 2015-16 rebasing under three distinct categories i.e. i) Private sector providing human health and social work activities on market basis covered through the survey on “Other Private Services 2016-17”, ii) Public sector covered through government budget documents, iii) NGOs engaged in the provision of human health and social work activities on non-market basis. The GFCF of autonomous bodies, covered through a separate census, has been combined with private and public sectors depending on the nature of the output. The GFCF of autonomous bodies, estimated through a census, having market output has been combined with the private sector and those with non-market output have been added to the general government. The combined GFCF of human health and social work industry by institutional sectors is presented in the below table:-

**Table 5.36: GFCF in Human Health and Social Work Activities 2015-16 base and 2005-06 base (Rs. Million)**

Institutional sector	2015-16 Base	2015-16 (2005-06 Base)	2005-06 Base
1	2	3	4
Private corporations and households (Private sector)	27,785	30,323	8,200
NPISH (NGOs)	27,357	53,964	12,965
Private Sector ( Inc. NGOs)	55,142	84,287	21,165
General government (Public sector)	37,389	31,261	6,569
<b>Total</b>	<b>92,531</b>	<b>115,548</b>	<b>27,734</b>

The total GFCF in human health and social work activities for the new base year 2015-16 stands Rs. 92,531 million with Rs. 37,389 million in the public sector, Rs. 27,785 million by private sector enterprises, and Rs.27,357 million by NGOs. The GFCF in private and NGOs are extrapolated by applying the growth of several persons engaged in the same industry at constant prices which are converted into current prices by applying WPI (General). For the public sector, GFCF is estimated at current prices through budget documents of federal, provincial and district governments and WPI (General) is used as the deflator.

#### **ix. Other Private Services**

In 2005-06 rebasing, “Other Private Services” were comprised of Renting of Machinery and Equipment, Computer Related Activities (Software Export Board and PASHA), Other Business Activities, Education, Health & Social work, Membership Organizations, NGO’s, Recreational, Cultural and Sporting Activities and Other Services activities. In 2015-16 rebasing, Computer Related Activities (Software Export Board and PASHA) and activities of TV Channels have been covered under “Information and Communication” whereas “Education” and “Human health and social work activities” including contributions from NGOs have also been covered separately under specific headings (described above). Hence, in 2015-16 rebasing “Other Private Services” include the Professional, scientific and technical activities (Other Business Activities), Administrative and support service activities, Arts, entertainment and recreation (Creative, arts, and entertainment activities and Sports activities and amusement and recreation activities), and Other service activities (Membership organizations, Repair of computers and personal and households goods, and Other personal service activities such as washing, dry-cleaning, hairdressing, and other beauty treatment, shoe shiners, etc.).

- **Professional, Scientific and Technical Activities**

The professional, scientific, and technical activities include legal & accounting Activities, activities of head offices, management consultancy services, architects and engineers’ activities, scientific research and development, advertising and market research, other professional, scientific and technical activities, and veterinary activities. The GFCF of these activities has been estimated through various studies conducted for the change of base of national accounts from 2005-06 to 2015-16. The results of studies have been adjusted to the base year and the combined GFCF of these activities stands at Rs.84,728 million for the new base year 2015-16. The GFCF of the industry except veterinary activities are extrapolated by applying the growth of engineers engaged in the same industry at constant prices which are converted into current prices by

applying WPI (General). The GFCF of veterinary activities is extrapolated at constant prices by applying the growth rate of veterinary doctors which is converted into current prices through WPI (General).

- **Administrative and Support Service Activities**

The administrative and support service activities include renting machinery, employment activities, travel agency, tour operator, reservation service and related activities, private security services, and office support activities. The GFCF estimates for these activities have been derived from the Survey on “Other Private Services 2016-17” conducted for the change of base of national accounts from 2005-06 to 2015-16. The GFCF of renting of machinery industry has been estimated at Rs.1757 million after the adjustment for the base year 2015-16 which is extrapolated at current prices by applying the growth of financing for fixed investment to private businesses engaged in the same industry. The base year GFCF for office support activities has been estimated at Rs.19,728 billion using the information on financing for fixed investment to private businesses of the industry. The extrapolation of the GFCF for this industry is made at current prices through financing for fixed investment compiled by the SBP. Hence the total GFCF for the base year 2015-16 for administrative and support service activities stands at Rs.21,485 million. WPI (General) is used to convert the current price estimates into constant prices.

- **Arts, Entertainment and Recreation**

This industry includes creative arts, entertainment, sports, amusement, and recreation activities. The GFCF estimates for these activities have been derived from the Survey on “Other Private Services 2016-17” conducted for the change of base of national accounts from 2005-06 to 2015-16. The survey figures of GFCF i.e. Rs.1,851 million have been adjusted for the base year 2015-16 and stand at Rs.1,403 million. The GFCF estimates are extrapolated at current prices by applying the growth of financing for fixed investment to private businesses engaged in the same industry which is converted into constant prices through WPI (General).

- **Other services activities**

Other service activities are comprised of membership Organizations, repair of computers and personal and household goods and other personal services activities (washing, dry-cleaning to textile and fur products, hairdressing and other beauty treatment, funeral and related activities, astrological and spiritual activities, marriage bureaus, shoe shiners, etc.). The GFCF estimates for Membership Organizations have been derived using GFCF to output ratio of NGOs Survey 2015-16 conducted for change of base of national accounts from 2005-06 to 2015-16 as both activities fall under the same institutional sector i.e. “Non-Profit Institutions Serving Households”. The GFCF for the new base year 2015-16 stands at Rs.22,628 million. The GFCF estimates are extrapolated at constant prices by applying the inter-census growth of urban dwellings having two or more rooms. WPI (General) is used as the deflator.

The GFCF of repair of computers and personal and household goods and other services activities in 2015-16 rebasing has been estimated through a survey on “Other Private Services 2016-17”. The survey results have been adjusted to the base year and stand at Rs.2,669 million. For this industry, the extrapolations of GFCF at constant prices are made by applying the growth rates of

inter-census dwellings at constant prices which are converted into current prices through WPI (General).

The base year GFCF for Other Personal Service Activities has been estimated based on financing for fixed investment reported provided to private businesses and stands at Rs.9,883 million. The GFCF of this industry will be extrapolated at current prices by applying the growth of financing for fixed investment to private businesses engaged in the industry compiled by SBP which are converted into constant prices through WPI (General).

The total GFCF in Other Private Services in 2015-16 rebasing stands at Rs.142,796 million which was estimated at Rs.205,216 at current prices in 2005-06 rebasing. The decline in GFCF in 2015-16 rebasing is due to i) improved coverage under relevant industries and ii) overestimation of GFCF in professional, scientific and technical activities used to be covered under the title of “Other business activities” and estimated through fixed growth rates from 1999-2000 onwards. A comparative table of GFCF of two benchmarks is placed below.

**Table 5.37: GFCF in Other Private Services 2015-16 base and 2005-06 base (Rs. Million)**

Activities	2015-16 Base	2015-16 (2005-06 Base)	2005-06 Base
1	2	3	4
Professional, scientific and technical activities	126,888	190,995	40,447
Administrative and support service activities	21,485	503	675
Arts, entertainment and recreation	1,403	6,138	2,649
Activities of membership organizations	22,628	3,163	760
Repair of computers and personal and household goods	2,676	2,210	531
Other personal services activities	9,883	2,207	530
<b>Total (Other private services)</b>	<b>184,962</b>	<b>205,216</b>	<b>45,592</b>

#### **x. General Government**

GFCF by the general government consists of the acquisitions less disposal of fixed assets during an accounting period. The expenditure made by Federal, Provincial, local governments and defence services on fixed assets during the year is accounted as gross fixed capital formation by the institutional sector General Government. The expenditure made on residential construction for military personnel are included as part of fixed capital formation.

Data on GFCF has been taken from published budget documents. GFCF at current prices has been worked out based on these budgets at Rs. 867,876 million for the year 2015-16. The GFCF of the institutional sector General Government has been further disaggregated into three relevant PSIC sections i.e. 84-Public administration and defence (Rs. 750,084 million), 85-Education (Rs. 80,403 million) and 86-88 Human health and social work activities (Rs. 37,389 million) as presented in the table given below.



**Table 5.38: GFCF in General Government 2015-16 Base and 2005-06 Base (Rs. Million)**

<b>Description</b>	<b>2015-16 Base</b>	<b>2015-16 (2005-06 Base)</b>	<b>2005-06 Base</b>
1	2	3	4
<b>Buildings</b>	<b>271,390</b>	<b>271,390</b>	<b>45,258</b>
<b>Other Construction</b>	<b>334,115</b>	<b>334,115</b>	<b>83,479</b>
i. Telephone/Power lines, Cables etc.			
ii. Canals			
iii. Drainage	13,396	13,396	
iv. Gas Pipelines			
v. Railway Tracks/Runways			
vi. Roads, Streets Highways	144,437	144,437	
vii. Tube wells	66,977	66,977	
viii. Other works n.e.c.	109,305	109,305	
Transport equipment	16,996	16,996	10,728
Computers	5,781	5,781	985
Telecommunication	796	796	-
Furniture and Fixture	7,849	7,849	4,839
Machinery & Equipment	106,914	106,914	12,399
Intellectual property products	902	902	-
Other assets	5,342	5,342	17,142
<b>Total (Public administration)</b>	<b>750,084</b>	<b>750,084</b>	<b>174,829</b>
<b>Education</b>	<b>80,403</b>	<b>80,253</b>	<b>16,680</b>
<b>Health &amp; Social Work</b>	<b>37,389</b>	<b>31,261</b>	<b>6,569</b>
<b>Grand Total (General Government)</b>	<b>867,876</b>	<b>861,598</b>	<b>198,078</b>

**Table 5.39: GFCF comparison, Private, Public and General Government Sectors Bases 2015-16 & 2005-06 (Rs. Million)**

Sr. No.	Industries/ Sectors	2015-16 Base	2015-16 (2005-06 Base)	2005-06 Base	Change (%)	
		At 2015-16 prices		At 2005-06 prices	Col. (3 / 4)	Col. (3 / 5)
1	2	3	4	5	6	7
	<b>Total GFCF(A+B+C)</b>	<b>4,657,149</b>	<b>4,095,630</b>	<b>1,456,889</b>	<b>13.71</b>	<b>219.66</b>
<b>A.</b>	<b>Private Sector</b>	<b>3,537,220</b>	<b>2,995,889</b>	<b>1,109,205</b>	<b>18.07</b>	<b>218.9</b>
<b>B.</b>	<b>Public Sector</b>	<b>252,053</b>	<b>238,143</b>	<b>149,606</b>	<b>5.84</b>	<b>68.48</b>
<b>C.</b>	<b>General Government</b>	<b>867,876</b>	<b>861,598</b>	<b>198,078</b>	<b>0.73</b>	<b>338.15</b>
	<b>Private &amp; Public Sector (A+B)</b>	<b>3,789,273</b>	<b>3,234,032</b>	<b>1,258,811</b>	<b>17.17</b>	<b>201.02</b>
1	Agriculture, forestry and fishing	904,250	850,088	254,796	6.37	254.89
2	Mining and quarrying	122,166	105,418	28,962	15.89	321.81
3	Manufacturing	723,845	485,495	287,117	49.09	152.11
	i. Large Scale	633,494	456,222	281,328	38.86	125.18
	ii. Small Scale (including Slaughtering)	90,351	29,273	5,789	208.65	1,460.77
4	Electricity, gas, and water supply	201,651	178,264	54,765	13.12	268.21
5	Construction	64,882	49,009	20,972	32.39	209.37
6	Wholesale and retail trade	202,799	63,419	18,089	219.78	1,021.12
7	Accommodation and food service activities (Hotels and restaurants)	74,922	14,043	4,005	433.52	1,770.71
8	Transportation and storage	416,691	381,876	162,452	9.12	156.5
9	Information and communication	158,036	142,322	138,387	11.04	14.2
10	Financial and insurance activities	56,520	57,775	22,238	-2.17	154.16
11	Real estate activities (OD)	523,819	577,278	190,127	-9.26	175.51
12	Public administration and social security	750,084	750,084	174,829	-	329.04
13	Education	179,991	119,795	26,824	50.25	571.01
14	Human health and social work activities	92,531	115,548	27,734	-19.92	233.64
15	Other Private Services	184,962	205,216	45,592	-9.87	305.69

**Table 5.40: GFCF comparison Private Sector Bases 2015-16 & 2005-06 (Rs. Million)**

Sr. No.	Industries/ Sectors	2015-16 Base	2015-16 (2005-06 Base)	2005-06 Base	Change (%)	
		At 2015-16 prices		At 2005-06 prices	Col. (3 / 4)	Col. (3 / 5)
1	2	3	4	5	6	7
<b>A.</b>	<b>Private Sector</b>	<b>3,537,220</b>	<b>2,995,889</b>	<b>1,109,205</b>	<b>18.07</b>	<b>218.9</b>
1	Agriculture, forestry and fishing	904,045	849,943	254,746	6.37	254.88
	Crops	176,622	172,352	84,348	2.48	109.4
	Cotton Ginning	1,042				
	Livestock	689,165	673,954	168,657	2.26	308.62
	Forestry	1,392	687	252	102.57	452.38
	Fishing	35,824	2,950	1,489	1,114.52	2,305.91
2	Mining and quarrying	94,113	77,365	22,829	21.65	312.25
3	Manufacturing	722,512	483,781	283,508	49.35	154.85
	i. Large Scale	632,161	454,508	277,719	39.09	127.63
	ii. Small Scale (including Slaughtering)	90,351	29,273	5,789	208.65	1,460.77
4	Electricity, gas, and water supply	46,543	23,156	3,307	101	1,307.49
5	Construction	59,704	43,831	14,597	36.21	309.02
6	Wholesale and retail trade	202,799	63,419	18,089	219.78	1,021.12
7	Accommodation and food service activities (Hotels and restaurants)	74,922	14,043	4,005	433.52	1,770.71
8	Transportation and storage	389,786	354,972	110,281	9.81	253.45
9	Information and communication	129,729	128,245	110,456	1.16	17.45
10	Financial and insurance activities	49,556	50,811	20,360	-2.47	143.4
11	Real estate activities (OD)	523,819	577,278	190,127	-9.26	175.51
12	Education	99,588	39,542	10,144	151.86	881.77
13	Human health and social work activities	55,142	84,287	21,165	-34.58	160.53
14	Other Private Services	184,962	205,216	45,592	-9.87	305.69

**Table 5.41: GFCF comparison Public and General Government Sectors Bases 2015-16 & 2005-06 (Rs. Million)**

Sr. No.	Industries/ Sectors	2015-16	2015-16	2005-06 Base	Change (%)	
		Base	(2005-06 Base)	At 2015-16 prices	At 2005-06 prices	Col. (3 / 4)
1	2	3	4	5	6	7
	<b>Public &amp; General Govt. (B+C)</b>	<b>1,119,929</b>	<b>1,099,741</b>	<b>347,684</b>	<b>1.84</b>	<b>222.11</b>
<b>B.</b>	<b>Public Sector</b> (Autonomous & Semi-Autonomous -Bodies)	<b>252,053</b>	<b>238,143</b>	<b>149,606</b>	<b>5.84</b>	<b>68.48</b>
1	Agriculture, forestry and fishing	205	145	50	41.38	310
2	Mining and quarrying	28,053	28,053	6,133	-	357.41
3	Manufacturing (Large scale)	1,333	1,714	3,609	-22.23	-63.06
4	Electricity, gas, and water supply	155,108	155,108	51,458	-	201.43
5	Construction	5,178	5,178	6,375	-	-18.78
6	Transportation and storage	26,905	26,904	52,171	-	-48.43
	a. Railways	5,825	5,825	4,754	-	22.53
	b. Post Offices & PTCL	-	13,644	15,232	-100	-100
	c. Others	21,080	7,435	32,185	183.52	-34.5
7	Information and communication	28,307	14,077	27,932	101.09	1.34
8	Financial and insurance activities	6,964	6,964	1,878	-	270.82
<b>C.</b>	<b>General Government</b>	<b>867,876</b>	<b>861,598</b>	<b>198,078</b>	<b>0.73</b>	<b>338.15</b>
	i. Federal	235,406	229,128	37,307	2.74	531
	ii. Provincial	527,461	527,461	122,774	-	329.62
	iii. District Governments	105,009	105,009	37,997	-	176.36
	<b>General Government (By industries)</b>	<b>867,876</b>	<b>861,598</b>	<b>198,078</b>	<b>0.73</b>	<b>338.15</b>
	Public administration and defense; compulsory social security	750,084	750,084	174,829	-	329.04
	Education	80,403	80,253	16,680	0.19	382.03
	Human health and social work activities	37,389	31,261	6,569	19.6	469.17

**Table 5.42: Summary of Gross Fixed Capital Formation by type of assets (AN11) for 2015-16 and 2005-06 base years**

Type of asset	Rs. Mill.		Share (%)	
	2015-16 base	2005-06 base	2015-16 base	2005-06 base
1	2	3	4	5
AN111 Dwellings (Residential buildings)	432,316	47,307	9.28	3.25
AN112 Other Buildings and structures	1,500,329	550,953	32.22	37.82
AN113 Machinery and Equipment	1,909,546	662,832	41	45.5
AN114 Weapons systems*				
AN115 Cultivate Biological Resources	694,108	170,184	14.9	11.68
AN116 Cost of ownership transfer on non-produced assets*				
AN117 Intellectual Property Products	120,850	25,613	2.59	1.76
<b>AN11</b>	<b>4,657,149</b>	<b>1,456,889</b>	<b>100</b>	<b>100</b>

\* It is merged with AN111 and AN112 whereas AN114 is not collected

**Table 5.43: GFCF by type of assets (AN11) for the base year 2015-16 and 2005-06 (Rs. in Million)**

Type of asset	2015-16 base	2005-06 base
1	2	3
<b>AN111 Dwellings (Residential buildings)</b>	<b>432,316</b>	<b>47,307</b>
<b>AN112 Other Buildings and structures</b>	<b>1,500,329</b>	<b>550,953</b>
<b>AN1121 Buildings other than dwellings</b>	872,549	273,417
<b>AN1122 Other structures</b>	532,104	241,563
i. Telephone/Power lines, Cables etc.	12,469	7,423
ii. Canals	-	14,268
iii. Drainage	80,373	13,100
iv. Gas Pipelines	43,367	1,568
v. Railway Tracks/Runways	219	-
vi. Roads, Streets Highways	144,540	92,760
vii. Tubewells	6,427	3,777
viii. Others n.e.c.	244,709	108,666
<b>AN1123 Land improvements &amp; cost of land transfer</b>	95,676	35,973
<b>AN113 Machinery and Equipment</b>	<b>1,909,546</b>	<b>662,832</b>
AN1131 Transport Equipment (vehicles etc.)	464,569	117,301
AN1132 ICT (computer hardware & telecommunication) equipment**	53,225	24,368
AN1133 Other machinery and equipment	1,391,753	521,163
i. Electrical	45,742	273,239
ii. Non-electrical	9,023	172,733
iii. Furniture & Fixture	93,476	33,501
iv. Other machinery and equipment n.e.c.	1,243,512	41,690

Type of asset	2015-16 base	2005-06 base
1	2	3
<b>AN114 Weapons systems</b>		
<b>AN115 Cultivate Biological Resources</b>	<b>694,108</b>	<b>170,184</b>
AN1151 Animals resources yielding repeat products	689,163	168,656
AN1152 Tree, crop and plant resources yielding repeat products	4,945	1,528
<b>AN116 Cost of ownership transfer on non-produced assets</b>		
<b>AN117 Intellectual Property Products</b>	<b>120,850</b>	<b>25,613</b>
AN1171 Research and Development	7,255	4,457
AN1172 Mineral exploration & evaluation	70,430	19,953
AN1173 Computer software and database	18,944	1,130
AN1174 Entertainment, literary or artistic originals		
AN1179 Other intellectual property products	24,221	73
<b>Total</b>	<b>4,657,149</b>	<b>1,456,889</b>

### 5.6.3 Changes in inventories and acquisition less disposal of valuables

#### a. Changes in inventories

Changes in inventories' refer to the value of physical change in the stocks of raw material, work-in-progress and finished goods held by industries and producers of government services as per details given below:

- Goods-producing industries
  - Material and supplies
  - Work-in-progress
  - Livestock except for breeding stock, dairy cattle and the like (which forms GFCF, instead)
  - Finished goods
- Wholesale & retail trade
- Other industries
- Producers of government services

Inventories consist of stocks of outputs that are still held by the units that produced them before their being further processed, sold, delivered to other units or used in other ways and stocks of products acquired from other units that are intended to be used for intermediate consumption or resale without further processing. Inventories of services consist of work-in-progress or finished products, for example, architectural drawings, which are in the process of completion or are completed and waiting for the building to which they relate to being started. Inventories held by the government include, but are not limited to, inventories of strategic materials, grain and other commodities of special importance to the nation.

Changes in inventories are measured by the value of the entries into inventories less the value of withdrawals and less the value of any recurrent losses of goods held in inventories during the

accounting period. When a good is entered into inventories it is acquired as an asset by the enterprise in its capacity as owner either by purchase (or barter) or by an internal transaction with itself as the producer. Conversely, a good leaving inventory represents the disposal of an asset by the owner either by sale or other use, by an internal transfer to the producer or possibly as a result of recurrent losses (recurrent wastage, accidental damage or pilfering).

In Pakistan, it is not directly estimated. Its estimation is the continuity of the previous bases. Fresh estimation is needed, a study is recommended.

#### **b. Valuables**

Valuables are not used primarily for purposes of production or consumption but are held as stores of value over time. Valuables are expected to appreciate or at least not to decline in real value, nor to deteriorate over time under normal conditions. They consist of precious metals and stones, jewelry, works of art, etc. Valuables may be held by all sectors of the economy. Costs of ownership transfer, such as values and auctioneers' margins, are treated as gross capital formation and included in the value of the items.

Precious metals and stones are treated as valuables when they are not held by enterprises for sale or use as inputs into processes of production nor are held as monetary gold and are not held as a financial asset in the form of unallocated metal accounts. Paintings, sculptures, etc., recognized as works of art and antiques are treated as valuables when they are not held by enterprises for sale. In principle, museum exhibits are included under valuables. Other valuables not elsewhere classified include such items as collections of stamps, coins, books etc. that have a recognized market value and fine jewelry, fashioned out of precious stones, and metals of significant and realizable value.

The category of valuables has been introduced in the SNA 1993. It was argued that this category should fill the gap in the system as jewelry etc. indeed, is neither a consumption of goods nor physical asset in a production process. For the conceptual purity and beauty and comprehensiveness of the System of National Accounts, it is reasonable to include this item though in most countries the amount is negligible and difficult to estimate.

In Pakistan, valuables are mainly held by households. In the 2005-06 rebasing, valuables were not included in the expenditure side of the GDP due to the non-availability of relevant data by households and other institutional sectors. For inclusion in the national income accounting framework, the annual amount of net additions to valuables is essentially required. This information on purchases and sales of values is reported in the expenditure and assets and liabilities module of the HIES surveys respectively. Therefore, in 2015-16 rebasing, valuables have been estimated separately for the year 2015-16 by using information from Section 4-M relating to the yearly expenditure of the household on the purchase of durable goods. While the product-wise information on purchases of valuables was available, the figures related to values sold were available at an aggregated level in Section 6-M, which were allocated to products using the product and region-specific proportions of purchases. Resultantly, net additions by-products have been derived by subtracting the value of sales from respective purchases. The expenditure on purchase, sales and net additions of gold products, silver products, and precious stones and metals, as reported by households during the reference period i.e. 2015-16, has been aggregated as per following details:-

**Table 5.44: Valuables by Province (Rs. in Million)**

<b>Valuable Type</b>	<b>KP</b>	<b>Punjab</b>	<b>Sindh</b>	<b>Balochistan</b>	<b>Total</b>
1	2	3	4	5	6
<b>Purchases during 2015-16</b>					
Gold products	8,583	37,305	1,997	720	48,605
Silver products	81	600	131	124	936
Precious stones and metals	10	100	8	19	137
<b>Total-Purchases</b>	<b>8,673</b>	<b>38,005</b>	<b>2,137</b>	<b>863</b>	<b>49,678</b>
<b>Valuables sold during 2015-16</b>					
Gold products	1,806	9,885	2,706	540	14,937
Silver products	16	152	180	107	455
Precious stones and metals	3	28	10	15	56
<b>Total-Sold</b>	<b>1,825</b>	<b>10,064</b>	<b>2,896</b>	<b>663</b>	<b>15,448</b>
<b>Net Additions during 2015-16</b>					
Gold products	6,777	27,419	-709	180	33,668
Silver products	65	448	-48	17	482
Precious stones and metals	7	73	-2	4	81
<b>Total-Net Addition</b>	<b>6,849</b>	<b>27,940</b>	<b>-759</b>	<b>201</b>	<b>34,231</b>

The total value of purchases of valuables held by households has been estimated at Rs.49.7 billion during 2015-16 which are mostly held by households belonging to Punjab province i.e. Rs.38.0 billion followed by households in KP (Rs.8.7 billion), Sindh Rs.2.1 billion) and Balochistan (Rs.0.9 billion). The total values of sales of valuables have been estimated at Rs.15.4 billion. Most of the sales of valuables have been estimated for households in Punjab i.e. Rs.10.1 billion followed by those in Sindh province (Rs.2.9 billion), KP (Rs.1.8 billion) and Balochistan (Rs.0.7 billion). Hence, the net additions of valuables for the base year 2015-16 have been estimated at Rs.34.2 billion with a major contribution from Punjab province i.e. Rs.27.9 billion followed by KP (Rs.6.8 billion). While the net addition of valuables for households in Balochistan has been estimated at Rs.201 million, a negative net addition (Rs.-759 million) has been reported by households in Sindh province. Further, the amount of valuables held by rural households stands at Rs.30.5 billion whereas the remaining Rs.19.1 billion is held by urban households.

**Table 5.45: Valuables by Urban/ Rural Areas (Rs. in Million)**

<b>Valuable Type</b>	<b>Rural</b>	<b>Urban</b>	<b>Total</b>
1	2	3	4
<b>Purchases during 2015-16</b>			
Gold products	29,841	18,764	48,605
Silver products	640	296	936
Precious stones and metals	60	77	195
<b>Total-Purchases</b>	<b>30,541</b>	<b>19,137</b>	<b>49,736</b>
<b>Valuables sold during 2015-16</b>			
Gold products	7,094	7,843	14,937
Silver products	181	274	455
Precious stones and metals	20	36	56
<b>Total-Sold</b>	<b>7,295</b>	<b>8,153</b>	<b>15,448</b>
<b>Net Additions during 2015-16</b>			
Gold products	22,747	10,921	33,668
Silver products	459	22	482
Precious stones and metals	40	41	81
<b>Total-Net Addition</b>	<b>23,246</b>	<b>10,984</b>	<b>34,231</b>

The extrapolation of figures about valuables is an issue as the regular HIES surveys do not provide information in detail. The 2015-16 HIES was an exception as it was conducted to cater for the additional needs of the Family Budget Survey. The ratios of valuables to total GDP expenditure at current and constant prices are used for extrapolation. Further, valuables may also be included as a separate module along with GFCF in future surveys to obtain information from establishments.

#### 5.6.4 Exports and Imports of Goods and Services

Like in the balance of payments (BOP), imports and exports of goods are recorded in the SNA at border values i.e. free-on-board (at the exporter's customs frontier). Following the recommendation of the World Bank experts on national accounts, BOP figures of exports and imports of goods and services compiled by the SBP, have been used in the compilation of expenditure on GDP in the new base estimates. Exports of goods and services have been estimated at Rs.2859 billion i.e.8.74% of the GDP in new base estimates for the year 2015-16 as compared to Rs.2659 billion i.e. 9.15% of the GDP in old base estimates. Imports of goods and services have been estimated at Rs. 5225 billion i.e.15.94% of the GDP in new base estimates for the year 2015-16 as compared to Rs. 4699 billion i.e. 16.16% of the GDP in old base estimates. The imports are deflated by the imports price index and the exports by the exports price index to bring the same at constant prices.

The comparison of exports and imports of goods and services is presented in below tables:-

**Table 5.46: Comparison of Exports and Imports of Goods and Services in 2015-16 base and 2005-06 base  
(Rs. Million)**

Items	2015-16 Base	2015-16 (2005-06 Base)	2005-06 Base	Change (%)	
				Col. (2 / 3)	Col. (2 / 4)
1	2	3	4	5	6
Exports of Services	568,733	510,907	177,043	11.32	221.24
Exports of Goods	2,290,361	2,148,271	984,226	6.61	132.71
Exports of Goods and Services	2,859,095	2,659,178	1,161,269	7.52	146.2
Imports of Services	938,368	594,998	322,800	57.71	190.7
Imports of Goods	4,286,140	4,103,771	1,447,599	4.44	196.09
Imports of Goods and Services	5,224,509	4,698,769	1,770,400	11.19	195.1
<b>Net Exports of Goods and Services</b>	<b>-2,365,414</b>	<b>-2,039,590</b>	<b>-609,131</b>	<b>15.97</b>	<b>288.33</b>

**Table 5.47: Comparison of Expenditure on GDP base 2015-16 and 2005-06 for the year 2015-16 and 2005-06  
(Rs. Million)**

Description	2015-16 Base	2005-06 Base	2005-06 Base	Change (%)		Diff. Col. (2-3)
	At 2015-16 prices		At 2005-06 prices	Col. (2/3)	Col. (2/4)	
1	2	3	4	5	6	7
Household final consumption expenditure	26,106,974	23,266,454	6,379,481	12.21	309.23	2,840,520
NPISH final consumption expenditure	296,722					296,722
General government final consumption expenditure	3,471,786	3,287,930	857,461	5.59	304.89	183,856
Gross fixed capital formation	4,657,149	4,095,630	1,456,889	13.71	219.66	561,519
Changes in inventories	523,601	465,210	131,459	12.55	298.3	58,391
Valuables	34,231					34,231
Exports of goods and services	2,859,095	2,659,178	1,161,269	7.52	146.2	199,917
Less imports of goods and services	5,224,509	4,698,769	1,770,399	11.19	195.1	525,740
Expenditure on gross domestic product (at MP)	32,725,049	29,075,633	8,216,160	12.55	298.3	3,649,416

**Table 5.48: Comparison of Expenditure on GDP base 2015-16 and 2005-06 for the year 2015-16 and 2005-06 (Rs. Million)**

Description	2015-16 Base	2005-06 Base	2005-06 Base	% share		
	At 2015-16 prices		At 2005-06 prices	2015-16 (2015-16 base)	2015-16 (2005-06 base)	2005-06
1	2	3	4	7	8	9
Household final consumption expenditure	26,106,974	23,266,454	6,379,481	79.78	80.02	77.65
NPISH final consumption expenditure	296,722			0.91	-	-
General government final consumption expenditure	3,471,786	3,287,930	857,461	10.61	11.31	10.44
Gross fixed capital formation	4,657,149	4,095,630	1,456,889	14.23	14.09	17.73
Changes in inventories	523,601	465,210	131,459	1.6	1.6	1.6
Valuables	34,231			0.1	-	-
Exports of goods and services	2,859,095	2,659,178	1,161,269	8.74	9.15	14.13
Less imports of goods and services	5,224,509	4,698,769	1,770,399	15.96	16.16	21.55
Expenditure on gross domestic product (at MP)	32,725,049	29,075,633	8,216,160	100	100	100

### 5.6.5 Net Primary Income (previously called “Net Factor Income”)

According to SNA (2008), “Gross national income (GNI) is defined as GDP plus compensation of employees receivable from abroad plus property income receivable from abroad plus taxes less subsidies on production receivable from abroad less compensation of employees payable abroad less property income payable abroad and less taxes plus subsidies on production payable abroad.” (p.333).

**Table 5.49: Net Primary Income from abroad (Rs. in million)**

Item	Base Year 2005-2006		Base Year 2015-16	% Increase	
	2005-2006 Price	At 2015-16 prices		Col. 4 / 2	Col. 4 / 3
1	2	3	4	5	6
<b>(A) TOTAL RECEIPTS</b>	<b>362,554</b>	<b>2,424,791</b>	<b>2,134,125</b>	<b>488.6</b>	<b>-12</b>
i) Compensation of Employees	313,985	2,366,652	2,075,986	561.2	-12.3
ii) Investment Income	46,590	56,056	56,056	20.3	-
iii) Other primary Income	1,979	2,083	2,083	5.3	-
<b>(B) TOTAL PAYMENTS</b>	<b>212,653</b>	<b>641,930</b>	<b>641,930</b>	<b>201.9</b>	<b>-</b>
i) Compensation of Employees	-	3,126	3,126		-
ii) Investment Income	206,552	619,731	619,731	200	-
iii) Other primary Income	5,922	19,073	19,073	222.1	-
<b>NPI (At Current Prices) (A-B)</b>	<b>149,901</b>	<b>1,782,860</b>	<b>1,492,194</b>	<b>895</b>	<b>-16.3</b>

## 5.7 Limitations

Despite making all-out efforts, the 2015-16 rebasing of national accounts is subject to some limitations due to resource/data constraints as follow:

- i. Use of projected livestock population
- ii. Compilation of GVA of WRT through functional approach due to non-availability of data at the establishment level
- iii. Application of fixed growth rates in small scale manufacturing, accommodation and food service activities, real estate activities (housing services) and some components of services due to non-availability of relevant indicators
- iv. Although double deflation i.e. relevant CPI and WPI, has been applied in many industries, however, single deflation has also to be used in some industries such as LSM, SSM, construction, housing, etc. due to non-availability of industry-wise output and input deflators.

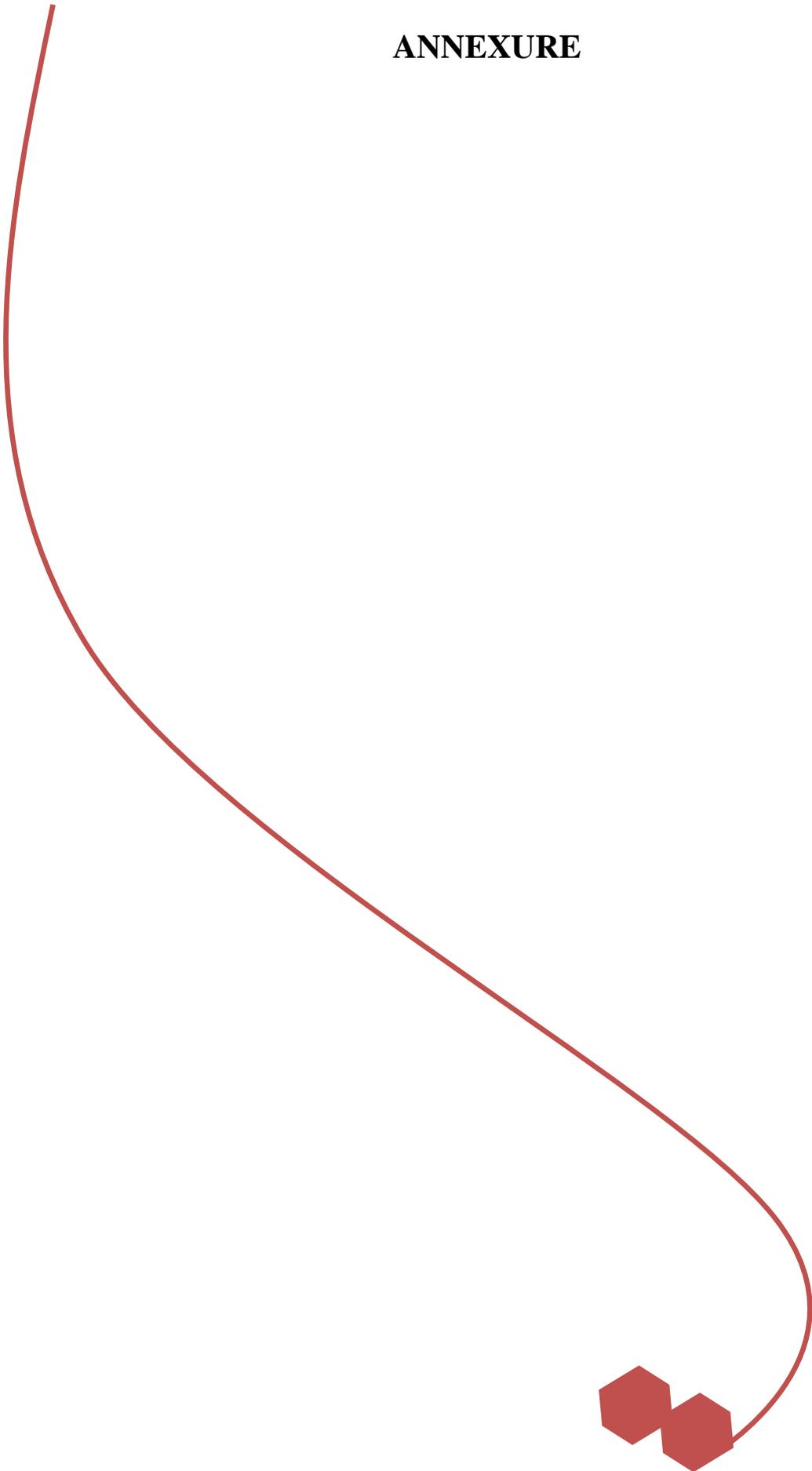
### 5.7.1 Areas for further improvement

Keeping in view the aforementioned limitations/data constraints, the areas for further improvements are as under:-

- i. Use of an-updated Business Register through an Economic Census for the census/surveys/studies of establishments for the next re-basing of national accounts.
- ii. Use of actual livestock population obtained through fresh livestock/agriculture census.
- iii. Compilation of GVA of WRT through establishment approach using specifically conducted surveys.
- iv. Finalization of the base year GVA on the basis of balanced Supply and Use Tables (SUTs)

- v. Use of SUTs as a compilation tool for the annual GDP
- vi. Use of relevant indicators for projection of GVA of small scale manufacturing, accommodation and food service activities, real estate activities (housing services) and other services
- vii. Application of double deflation using industry-specific input and output Producer's Price Index (PPIs) or CPI should be compiled separately for goods and services.

# ANNEXURE





## ANNEXURES

### Area of Crops (000 Hect.)

### Annexure-I

S.No	Crop/Item	2015-16				
		Punjab	Sindh	KPK	Baloch.	Pakistan
1	Wheat-Released	4843.5	800.5	703.8	355.7	6703.6
2	Wheat-Procured	2070.4	354.1	68.5	27.2	2520.2
3	Maize	716.1	3.7	468.5	2.9	1191.2
4	Rice-Basmati	1251.5	51.7	15.7	33.9	1352.8
5	Rice-Irri	186.5	389.9	23.3	139.5	739.1
6	Rice-Others	342.2	278.3	25.7	1.4	647.5
7	Barley	23.1	8.3	23.3	11.4	66
8	Bajra	433.7	45.1	4	3.3	486.1
9	Jowar(Sorghum)	231.1	13.1	8.3	21.1	273.6
11	Gram	854.9	14.8	32.9	36.9	939.5
12	Mash	15.3	0.2	0.7	2.9	19.2
13	Masoor	11.3	1.4	3.5	1.7	17.9
14	Moong	133.1	2.2	7.4	3.5	146.3
15	Mattar	13	21.2	1.2	9.9	45.3
16	Other K. Pulses	1.4	0.3	1.3	1.3	4.3
17	Other R. Pulses	0.2	0.1	0.1	0	0.4
18	Potato	165.5	0.6	9.4	1.9	177.3
19	Sweet Potato	0.5	1	0	0	1.6
20	Peas & Garden Peas	17.6	2.4	1.9	1.1	22.9
21	Beans	0.4	0.8	0	0.6	1.7
22	Tinda	6.7	2.1	1.1	0.8	10.7
23	Lady finger	5.9	4.9	2.1	2.6	15.5
24	Bitter Gourd	4.2	0.6	1.2	0.7	6.7
25	Bottle Gourd	3.9	0.3	0.5	0.7	5.5
26	Brinjal (eggplant)	4.5	1.4	0.9	1.6	8.4
27	Arum	0.9	0.2	1.3	0	2.5
28	Luffa	1.3	0.4	0	0.4	2
29	Pursilano	0	0.1	0	0	0.1
30	Field vetch	0	0.5	0	0	0.5
31	Cauliflower	7.1	2.1	1.4	2	12.6
32	Cabbage	2.6	1.1	0.5	0.7	4.9
33	Spinach	3.5	2	1.7	1.4	8.7
34	Knol Kohl	0	0.1	0	0	0.1
35	Fenu Greek	0	0.2	0	0	0.2

S.No	Crop/Item	2015-16				
		Punjab	Sindh	KPK	Baloch.	Pakistan
36	Lettuce	0	0.4	0	0	0.4
37	Other K. Vegetables	15.2	0.1	5.8	0.5	21.5
38	Other R. Vegetables	31.5	0.3	3.1	0.4	35.3
39	Onion	44.7	51.7	12.2	27.3	135.9
40	Carrot	8.2	1.5	0.6	3.1	13.4
41	Radish	6.2	1.1	1.1	1.4	9.8
42	Lotus roots	0	0.1	0	0	0.1
43	Sugar beet Vegetable	2.1	0.5	0	0	2.7
44	Turnip	9.2	1.7	3.4	1	15.2
45	Mango	107	62.3	0.3	0.6	170.3
46	Banana	0.2	26.7	0.7	1.1	28.7
47	Guava	57.6	8.5	3.4	0.5	70
48	Dates	5.8	36.5	1.6	53.2	97.1
49	Figs	0	0	0.1	0	0.1
50	Coconut	0	0.4	0	1.1	1.5
51	Orange	9.1	0.7	0	0	9.8
52	Kino	153.8	0.1	0	0	153.9
53	Lemon	4.7	3.7	0	0	8.4
54	Grape fruit	0.3	0.3	0	0	0.6
55	Mandrine	1.1	0	0	0	1.1
56	Musambi	7.1	0.1	0	0	7.1
57	Sure lime	0.7	0	0	0	0.7
58	Sweet lime	3.8	0	0	0	3.8
59	Soure orange	0.1	0	0	0	0.1
60	Other Citrus	1.1	0	3.9	1.6	6.7
61	Grapes	0	0	0.1	14.6	14.8
62	Water melon	18.3	6.1	4.1	8.2	36.7
63	Garma	0	0	0	0.3	0.3
64	Sarda	0	0	0	0.3	0.3
65	Pumpkin & Melon Pumpkin	2.2	0.1	0.8	0.6	3.8
66	Long Melon	0.3	0.2	0	0	0.5
67	Tomatoes	8.2	27.9	13.6	12.9	62.5
68	Cucumber	1.8	0.7	0	0.9	3.4
69	Apple	0.4	0	7.7	88.8	96.9
70	Plums	0	0	2.9	4	6.9
71	Peaches	0	0	8	5.8	13.8
72	Pomegranates	1.4	0	0.2	7.4	9
73	Appricots	0	0	2.7	23	25.7

S.No	Crop/Item	2015-16				
		Punjab	Sindh	KPK	Baloch.	Pakistan
74	Pear	0	0	1.6	0.2	1.8
75	Jaman	0.8	0.2	0	0	1
76	Litchi	0.3	0	0	0	0.3
77	Phalsa	0.5	0.6	0	0	1.2
78	Chikoo	0	1.1	0	0.6	1.7
79	Papaya	0	0.6	0	0.8	1.4
80	Cherry	0	0	0	1.1	1.1
81	Ber	1.2	3.9	0	0	5.1
82	Loquat	0.8	0	0.6	0	1.4
83	Mulbery	0.2	0	0.2	0	0.4
84	Percimen	0	0	3.2	0	3.2
85	Other K. Fruits	3.6	0	0.4	0.8	4.9
86	Other R. Fruits	1.7	0.5	1.2	0.8	4.3
87	Almond	0	0	0.2	10.3	10.5
88	Walnuts	0	0	1.6	0	1.6
89	Pistachio	0	0	0	0.2	0.2
90	Soya Beans	0	0	0	0	0
91	Groundnuts	84	0.5	7.3	0	91.9
92	Sunflower	16.2	65.9	0.2	0.3	82.6
93	Sesamum	65.7	7	0.1	5.8	78.5
94	Safflower	0	0	0	0	0
95	Rape & Mustard	123.7	50.2	12.9	14.2	201
96	Canola	7.1	2.8	0.5	3.4	13.8
97	Castor seed	0	0.4	0	1.4	1.8
98	Lin seed	0.7	2.4	0	0	3
99	Flowers & F. Buds	0	0	0		0
100	Corriander	0.5	2.8	0.2	1.8	5.3
101	Cumin seeds	0	0	0	5.4	5.4
102	Dil seed	0	0.3	0	0	0.3
103	Chillies	5.7	54.6	0.4	4.1	64.8
104	Ajwan	0	0.4	0	0	0.4
105	Fennel (Sounf)	0	0.7	0	0	0.7
106	Turmeric	5.3	0.3	0.3	0	5.9
107	Garlic	3.1	1.3	2.6	0.9	7.9
108	Ginger	0	0.3	0	0	0.3
109	Other spices	0	0.4	0	0	0.4
110	Tobaccoo	18.3	0.2	33.2	1	52.7
111	Sugar beet Crop	0	0	0.6	0	0.6

S.No	Crop/Item	2015-16				
		Punjab	Sindh	KPK	Baloch.	Pakistan
112	Sugar cane-Released	225.7	3.1	37.2	0.7	266.7
113	Sugar cane-Procured	479.6	309.7	75.5	0	864.8
114	Fodders Green	3185	136.7	99.6	35	3456.3
115	Guarseed	95.5	95.9	0.6	6.6	198.6
116	Fodders Dry-Wheat					
117	Fodders Dry-Maize-Stalks					
118	Fodders Dry-Maize-Piths					
119	Rice-Straw					
120	FD-Barley					
121	FD-Bajra					
122	FD-Jowar(Sorghum)					
123	FD-Gram					0
124	Fodders Dry-S.cane					0
125	Fodders Dry-Sesamum					0
126	Fodders Dry-R&Mustard					0
127	Cotton-Upland (Phutti)	2211.2	619.4	0.4	37.6	2868.6
128	Cotton-Desi (Phutti)	31.6	1.8			33.4
129	Hemp	0.1	0	0	0	0.1
130	Cotton Sticks					

**Production of Crops (000 M. Tons)**

**Annexure II**

S.No	Crop/Item	2015-16				
		Punjab	Sindh	KPK	Balo.	Pakistan
1	Wheat-Released	14818.7	2739.6	1397.5	871.3	19827
2	Wheat-Procured	4708	1095	3	0	5806
3	Maize	4391.2	3.6	873	3.1	5270.9
4	Rice-Basmati	2279.2	84.8	41.1	101.3	2506.5
5	Rice-Irri	460.8	1044.6	56.2	468.6	2030.2
6	Rice-Others	762	1443.3	56.5	2.7	2264.5
7	Barley	20.1	5.2	20.3	15	60.5
8	Bajra	271.9	23.2	2.5	1.9	299.5
9	Jowar(Sorghum)	126.1	12.3	4.8	17.3	160.5
11	Gram	227.2	14.4	14.1	30.5	286.2
12	Mash	4.9	0.1	0.9	2.6	8.5
13	Masoor	4	0.9	1.8	1.1	7.8
14	Moong	93.9	0.9	4.8	2.5	102.1
15	Mattar	10.1	13.1	1.1	5.5	29.7
16	Other K. Pulses	0.7	0.1	0.8	1.6	3.2
17	Other R. Pulses	0.1	0	0.1	0	0.2
18	Potato	3811.1	4.9	132.8	28.8	3977.6
19	Sweet Potato	8.6	4			12.5
20	Peas & Garden Peas	112.3	8.4	12.5	12.3	145.4
21	Beans	1	1.3		5.4	7.7
22	Tinda	66.9	13	12.7	5.3	98
23	Lady finger	67.1	19	16.8	16.1	119
24	Bitter Gourd	45.4	2.2	12.1	5.3	65
25	Bottle Gourd	44.3	1.2	4.6	5.5	55.6
26	Brinjal (eggplant)	54.2	8.2	9.1	12.3	83.8
27	Arum	10.6	0.9	17.9		29.4
28	Luffa	13.5	1.5		2.3	17.3
29	Pursilano		0.2			0.2
30	Field vetch		1.8			1.8
31	Cauliflower	147.2	20.3	16.7	32.6	216.7
32	Cabbage	50.4	12.2	4.2	10.4	77.3
33	Spinach	52.9	10.4	19.1	24.7	107
34	Knol Kohl		0.4			0.4
35	Fenu Greek		0.5			0.5
36	Lettuce		0.4			0.4

S.No	Crop/Item	2015-16				
		Punjab	Sindh	KPK	Balo.	Pakistan
37	Other K. Vegetables	184.5	0.3	59.5	3.1	247.5
38	Other R. Vegetables	512.2	0.6	35	5.1	552.9
39	Onion	328.2	692.3	201.3	514.6	1736.4
40	Carrot	150.6	17.5	7.8	53.2	229.1
41	Radish	116.8	6.6	12.9	24.2	160.6
42	Lotus roots		0.2			0.2
43	Sugar beet Vegetable	106.2	4.3		1.1	111.7
44	Turnip	176	19.7	50.4	16.1	262.3
45	Mango	1228	404.2	3.1	1.2	1636.5
46	Banana	1.4	112.4	12.9	7.9	134.6
47	Guava	414.6	63.5	41.8	2.6	522.6
48	Dates	42.9	201.2	12.3	211.3	467.8
49	Figs			0.4	0.1	0.4
50	Coconut		1.3		8.7	10
51	Orange	78.1	9.6			87.7
52	Kino	2065.8	0.5			2066.3
53	Lemon	26.1	17.4			43.5
54	Grape fruit	2.4	1.5			3.9
55	Mandrine	8.3				8.3
56	Musambi	55.7	0.4			56.2
57	Sure lime	3.5	0			3.5
58	Sweet lime	27.4	0.1			27.5
59	Soure orange	0.8				0.8
60	Other Citrus	7.9		31.7	6.8	46.3
61	Grapes		0	0.6	65.2	65.9
62	Water melon	344.4	42	48.7	95.9	531.1
63	Garma				3.2	3.2
64	Sarda				2.9	2.9
65	Pumpkin & Melon Pumpkin	28.2	0.5	7	5.8	41.5
66	Long Melon	2.5	0.7			3.2
67	Tomatoes	106.2	206.5	130	144.4	587.1
68	Cucumber	44.9	2.6		6.8	54.3
69	Apple	3.5		89.3	527.6	620.5
70	Plums	0.2		25.4	29	54.6
71	Peaches	0.2		52	18.5	70.8
72	Pomegranates	9.3		1.7	29	40.1

S.No	Crop/Item	2015-16				
		Punjab	Sindh	KPK	Balo.	Pakistan
73	Appricots	0.3		10.8	161.9	172.9
74	Pear	0.1		16.1	0.4	16.6
75	Jaman	4.9	0.6			5.5
76	Litchi	1.8				1.8
77	Phalsa	2.2	1.7			3.8
78	Chikoo		3.6		3.2	6.8
79	Papaya		2.6		3.6	6.2
80	Cherry				2.1	2.1
81	Ber	8.6	15.7			24.3
82	Loquat	4.2		5.7	0.1	9.9
83	Mulbery	0.9	0.1	1.1		2.1
84	Percimen			26.9		26.9
85	Other K. Fruits	14.6	0.1	3.7	2.4	20.8
86	Other R. Fruits	10	1.7	12.4	2.4	26.6
87	Almond	0		1	20.4	21.5
88	Walnuts			13.8		13.8
89	Pistachio				0.7	0.7
90	Soya Beans		0	0		0
91	Groundnuts	80.6	1.2	9.9		91.7
92	Sunflower	31.1	54.1	0.4	0.5	86.1
93	Sesamum	24.8	3.2	0	3.7	31.8
94	Safflower		0			0
95	Rape & Mustard	117.6	52.7	6	8.8	185
96	Canola	9.2	3.4	0.3	2.3	15.2
97	Castor seed	0	0.2		1.6	1.9
98	Lin seed	0.5	1.7			2.2
99	Flowers & F. Buds					
100	Corriander	0.3	1.5	0.1	1	2.9
101	Cumin seeds				2.5	2.5
102	Dil seed		0.1			0.1
103	Chillies	9.1	126.5	0.4	6.1	142.2
104	Ajwan		0.2			0.2
105	Fennel (Sounf)		0.5			0.5
106	Turmeric	69.8	0.3	3.1		73.2
107	Garlic	24.1	6.8	32.2	7.8	70.9
108	Ginger		0.1			0.1

S.No	Crop/Item	2015-16				
		Punjab	Sindh	KPK	Balo.	Pakistan
109	Other spices		0.2			0.2
110	Tobacco	32	0.2	81.9	1.4	115.6
111	Sugar beet Crop			21.4		21.4
112	Sugar cane-Released	13429.8	179.8	1814.4	31.7	15455.8
113	Sugar cane-Procured	28538.3	17804.4	3683.8	0	50026.6
114	Fodders Green	131160	3691.1	2122	1109.5	138083
115	Guarseed	44	75.2	1.1	4.3	124.6
116	Fodders Dry-Wheat	19526.7	3834.6	1400.5	871.3	25633
117	Fodders Dry-Maize-Stalks	6586.8	5.4	1309.5	4.6	7906.4
118	Fodders Dry-Maize-Piths	2195.6	1.8	436.5	1.5	2635.5
119	Rice-Straw	4902.8	3601.9	215.3	801.8	9521.7
120	FD-Barley	20.1	5.2	20.3	15	60.5
121	FD-Bajra	815.7	69.6	7.5	5.8	898.6
122	FD-Jowar(Sorghum)	466.6	45.3	17.9	63.9	593.7
123	FD-Gram	227.2	14.4	14.1	30.5	286.2
124	Fodders Dry-S.cane	8393.6	3596.9	1099.6	6.3	13096.5
125	Fodders Dry-Sesamum	49.6	6.4	0.1	7.4	63.6
126	Fodders Dry-R&Mustard	117.6	52.7	6	8.8	185
127	Cotton-Upland (Phutti)	3216.6	1772.2	0.6	49.8	5039.2
128	Cotton-Desi (Phutti)	20	1.3	0	0	21.3
129	Hemp	0		0		0
130	Cotton Sticks	12946.6	7094	2.5	199.2	20242.2

**Harvest Prices of Crops (Rs/ M.Ton)**
**Annexure III**

S.No	Crop/Item	2015-16				
		Punjab	Sindh	KPK	Balo.	Pakistan
1	Wheat-Released	31068	31745	30768	35127	32177
2	Wheat-Procured	32500	32500	32500	32500	32500
3	Maize	26525	30096	26015	32646	28821
4	Rice-Basmati	37248	39208	45089	58812	45089
5	Rice-Irri	24505	17644	48275	24505	28732
6	Rice-Others	24505	17644	48275	24505	28732
7	Barley	31911	34487	33507	35103	33752
8	Bajra	28487	35873	29894	25322	29894
9	Jowar(Sorghum)	39683	67299	28689	45224	45224
11	Gram	88675	91230	84083	86606	87648
12	Mash	90810	105018	80930	146563	105830
13	Masoor	85765	87066	61784	116584	87800
14	Moong	74000	85271	70041	129908	89805
15	Mattar	73039	70525	91651	118964	88545
16	Other K. Pulses	68047	95208	50870	137998	88031
17	Other R. Pulses	38611	54864	46866		46780
18	Potato	17126	20846	24832	20580	20846
19	Sweet Potato	13015	8563			10789
20	Peas & Garden Peas	38604	44052	70438	41328	48605
21	Beans	19554	24220		38511	27428
22	Tinda	29331	20443	38663	29479	29479
23	Lady finger	27553	40885	36441	40885	36441
24	Bitter Gourd	39996	22887	32886	32886	32164
25	Bottle Gourd	15110	19332	17221	18098	17440
26	Brinjal (eggplant)	16887	16517	16665	15999	16517
27	Arum	13332	17056	17056		15815
28	Luffa	13332	20443		16887	16887
29	Pursilano		52964			52964
30	Field vetch		48027			48027
31	Cauliflower	14221	19076	14951	11555	14951
32	Cabbage	19221	20665	19221	17776	19221
33	Spinach	9888	17776	13832	13832	13832
34	Knol Kohl		19301			19301
35	Fenu Greek		86437			86437
36	Lettuce		63737			63737

S.No	Crop/Item	2015-16				
		Punjab	Sindh	KP	Balo.	Pakistan
37	Other K. Vegetables	23319	25796	28273	26841	26057
38	Other R. Vegetables	21331	29597	37863	24664	28364
39	Onion	21375	46440	24442	29257	30379
40	Carrot	14554	15776	13332	9039	13175
41	Radish	16887	13777	17332	7110	13777
42	Lotus roots		50271			50271
43	Sugar beet Vegetable	14812	14812		13473	14366
44	Turnip	12139	13017	12139	11261	12139
45	Mango	40194	38876	37279	44429	40194
46	Banana	29733	31528	77884	53835	48245
47	Guava	37594	37071	29904	43716	37071
48	Dates	59763	48274	79204	51811	59763
49	Figs			324735	181340	253037
50	Coconut		111923		182959	147441
51	Orange	22204	43879			33042
52	Kino	17943	35458			26700
53	Lemon	26914	41439			34176
54	Grape fruit	19737	41012			30374
55	Mandrine	14130				14130
56	Musambi	17943	35458			26700
57	Sure lime	26914	58506			42710
58	Sweet lime	18391	32799			25595
59	Soure orange	19737	39004			29370
60	Other Citrus	15700		26065	36430	26065
61	Grapes		71469	73603	79460	74844
62	Water melon	17373	22001	15593	14525	17373
63	Garma				51811	51811
64	Sarda				51811	51811
65	Pumpkin & Melon Pumpkin	24778	24564	24351	24564	24564
66	Long Melon		34907			34907
67	Tomatoes	32361	34123	34123	35885	34123
68	Cucumber	17943	17943		25632	20506
69	Apple	46046	48433	53208	46046	48433
70	Plums	69207		67712	68460	68460
71	Peaches	53768		82031	73479	69759
72	Pomegranates	75081		66430	83732	75081
73	Appricots	59467		101034	105733	88745

S.No	Crop/Item	2015-16				
		Punjab	Sindh	KP	Balo.	Pakistan
74	Pear	33698		33322	53835	40285
75	Jaman	37167	45747			41457
76	Litchi	91678				91678
77	Phalsa	62372	42720			52546
78	Chikoo		62030		80146	71088
79	Papaya		22215		53026	37620
80	Cherry				92276	92276
81	Ber	41131	32040			36586
82	Loquat	51265		29904	40073	40414
83	Mulbery	42866	55569	49217		49217
84	Percimen			112865		112865
85	Other K. Fruits	42720	32307	37514	58288	42707
86	Other R. Fruits	23043	25329	55859	40478	36177
87	Almond	542838		479563	606114	542838
88	Walnuts	191492		244222		217857
89	Pistachio				622423	622423
90	Soya Beans		95905	70117		83011
91	Groundnuts	83437	93987	88712		88712
92	Sunflower	39916	52747	38138	34727	41382
93	Sesamum	88386	86010	83407	83407	85303
94	Safflower		53670			53670
95	Rape & Mustard	73180	51083	39679	39059	50750
96	Canola	66527	79134	46200	47130	59748
97	Castro seed	70319	62270		66294	66294
98	Lin seed	139707	108107			123907
99	Flowers & F. Buds					
100	Corriander	71522	85231	104709	87154	87154
101	Cumin seeds		0		283705	141852
102	Dil seed		87734			87734
103	Chillies	78674	113840	114734	102416	102416
104	Ajwan		109667			109667
105	Fennel (Sounf)		66897			66897
106	Turmeric	101073	80880	101073		94342
107	Garlic	115628	103807	121886	73906	103807
108	Ginger		148599			148599
109	Other spices		82251			82251
110	Tobaccoo	114793	133314	151836	127441	131846

S.No	Crop/Item	2015-16				
		Punjab	Sindh	KP	Balo.	Pakistan
111	Sugar beet Crop			4834		4834
112	Sugar cane-Released	5247	5247	5247	11544	6821
113	Sugar cane-Procured	4500	4300	4500	0	3325
114	Fodders Green	3250	7396	7986	10952	7396
115	Guarseed	34479	61606	48043	48043	48043
116	Fodders Dry-Wheat	7015	5011	9822	7015	7216
117	Fodders Dry-Maize-Stalks	6325	4846	7958	6376	6376
118	Fodders Dry-Maize-Piths	4970	4999	7294	5754	5754
119	Rice-Straw	2941	3293	3117	2697	3012
120	FD-Barley	3191	2597	2894	3478	3040
121	FD-Bajra	5275	3429	4352	4352	4352
122	FD-Jowar(Sorghum)	5363	3486	6167	5005	5005
123	FD-Gram	5886	2737	4311	4835	4442
124	Fodders Dry-S.cane	3358	3043	4198	4198	3699
125	Fodders Dry-Sesamum	5702	4277	4469	4469	4729
126	Fodders Dry-R&Mustard	3560	3560	4469	4469	4015
127	Cotton-Upland (Phutti)	66564	58446	66564	61693	63317
128	Cotton-Desi (Phutti)	56823	56011			56417
129	Hemp	27600		27600		27600
130	Cotton Sticks	2273	3555	2273	2273	2594

**Output of Crops (Million Rs.)**
**Annexure IV**

S.No	Crop/Item	2015-16				
		Punjab	Sindh	KPK	Balo.	Pakistan
1	Wheat-Released	460392	86968	42997	30606	620963
2	Wheat-Procured	153010	35588	98	0	188695
3	Maize	116477	109	22712	101	139399
4	Rice-Basmati	84895	3327	1852	5959	96034
5	Rice-Irri	11291	18431	2713	11484	43919
6	Rice-Others	18674	25465	2726	67	46932
7	Barley	641	178	679	527	2026
8	Bajra	7746	832	75	49	8702
9	Jowar(Sorghum)	5004	825	139	781	6748
11	Gram	20147	1313	1183	2642	25284
12	Mash	447	11	70	381	908
13	Masoor	347	76	110	128	661
14	Moong	6946	80	338	319	7684
15	Mattar	736	921	101	655	2413
16	Other K. Pulses	48	9	39	219	315
17	Other R. Pulses	5	2	3	0	10
18	Potato	65267	101	3299	593	69260
19	Sweet Potato	111	34	0	0	145
20	Peas & Garden Peas	4334	368	881	508	6090
21	Beans	20	31	0	206	257
22	Tinda	1962	266	492	157	2877
23	Lady finger	1848	777	613	659	3896
24	Bitter Gourd	1817	50	397	173	2438
25	Bottle Gourd	669	24	79	100	872
26	Brinjal (eggplant)	916	136	152	196	1400
27	Arum	142	15	306	0	463
28	Luffa	180	31	0	39	250
29	Pursilano	0	9	0	0	9
30	Field vetch	0	84	0	0	84
31	Cauliflower	2093	387	250	377	3106
32	Cabbage	969	252	81	186	1489
33	Spinach	523	185	264	341	1313
34	Knol Kohl	0	8	0	0	8
35	Fenu Greek	0	41	0	0	41
36	Lettuce	0	28	0	0	28

S.No	Crop/Item	2015-16				
		Punjab	Sindh	KPK	Balo.	Pakistan
37	Other K. Vegetables	4302	8	1683	83	6077
38	Other R. Vegetables	10926	18	1326	127	12396
39	Onion	7015	32149	4921	15055	59140
40	Carrot	2192	276	104	481	3053
41	Radish	1973	91	224	172	2460
42	Lotus roots	0	10	0	0	10
43	Sugar beet Vegetable	1573	64	0	15	1652
44	Turnip	2137	257	612	181	3187
45	Mango	49357	15713	115	55	65240
46	Banana	41	3543	1008	426	5019
47	Guava	15588	2356	1250	112	19307
48	Dates	2566	9711	976	10950	24202
49	Figs	0	0	117	11	128
50	Coconut	0	144	0	1601	1745
51	Orange	1733	422	0	0	2155
52	Kino	37066	17	0	0	37083
53	Lemon	704	720	0	0	1423
54	Grape fruit	47	63	0	0	110
55	Mandrine	117	0	0	0	117
56	Musambi	1000	16	0	0	1016
57	Sure lime	95	0	0	0	96
58	Sweet lime	504	2	0	0	506
59	Soure orange	16	0	0	0	16
60	Other Citrus	123	0	826	248	1197
61	Grapes	0	3	43	5183	5229
62	Water melon	5983	924	760	1393	9060
63	Garma	0	0	0	167	167
64	Sarda	0	0	0	152	152
65	Pumpkin & Melon Pumpkin	698	13	170	142	1024
66	Long Melon	0	25	0	0	25
67	Tomatoes	3438	7047	4435	5182	20101
68	Cucumber	806	47	0	174	1026
69	Apple	161	0	4753	24296	29210
70	Plums	13	0	1722	1987	3721
71	Peaches	11	0	4266	1363	5639
72	Pomegranates	702	0	115	2432	3249
73	Appricots	15	0	1089	17118	18222

S.No	Crop/Item	2015-16				
		Punjab	Sindh	KPK	Balo.	Pakistan
74	Pear	3	0	536	21	560
75	Jaman	182	26	0	0	208
76	Litchi	161	0	0	0	161
77	Phalsa	136	71	0	0	207
78	Chikoo	0	224	0	254	478
79	Papaya	0	58	0	190	248
80	Cherry	0	0	0	197	197
81	Ber	354	503	0	0	858
82	Loquat	213	0	169	3	386
83	Mulbery	40	5	54	0	100
84	Percimen	0	0	3034	0	3034
85	Other K. Fruits	623	2	140	143	908
86	Other R. Fruits	231	44	695	99	1068
87	Almond	5	0	479	12391	12875
88	Walnuts	0	0	3358	0	3358
89	Pistachio	0	0	0	439	439
90	Soya Beans	0	2	2	0	3
91	Groundnuts	6722	114	877	0	7712
92	Sunflower	1240	2855	15	16	4127
93	Sesamum	2194	276	4	311	2784
94	Safflower	0	1	0	0	1
95	Rape & Mustard	8604	2691	237	343	11875
96	Canola	614	272	13	106	1005
97	Castro seed	1	15	0	106	122
98	Lin seed	71	182	0	0	253
99	Flowers & F. Buds	6269	3134	836	209	10448
100	Corriander	23	128	11	87	249
101	Cumin seeds	0	0	0	705	705
102	Dil seed	0	12	0	0	12
103	Chillies	714	14403	51	627	15795
104	Ajwan	0	24	0	0	24
105	Fennel (Sounf)	0	36	0	0	36
106	Turmeric	7057	22	314	0	7394
107	Garlic	2792	701	3925	578	7996
108	Ginger	0	19	0	0	19
109	Other spices	0	19	0	0	19
110	Tobaccoo	3676	30	12434	183	16323

S.No	Crop/Item	2015-16				
		Punjab	Sindh	KPK	Balo.	Pakistan
111	Sugar beet Crop	0	0	104	0	104
112	Sugar cane-Released	70468	944	9521	366	81298
113	Sugar cane-Procured	128423	76559	16577	0	221559
114	Fodders Green	426270	27300	16947	12152	482668
115	Guarseed	1516	4634	51	207	6408
116	Fodders Dry-Wheat	136988	19215	13755	6113	176071
117	Fodders Dry-Maize-Stalks	41663	26	10421	30	52139
118	Fodders Dry-Maize-Piths	10912	9	3184	9	14114
119	Rice-Straw	14417	11863	671	2163	29114
120	FD-Barley	64	13	59	52	188
121	FD-Bajra	4303	239	33	25	4600
122	FD-Jowar(Sorghum)	2502	158	110	320	3090
123	FD-Gram	1337	39	61	147	1585
124	Fodders Dry-S.cane	28187	10946	4616	27	43776
125	Fodders Dry-Sesamum	283	27	0	33	344
126	Fodders Dry-R&Mustard	419	188	27	39	672
127	Cotton-Upland (Phutti)	214110	103579	42	3072	320802
128	Cotton-Desi (Phutti)	1139	72	0	0	1211
129	Hemp	1	0	0	0	1
130	Cotton Sticks	29426	25223	6	453	55107

**Seeds of Crops**

**Annexure V**

S.No	Crop/Item	Average Use of Seed (kg/Acre)					Average Price of Seed (Rs/Kg)				
		Punjab	Sindh	KPK	Baloch.	Pakistan	Punjab	Sindh	KPK	Baloch.	Pakistan
1	Wheat-Released	50	54	49	51	51	40	42	38	34	38
2	Wheat-Procured	50	54	49	51	51	59	59			59
3	Maize	19	21	21	20.3	20.3	62	56	52	39	52
4	Rice-Basmati	6	7	5	5	5.8	77	77	77	77	77
5	Rice-Irri	5	7	7	7	6.5	49	49	49	49	49
6	Rice-Others	7	7	7	7	7	49	49	49	49	49
7	Barley	40	35	46	76	49.3	57	50	38	26	43
8	Bajra	7	5	7	8	6.8	208	36	64	24	83
9	Jowar(Sorghum)	15	6	23	59	25.8	61	58	96	21	59
11	Gram	25	20	26	77	37	112	79	166	101	115
12	Mash	10	11	15	11	11.8	102	136	193	185	154
13	Masoor	7	11	11	11	10	109	139	139	139	132
14	Moong	10.3	10	10	10	10.1	98	152	127	127	126
15	Mattar	30	25	8	28	22.8	218	232	232	248	232
16	Other K. Pulses	11	11	7	11	10	129	152	472	139	223
17	Other R. Pulses	11	5	11	11	9.5	129	48	142	0	80
18	Potato	1354	867	570	880	917.8	35	16	32	325	102
19	Sweet Potato	281	40			160.5	48	24			36
20	Peas & Garden Peas	30	22	16	10	19.5	222	134	612	189	289
21	Beans	7	2	12	8	7.3	160	70	0	105	84
22	Tinda	2	2	1	2	1.8	4362	923	3337	537	2290
23	Lady finger	9	18	7	9	10.8	483	763	651	416	578
24	Bitter Gourd	2	2	5	3	3	755	1046	1572	1583	1239
25	Bottle Gourd	1	2	6	2	2.8	2135	1132	354	335	989
26	Brinjal (eggplant)	0.3	0.3	5	3	2.2	3775	643	538	212	1292
27	Arum	480	800	100		460	19	27	57	0	26
28	Luffa	2	2	1		1.7	1408	1276	2273	99	1264

S.No	Crop/Item	Average Use of Seed (kg/Acre)					Average Price of Seed (Rs/Kg)				
		Punjab	Sindh	KPK	Baloch.	Pakistan	Punjab	Sindh	KPK	Baloch.	Pakistan
29	Pursilano		1			1		236			236
30	Field vetch		5			5	133	54	120		102
31	Cauliflower	1	1	5	3	2.5	755	1610	767	248	845
32	Cabbage	1	1	1	3	1.5	849	1730	1817	330	1182
33	Spinach	8	10	8	10	9	210	151	404	97	215
34	Knol Kohl		1			1		1310			1310
35	Fenu Greek	40	2			21	196	283			240
36	Lettuce		0.2			0.2		671			671
37	Other K. Vegetables	4	4	4	4	4	542	547	564	550	551
38	Other R. Vegetables	7	7	7	7	7	711	725	725	725	721
39	Onion	4	6	6	6	5.5	1416	952	861	409	909
40	Carrot	7	11	8	11	9.3	629	101	4530	435	1424
41	Radish	2	4	3	17	6.5	2162	644	590	388	946
42	Lotus roots		6			6		81			81
43	Sugar beet Vegetable		2		2	2		156			156
44	Turnip	2	1	2	1	1.5	1403	708	708	708	882
45	Mango										
46	Banana										
47	Guava										
48	Dates										
49	Figs										
50	Coconut										
51	Orange										
52	Kino										
53	Lemon										
54	Grape fruit										
55	Mandrine										
56	Musambi										

S.No	Crop/Item	Average Use of Seed (kg/Acre)					Average Price of Seed (Rs/Kg)				
		Punjab	Sindh	KPK	Baloch.	Pakistan	Punjab	Sindh	KPK	Baloch.	Pakistan
57	Sure lime										
58	Sweet lime										
59	Soure orange										
60	Other Citrus										
61	Grapes										
62	Water melon	1	3	2	2	2	24166	23016	11325	12740	17812
63	Garma				3	3				201	201
64	Sarda				3	3				201	201
65	Pumpkin & Melon Pumpkin	3	0.1	1	2	1.5	2123	891	472	231	929
66	Long Melon		1					939			939
67	Tomatoes	0.3	0.3	0.3	1	0.4	22166	4816	12049	6661	11423
68	Cucumber	0.4	0.3	3	2	1.4	832	566	1075	3220	1423
69	Apple										
70	Plums										
71	Peaches										
72	Pomegranates										
73	Appricots										
74	Pear										
75	Jaman										
76	Litchi										
77	Phalsa										
78	Chikoo										
79	Papaya										
80	Cherry										
81	Ber										
82	Loquat										
83	Mulbery										
84	Percimen										

S.No	Crop/Item	Average Use of Seed (kg/Acre)					Average Price of Seed (Rs/Kg)				
		Punjab	Sindh	KPK	Baloch.	Pakistan	Punjab	Sindh	KPK	Baloch.	Pakistan
85	Other K. Fruits										
86	Other R. Fruits										
87	Almond										
88	Walnuts										
89	Pistachio										
90	Soya Beans		40	40		40		944	77		510
91	Groundnuts	29	12	73		38	199	178	196		191
92	Sunflower	3	2	3	3	2.8	665	3190			1928
93	Sesamum	4	3	1	1	2.3	207	225	163	231	206
94	Safflower		5			5		64			64
95	Rape & Mustard	2	2	6	2	3	100	97	283	103	146
96	Canola	4	2	2	2	2.5	283	115	87	110	149
97	Castro seed	5	5		5	5	51	51		51	51
98	Lin seed	7	7			7	95	95			95
99	Flowers & F. Buds										
100	Corriander	8	10	8	8	8.5	294	94	189	238	204
101	Cumin seeds		14		14	14		170		565	368
102	Dil seed		5			5		396			396
103	Chillies	1	1	1	2	1.3	1627	4930	795	330	1921
104	Ajwan		3			3		247			247
105	Fennel (Sounf)		5			5		178			178
106	Turmeric	613	640	640		631	21	208			114
107	Garlic	244	200	136	102	170.5	198	236	158	233	206
108	Ginger		160	12		86		346	283		315
109	Other spices		3			3		594			594
110	Tobaccoo	3	118	21	0.3	35.6	35	132	141	113	105
111	Sugar beet Crop	2		2		2	11		174		93
112	Sugar cane-Released	2421	3850	2492	2921	2921	5	6	6	6	5

S.No	Crop/Item	Average Use of Seed (kg/Acre)					Average Price of Seed (Rs/Kg)				
		Punjab	Sindh	KPK	Baloch.	Pakistan	Punjab	Sindh	KPK	Baloch.	Pakistan
113	Sugar cane-Procured	2421	3850	2492	2921	2921	5	6	6	6	5
114	Fodders Green	8	9	30	12	14.8	307	245	48	195	199
115	Guarseed	11	7	10	10	9.5	40	38	144	144	91
116	Fodders Dry-Wheat										
117	Fodders Dry-Maize-Stalks										
118	Fodders Dry-Maize-Piths										
119	Rice-Straw										
120	FD-Barley										
121	FD-Bajra										
122	FD-Jowar(Sorghum)										
123	FD-Gram										
124	Fodders Dry-S.cane										
125	Fodders Dry-Sesamum										
126	Fodders Dry-R&Mustard										
127	Cotton-Upland (Phutti)	9	9	9	9	9	260	202	214	266	236
128	Cotton-Desi (Phutti)	9	7			8	175	243		116	178
129	Hemp	13		13		13	83		83		83
130	Cotton Sticks										

**Value of Seed of Crops (Million Rs)**
**Annexure VI**

S.No	Crop/Item	2015-16				
		Punjab	Sindh	KPK	Balochistan	Pakistan
1	Wheat-Released	23720.5	4435.4	3217.1	1523.2	32896.2
2	Wheat-Procured	15028.7	2775.8	0	0	17804.6
3	Maize	2096.7	10.6	1270.3	5.7	3383.2
4	Rice-Basmati	1436	69.2	15	32.4	1552.6
5	Rice-Irri	113.1	331	19.8	118.4	582.2
6	Rice-Others	290.4	236.2	21.8	1.2	549.7
7	Barley	129.3	35.6	99.8	56.5	321.2
8	Bajra	1557.6	20	4.4	1.5	1583.5
9	Jowar(Sorghum)	525.5	11.2	45.4	63.7	645.8
11	Gram	5931.4	57.8	351.5	708.3	7049.1
12	Mash	38.6	0.9	5.3	14.4	59.2
13	Masoor	21.3	5.3	13.2	6.5	46.4
14	Moong	333.1	8.4	23.3	11.1	375.8
15	Mattar	210	303.2	5.7	169.9	688.9
16	Other K. Pulses	5	1.1	10.9	4.9	21.9
17	Other R. Pulses	0.6	0.1	0.5	0	1.1
18	Potato	19330.8	19.3	423.3	1349.1	21122.6
19	Sweet Potato	18.2	2.3	0	0	20.6
20	Peas & Garden Peas	290.1	17.4	44.8	5	357.3
21	Beans	1	0.3	0	1.2	2.4
22	Tinda	145	9.4	8.9	2.2	165.6
23	Lady finger	63.5	166.9	23.5	24.3	278.1
24	Bitter Gourd	15.7	3	23.8	7.8	50.4
25	Bottle Gourd	20.7	1.8	2.8	1.2	26.4
26	Brinjal (eggplant)	12.5	0.7	5.8	2.6	21.5
27	Arum	21	12.3	18.8	0	52.1
28	Luffa	9	2.3	0	0	11.3
29	Pursilano	0	0	0	0	0
30	Field vetch	0	0.4	0	0	0.4
31	Cauliflower	13.3	8.2	13.7	3.7	38.9
32	Cabbage	5.5	4.7	2.3	1.6	14.2
33	Spinach	14.7	7.6	13.5	3.4	39.3
34	Knol Kohl	0	0.3	0	0	0.3
35	Fenu Greek	0	0.2	0	0	0.2

S.No	Crop/Item	2015-16				
		Punjab	Sindh	KPK	Balochistan	Pakistan
36	Lettuce	0	0.1	0	0	0.1
37	Other K. Vegetables	81.3	0.7	32.1	2.6	116.7
38	Other R. Vegetables	387.3	3.3	38.9	5	434.5
39	Onion	625	730.1	156.3	165.1	1676.6
40	Carrot	89.6	4.2	50.2	36.3	180.3
41	Radish	66.3	6.9	4.6	23	100.9
42	Lotus roots	0	0.1	0	0	0.1
43	Sugar beet Vegetable	0	0.4	0	0	0.4
44	Turnip	64	2.9	11.7	1.7	80.3
45	Mango					
46	Banana					
47	Guava					
48	Dates					
49	Figs					
50	Coconut					
51	Orange					
52	Kino					
53	Lemon					
54	Grape fruit					
55	Mandrine					
56	Musambi					
57	Sure lime					
58	Sweet lime					
59	Soure orange					
60	Other Citrus					
61	Grapes					
62	Water melon	1090.3	1034.3	229.7	518.8	2873.1
63	Garma	0	0	0	0.5	0.5
64	Sarda	0	0	0	0.5	0.5
65	Pumpkin & Melon Pumpkin	34.8	0	0.9	0.7	36.5
66	Long Melon	0	0.5	0	0	0.5
67	Tomatoes	111.9	82.9	101.2	212.6	508.5
68	Cucumber	1.5	0.2	0	14.7	16.5
69	Apple					
70	Plums					
71	Peaches					

S.No	Crop/Item	2015-16				
		Punjab	Sindh	KPK	Balochistan	Pakistan
72	Pomegranates					
73	Appricots					
74	Pear					
75	Jaman					
76	Litchi					
77	Phalsa					
78	Chikoo					
79	Papaya					
80	Cherry					
81	Ber					
82	Loquat					
83	Mulbery					
84	Percimen					
85	Other K. Fruits					
86	Other R. Fruits					
87	Almond					
88	Walnuts					
89	Pistachio					
90	Soya Beans	0	2.4	0.2	0	2.6
91	Groundnuts	1199.2	2.9	258.3	0	1460.3
92	Sunflower	79.8	1038.6	0	0	1118.4
93	Sesamum	134.2	11.6	0	3.3	149.1
94	Safflower	0	0	0	0	0
95	Rape & Mustard	61.1	24.2	54.3	7.2	146.8
96	Canola	19.9	1.6	0.2	1.9	23.5
97	Castro seed	0	0.2	0	0.9	1.1
98	Lin seed	1.1	3.9	0	0	5
99	Flowers & F. Buds	0	0	0	0	0
100	Corriander	3.2	6.5	0.7	8.4	18.7
101	Cumin seeds	0	0	0	106.3	106.3
102	Dil seed	0	1.6	0	0	1.6
103	Chillies	22.7	665.4	0.8	6.8	695.7
104	Ajwan	0	0.8	0	0	0.8
105	Fennel (Sounf)	0	1.6	0	0	1.6
106	Turmeric	165.3	88.8	0	0	254.1
107	Garlic	366.4	149.5	140.3	52.1	708.2

S.No	Crop/Item	2015-16				
		Punjab	Sindh	KPK	Balochistan	Pakistan
108	Ginger	0	39.9	0	0	39.9
109	Other spices	0	1.8	0	0	1.8
110	Tobacco	4.7	5.8	243.7	0.1	254.4
111	Sugar beet Crop	0	0	0.5	0	0.5
112	Sugar cane-Released	6371.8	168.5	1296.3	26.8	7863.4
113	Sugar cane-Procured	13540.1	16683.1	2631.9	0	32855.1
114	Fodders Green	19311.9	746.2	355.5	202.7	20616.4
115	Guarseed	102.9	62.6	2	23.4	190.9
116	Fodders Dry-Wheat					
117	Fodders Dry-Maize-Stalks					
118	Fodders Dry-Maize-Piths					
119	Rice-Straw					
120	FD-Barley					
121	FD-Bajra					
122	FD-Jowar(Sorghum)					
123	FD-Gram					
124	Fodders Dry-S.cane					
125	Fodders Dry-Sesamum					
126	Fodders Dry-R&Mustard					
127	Cotton-Upland (Phutti)	12784.4	2780.8	1.9	222.6	15789.8
128	Cotton-Desi (Phutti)	122.5	7.7	0	0	130.2
129	Hemp	0.2	0	0	0	0.2
130	Cotton Sticks					0

## Average Rate of Ploughing &amp; Planking of Crops (Rs/ Hect.)

## Annexure VII

S.No	Crop/Item	Average Rate 2015-16				
		Punjab	Sindh	KP	Balochistan	Pakistan
1	Wheat-Released	8310	9348	9089	9089	8959
2	Wheat-Procured	8310	9348	9089	9089	8959
3	Maize	10127	9868	8050	10647	9673
4	Rice-Basmati	12205	8050		10127	10127
5	Rice-Irri	11426	6752	10127	9435	9435
6	Rice-Others	11426	6752	10127	9435	9435
7	Barley	7790	5194	6752	8569	7076
8	Bajra	7011	5194	6752	9089	7011
9	Jowar(Sorghum)	4934	5194	6752	9868	6687
10	Other	0	0	0	0	
11	Gram	5453	5194	6752	9868	6817
12	Mash	5453	5194	6752	9868	6817
13	Masoor	5453	5194	6752	9868	6817
14	Moong	5453	5194	6752	9868	6817
15	Mattar	5453	5194	6752	9868	6817
16	Other K. Pulses	5453	5194	6752	9868	6817
17	Other R. Pulses	5453	5194	6752		5799
18	Potato	8310	9348	9089	9608	9089
19	Sweet Potato	5453	5194			5323
20	Peas & Garden Peas	5453	5194	6752	9868	6817
21	Beans	8137	5194	9348	9868	8137
22	Tinda	5453	5194	6405	8569	6405
23	Lady finger	5453	5194	6838	9868	6838
24	Bitter Gourd	5453	5194	6405	8569	6405
25	Bottle Gourd	5453	5194	6405	8569	6405
26	Brinjal (eggplant)	5453	5194	8310	8569	6881
27	Arum	5973	5194	6752		5973
28	Luffa	7877	5194	9868	8569	7877
29	Pursilano		5194			5194
30	Field vetch	9348	5194	7271		7271
31	Cauliflower	5453	5194	5453	8569	6167
32	Cabbage	5453	5194	6405	8569	6405
33	Spinach	5453	5453	8180	8569	6914
34	Knol Kohl		5453			5453

S.No	Crop/Item	Average Rate 2015-16				
		Punjab	Sindh	KP	Balochistan	Pakistan
35	Fenu Greek	13503	5453			9478
36	Lettuce		5453			5453
37	Other K. Vegetables	5453	5453	6492	8569	6492
38	Other R. Vegetables	5453	5453	6492	8569	6492
39	Onion	5453	9348	6752	9868	7855
40	Carrot	5453	5194	6752	7531	6232
41	Radish	5453	5194	6752	8569	6492
42	Lotus roots		5194			5194
43	Sugar beet Vegetable		5194		8569	6881
44	Turnip	5453	5194	6405	8569	6405
45	Mango	0	0	0	0	0
46	Banana	0	0	0	0	0
47	Guava	0	0	0	0	0
48	Dates	0	0	0	0	0
49	Figs			0	0	0
50	Coconut		0		0	0
51	Orange	0	0	0		0
52	Kino	0	0			0
53	Lemon	0	0	0		0
54	Grape fruit	0	0			0
55	Mandrine	0	0			0
56	Musambi	0	0			0
57	Sure lime	0	0			0
58	Sweet lime	0	0			0
59	Soure orange	0	0			0
60	Other Citrus	0	0	0	0	0
61	Grapes		0	0	0	0
62	Water melon	5453	5194	6405	8569	6405
63	Garma			8569	8569	8569
64	Sarda			8569	8569	8569
65	Pumpkin & Melon Pumpkin	5453	5453	6492	8569	6492
66	Long Melon		5453			5453
67	Tomatoes	5453	5194	6752	9868	6817
68	Cucumber	5194	5194	6319	8569	6319
69	Apple	0	0	0	0	0
70	Plums	0		0	0	0

S.No	Crop/Item	Average Rate 2015-16				
		Punjab	Sindh	KP	Balochistan	Pakistan
71	Peaches	0		0	0	0
72	Pomegranates	0		0	0	0
73	Appricots	0		0	0	0
74	Pear	0		0	0	0
75	Jaman	0	0			0
76	Litchi	0				0
77	Phalsa	0	0			0
78	Chikoo		0		0	0
79	Papaya		0		0	0
80	Cherry				0	0
81	Ber	0	0			0
82	Loquat	0		0	0	0
83	Mulbery	0	0	0		0
84	Percimen			0		0
85	Other K. Fruits	7271	5453	7098	8569	7098
86	Other R. Fruits	0	0	0	0	0
87	Almond	0		0	0	0
88	Walnuts	0		0		0
89	Pistachio				0	0
90	Soya Beans		5453	5453		5453
91	Groundnuts	5453	5194	6752		5799
92	Sunflower	9089	9348	9089	9868	9348
93	Sesamum	5453	5194	6752	9868	6817
94	Safflower		5194			5194
95	Rape & Mustard	5453	5194	6752	5799	5799
96	Canola	5453	5194	6752	5799	5799
97	Castro seed	0	0		0	0
98	Lin seed	0	0			0
99	Flowers & F. Buds					
100	Corriander	7271	5453	7790	8569	7271
101	Cumin seeds		5453		8569	7011
102	Dil seed		5453			5453
103	Chillies	9219	9348	9089	9608	9316
104	Ajwan		5453			5453
105	Fennel (Sounf)		5453			5453
106	Turmeric	5453	5194	6752		5799

S.No	Crop/Item	Average Rate 2015-16				
		Punjab	Sindh	KP	Balochistan	Pakistan
107	Garlic	5453	5194	6838	9868	6838
108	Ginger		5453	5194		5323
109	Other spices		5194			5194
110	Tobaccoo	9998	9348	10647	9089	9770
111	Sugar beet Crop	5194		9089		7141
112	Sugar cane-Released	10906	11166	10647	10906	10906
113	Sugar cane-Procured	10906	11166	10647	10906	10906
114	Fodders Green	5453	5453	7531	8569	6752
115	Guarseed	5453	5194	6405	8569	6405
116	Fodders Dry-Wheat					
117	Fodders Dry-Maize-Stalks					
118	Fodders Dry-Maize-Piths					
119	Rice-Straw					
120	FD-Barley					
121	FD-Bajra					
122	FD-Jowar(Sorghum)					
123	FD-Gram					
124	Fodders Dry-S.cane					
125	Fodders Dry-Sesamum					
126	Fodders Dry-R&Mustard					
127	Cotton-Upland (Phutti)	9385	11875	10630	10630	10630
128	Cotton-Desi (Phutti)	9385	11875	10630	10630	10630
129	Hemp	5453		6752		6102
130	Cotton Sticks					

**Ploughing & Planking Cost of Crops (Million Rs)**

**Annexure VIII**

S.No	Crop/Item	Ploughing & Planking Cost 2015-16				
		Punjab	Sindh	KPK	Balochistan	Pakistan
1	Wheat-Released	40248	7483	6397	3233	57362
2	Wheat-Procured	17204	3310	622	247	21384
3	Maize	7252	36	3772	31	11091
4	Rice-Basmati	15275	416	0	343	16034
5	Rice-Irri	2131	2632	236	1316	6315
6	Rice-Others	3909	1879	260	13	6062
7	Barley	180	43	157	98	478
8	Bajra	3041	234	27	30	3332
9	Jowar(Sorghum)	1140	68	56	208	1472
10	Other	0	0	0	0	0
11	Gram	4662	77	222	364	5325
12	Mash	84	1	5	28	118
13	Masoor	61	7	24	17	109
14	Moong	726	12	50	35	822
15	Mattar	71	110	8	98	287
16	Other K. Pulses	8	1	9	13	31
17	Other R. Pulses	1	0	1	0	2
18	Potato	1375	5	85	18	1484
19	Sweet Potato	3	5	0	0	8
20	Peas & Garden Peas	96	12	13	11	132
21	Beans	3	4	0	5	12
22	Tinda	37	11	7	7	61
23	Lady finger	32	26	14	26	98
24	Bitter Gourd	23	3	8	6	40
25	Bottle Gourd	21	2	3	6	33
26	Brinjal (eggplant)	24	7	7	14	53
27	Arum	6	1	9	0	16
28	Luffa	10	2	0	3	15
29	Pursilano	0	0	0	0	0
30	Field vetch	0	3	0	0	3
31	Cauliflower	39	11	8	17	75
32	Cabbage	14	6	3	6	29
33	Spinach	19	11	14	12	56
34	Knol Kohl	0	1	0	0	1
35	Fenu Greek	0	1	0	0	1

S.No	Crop/Item	Ploughing & Planking Cost 2015-16				
		Punjab	Sindh	KPK	Balochistan	Pakistan
36	Lettuce	0	2	0	0	2
37	Other K. Vegetables	83	1	37	4	125
38	Other R. Vegetables	172	1	20	3	197
39	Onion	244	483	83	269	1079
40	Carrot	45	8	4	23	80
41	Radish	34	6	7	12	59
42	Lotus roots	0	1	0	0	1
43	Sugar beet Vegetable	0	3	0	0	3
44	Turnip	50	9	21	8	89
45	Mango	0	0	0	0	0
46	Banana	0	0	0	0	0
47	Guava	0	0	0	0	0
48	Dates	0	0	0	0	0
49	Figs	0	0	0	0	0
50	Coconut	0	0	0	0	0
51	Orange	0	0	0	0	0
52	Kino	0	0	0	0	0
53	Lemon	0	0	0	0	0
54	Grape fruit	0	0	0	0	0
55	Mandrine	0	0	0	0	0
56	Musambi	0	0	0	0	0
57	Sure lime	0	0	0	0	0
58	Sweet lime	0	0	0	0	0
59	Soure orange	0	0	0	0	0
60	Other Citrus	0	0	0	0	0
61	Grapes	0	0	0	0	0
62	Water melon	100	31	26	71	228
63	Garma	0	0	0	3	3
64	Sarda	0	0	0	3	3
65	Pumpkin & Melon Pumpkin	12	1	5	5	23
66	Long Melon	0	1	0	0	1
67	Tomatoes	45	145	92	127	408
68	Cucumber	9	4	0	8	21
69	Apple	0	0	0	0	0
70	Plums	0	0	0	0	0
71	Peaches	0	0	0	0	0

S.No	Crop/Item	Ploughing & Planking Cost 2015-16				
		Punjab	Sindh	KPK	Balochistan	Pakistan
72	Pomegranates	0	0	0	0	0
73	Appricots	0	0	0	0	0
74	Pear	0	0	0	0	0
75	Jaman	0	0	0	0	0
76	Litchi	0	0	0	0	0
77	Phalsa	0	0	0	0	0
78	Chikoo	0	0	0	0	0
79	Papaya	0	0	0	0	0
80	Cherry	0	0	0	0	0
81	Ber	0	0	0	0	0
82	Loquat	0	0	0	0	0
83	Mulbery	0	0	0	0	0
84	Percimen	0	0	0	0	0
85	Other K. Fruits	26	0	3	7	37
86	Other R. Fruits	0	0	0	0	0
87	Almond	0	0	0	0	0
88	Walnuts	0	0	0	0	0
89	Pistachio	0	0	0	0	0
90	Soya Beans	0	0	0	0	0
91	Groundnuts	458	3	49	0	510
92	Sunflower	147	616	2	3	768
93	Sesamum	358	36	1	57	452
94	Safflower	0	0	0	0	0
95	Rape & Mustard	675	261	87	82	1105
96	Canola	39	15	3	20	76
97	Castro seed	0	0	0	0	0
98	Lin seed	0	0	0	0	0
99	Flowers & F. Buds	0	0	0	0	0
100	Corriander	4	15	2	15	36
101	Cumin seeds	0	0	0	47	47
102	Dil seed	0	2	0	0	2
103	Chillies	52	511	4	40	606
104	Ajwan	0	2	0	0	2
105	Fennel (Sounf)	0	4	0	0	4
106	Turmeric	29	1	2	0	32
107	Garlic	17	7	18	9	50

S.No	Crop/Item	Ploughing & Planking Cost 2015-16				
		Punjab	Sindh	KPK	Balochistan	Pakistan
108	Ginger	0	2	0	0	2
109	Other spices	0	2	0	0	2
110	Tobacco	183	1	354	9	547
111	Sugar beet Crop	0	0	5	0	5
112	Sugar cane-Released	2462	35	396	7	2900
113	Sugar cane-Procured	5231	3458	804	0	9493
114	Fodders Green	17369	746	750	300	19164
115	Guarseed	521	498	4	56	1079
116	Fodders Dry-Wheat					
117	Fodders Dry-Maize-Stalks					
118	Fodders Dry-Maize-Piths					
119	Rice-Straw					
120	FD-Barley					
121	FD-Bajra					
122	FD-Jowar(Sorghum)					
123	FD-Gram					
124	Fodders Dry-S.cane					
125	Fodders Dry-Sesamum					
126	Fodders Dry-R&Mustard					
127	Cotton-Upland (Phutti)	20751	7356	4	400	28511
128	Cotton-Desi (Phutti)	296	22	0	0	318
129	Hemp	0	0	0	0	0
130	Cotton Sticks	0	0	0	0	0

## Livestock Population

## Annexure IX

Animal Categories			"000" Heads	
			2005-06	2015-16
<b>Buffaloes</b>			<b>27,335</b>	<b>36,637</b>
	<b>Mature</b>		<b>16,172</b>	<b>21,676</b>
		<b>Bulls 3 years and above</b>	<b>610</b>	<b>817</b>
		For Breeding	330	442
		For Work	280	375
		<b>Buffaloes 3 Years and above</b>	<b>15,562</b>	<b>20,859</b>
		In Milk	10,222	13,701
		Dry	3,381	4,532
		Not Yet Calved	1,959	2,626
		<b>Young Males</b>	<b>4,706</b>	<b>6,307</b>
	<b>NB</b>	Bulls Below one Year	3,748	5,023
	<b>Immature</b>	Bulls Between 1 & 3 Years	958	1,284
	<b>Young Females</b>		<b>6,457</b>	<b>8,654</b>
	<b>NB</b>	Buffaloes Below One Year	4,276	5,731
<b>Immature</b>	Buffaloes Between 1 & 3 years	2,181	2,923	
<b>Cattle</b>			<b>29,558</b>	<b>42,796</b>
	<b>Mature</b>		<b>19,303</b>	<b>27,948</b>
		<b>Bulls 3 years and above</b>	<b>4,147</b>	<b>6,004</b>
		For Breeding	1,573	4,050
		For Work	2,574	1,954
		<b>Cows 3 Years and above</b>	<b>15,156</b>	<b>21,944</b>
		In Milk	8,720	12,625
		Dry	4,469	6,471
		Not Yet Calved	1,967	2,848
		<b>Young Males</b>	<b>5,374</b>	<b>7,781</b>
	<b>NB</b>	Bulls Below one Year	3,911	5,663
	<b>Immature</b>	Bulls Between 1 & 3 Years	1,463	2,118
	<b>Young Females</b>		<b>4,881</b>	<b>7,067</b>
	<b>NB</b>	Cows Below One Year	3,426	4,960
<b>Immature</b>	Cow Between 1 & 3 years	1,455	2,107	
<b>Sheep</b>			<b>26,488</b>	<b>29,789</b>
	<b>Mature</b>		<b>18,120</b>	<b>20,378</b>
		Male 1 Year and Above	4,365	4,909
		Female 1 Year and above	13,755	15,469
	<b>Young</b>	Youngstock less than 1 Year	8,368	9,411

Animal Categories			“000” Heads	
			2005-06	2015-16
<b>Goats</b>			<b>53,789</b>	<b>70,274</b>
	<b>Mature</b>		<b>37,788</b>	<b>49,369</b>
		Male 1 Year and Above	6,617	8,645
		Female 1 Year and above	31,171	40,724
	<b>Young</b>	Young stock less than 1 Year	16,001	20,905
<b>Camels</b>			<b>921</b>	<b>1,048</b>
	<b>Mature</b>		<b>698</b>	<b>794</b>
		Male, 3 Years and above	356	405
		Female 3 Years and above	342	389
	<b>Young</b>	Less Than 3 years	223	254
<b>Horses</b>			<b>344</b>	<b>364</b>
	<b>Mature</b>	3 Years and above	289	306
	<b>Young</b>	Less Than 3 years	55	58
<b>Mules</b>			<b>156</b>	<b>186</b>
	<b>Mature</b>	3 Years and above	140	167
	<b>Young</b>	Less Than 3 years	16	19
<b>Asses</b>			<b>4,269</b>	<b>5,128</b>
	<b>Mature</b>	3 Years and above	3,495	4,198
	<b>Young</b>	Less Than 3 years	774	930

### Opening and Closing Stock of Animals (000 Heads) 2015-16

### Annexure X

Species	Opening	New Born	Slaughtered	Died	Closing
Buffaloes	36,637	10,755	2,660	7,006	37,726
Cattle	42,796	10,623	7,811	1,198	44,410
Sheep	29,789	15,547	14,300	894	30,142
Goats	70,274	43,402	38,686	2,811	72,179
Camels	1,048	254	63	178	1,061
Horses	364	58		56	366
Mules	186	19		16	189
Asses	5,128	930		835	5,223

**Livestock and Poultry Products**
**Annexure XI**

<b>Poultry and Poultry Products</b>				
<b>Description</b>		<b>Unit</b>	<b>2005-06</b>	<b>2015-16</b>
<b>Poultry</b>				
	Layers (Farming)	Mill. #	23.2	45.64
	Broilers (Farming)	"	337	874.09
	Breeding Stock (Farming)	"	6.9	11.24
	Poultry (Desi-cocks, hen, chicken)	"	72.95	84.58
	Ducks, Drakes and Ducklings	"	0.7	0.46
<b>Poultry products</b>				
	Eggs ( Farming )	"	6,258.00	12,077.00
	Eggs ( Desi )	"	3,423.00	4,090.00
	Eggs ( Ducks )	"	31.28	20.55
	<b>Total Eggs</b>	<b>"</b>	<b>9,712.28</b>	<b>16,187.55</b>
<b>Livestock products</b>				
<b>Milk</b>				
	Buffaloes	(000 MT)	19,779.00	26,510.00
	Cows	"	10,726.00	15,529.00
	Sheep	"	34	39
	Goat	"	664	867
	Camel	"	767	873
	<b>Dung &amp; Urine</b>	<b>Mill.MT</b>	<b>1,171.00</b>	<b>1,575.00</b>
<b>Wool &amp; Hair</b>				
<b>Wool</b>				
	Sheep	(000 MT)	38.5	43.18
	Camel	"	1.71	1.94
<b>Hair</b>				
	Goat	"	19.93	26.04
	Horse	"	0.26	0.28
	Mule	"	0.12	0.14

**Working for Draught Power 2015-16**
**Annexure XII**

<b>DRAUGHT POWER</b>	<b>2005-06</b>	<b>2015-16</b>
<b>DESCRIPTION</b>	<b>NO &amp; VALUE</b>	
NO. OF ANIMALS USED FOR WORK	2,854,000	2,329,000
i. ANIMALS USED FOR NON-MECHANISED ROAD TRANSPORT(REGISTERED) 1% OF TOTAL	28,540	23,290
ii. ANIMALS USED FOR TRANSPORT/BIKES MOVEMENT ETC 2 % OF TOTAL	57,080	46,580
iii. AVAILABLE ANIMALS FOR DRAUGHT POWER =	2,768,380	2,259,130
NO OF WORK DAYS IN A YEAR	365	365
i. RAINY AND SLACK SEASON DAYS	145	145
ii. WORKING DAYS FOR USE OF DRAGUHT POWER	220	220
A PAIR OF ANIMALS PLOUGH 1/2 ACRE IN A DAY ( FOR AOUT ( 4-5 HOURS)	160	552
TRACTOR PLOUGHS 1/2 ACRE FOR RUPEES 160/-	160	552
THE OUTPUT OF TWO ANIMALS 160 RUPEES PER DAY	160	552
AND PER DAY PER ANIMALS WILL BE EQUAL TO $160/2 = 80$ RUPEES	80	276
OUTPUT OF ONE ANIMLAS IS EQUAL TO $80*220$ RUPEES PER YEAR	17,600	60,685
NO OF BULLOCKS AND BULLS USED IN THE AGRICULTURE (97%)	2,768,380	2,259,130
<b>OUTPUT OF WORKING ANIMALS AVAILABLE FOR DRAUGHT POWER(MILLIONS RS)</b>	<b>48,723</b>	<b>137,095</b>

## Gross Output Of Forestry 2015-16 (Million Rs)

## Annexure XIII

Benchmark Estimates of Timber, 2015-16		
Description	2005-06	2015-16
<b>TIMBER</b>		
<b>A Total use of Timber by Sectors (net of imports (Sum(i-iv)))</b>	<b>25,048</b>	<b>82,742</b>
i. Census of Mining Industries 2016-17 adjusted to 2015-16	809	3,940
ii. Census of Large Scale Manufacturing Industries ( CMI 2015-16)	4,682	29,997
iii. Small and household Manufacturing Industries (SHMI) 2015-16	9,679	24,081
iv. Construction survey 2014-15, adjusted to 2015-16	9,878	24,723
<b>B Smuggling (25% of 'A')</b>	<b>6,262</b>	<b>20,685</b>
<b>C Trade &amp; Transport Margin (40% of 'A')</b>	<b>7,515</b>	<b>24,822</b>
<b>D Domestic use of timber in 2015-16- at 2015-16 Prices (A – B –C)</b>	<b>11,272</b>	<b>37,234</b>
<b>FIREWOOD</b> [consumption by Household & Industry]	<b>32,956</b>	<b>166,707</b>
<b>Benchmark Estimates at 2015-16 prices</b>		
<b>A Household Use -2015-16</b>		
i. Total Firewood consumption ( <i>net of 30% Trade &amp; Transport Margin</i> )	44,960	169,347
ii. Value of Firewood used at 2015-16 Producers' Prices	31,472	135,478
<b>B Total Industrial Use of Firewood (CMI + SHMI) [C+D]</b>	<b>2,473</b>	<b>52,049</b>
i. Value of Firewood used in 2015-16 Prices (SHMI)	2,138	1,861
ii. Use of Firewood in CMI 2015-16	335	50,187
<b>C Trade &amp; Transport Margin (40%)</b>	<b>989</b>	<b>20,820</b>
<b>D Value of Firewood (at producer's prices) used in 2015-16 at 2015-16 Prices [B – C]</b>	<b>1,484</b>	<b>31,299</b>
<b>GRAND TOTAL (TIMBER+ FIREWOOD)</b>	<b>44,227</b>	<b>203,941</b>

## Brief on Survey on Other Private Services (OPS) 2016-17

The OPS Survey has been conducted by the Pakistan Bureau of Statistics (PBS) in both urban and rural areas of the country to provide necessary data about the contribution of selected services being undertaken in the private sector for the change of base of national accounts from 2005-06 to 2015-16. The survey has been conducted in the selected areas of urban and rural areas of the four provinces of Pakistan. However, Azad Jammu & Kashmir (AJK), Gilgit-Baltistan (GB) and FATA were excluded from the scope of the survey. Enumeration of establishments was not undertaken in the military restricted areas and other prohibited places.

The survey has been conducted to assess the value-added contributions of private services in selected industries including accommodation and food service activities (PSIC Section I), activities of real estate agents (PSIC Division 68), administrative and support service activities (PSIC Section N), education (PSIC Section P), human health and social work (PSIC Section Q), arts, entertainment and recreation (PSIC Section R), and other service activities (PSIC Section S). Repair of motor vehicles and motorcycles (PSIC Division 45) has also been covered in the survey.

As the Business Register was not updated, therefore, the survey had to be conducted through blocks. For the OPS Survey, the newly updated frame from the Sixth Population and Housing Census, Economic Census and Updating of Urban area frame in 2013 containing information on the number of establishments and their type of work was used in sample selection by the Sample Design Section of the PBS. Based on available information relating to establishments, the blocks were divided into three mutually exclusive categories i.e. **Stratum I:** Blocks with information of establishment, **Stratum II:** Blocks with information but reported zero establishments for all the categories and **Stratum III:** Blocks with no information. A representative sample, having representation of all three stratum and provinces of Pakistan, comprising of 3514 blocks was fixed for the OPS Survey 2016-17 out of which 1841 blocks belonged to urban areas and the remaining 1673 were in rural areas. Four provinces of Pakistan Out of 3514 blocks, 30 were dropped due to the law and order situation. Hence, data collection had to be arranged from 3484 blocks. The enumeration blocks of **substratum-I** were selected by Probability Proportional to size (PPS) method by taking the sum of establishments engaged in the private sector in activities including education, health, hotel & restaurant, and other services as a *measure of size*. The enumeration blocks of **substratum-II & III** were selected by the **Simple Random Sampling** method. Sample Design Section provided the sampling weights to raise the results at the national level.

Although the reference period of the survey was financial year i.e. 2016-17, the option of reporting responses on monthly basis was also provided for some of the services e.g. repair of computers and personal and household goods, other personal service activities to facilitate the respondents. However, the results have been compiled for the financial year 2016-17. The data were collected from the establishments on specially designed questionnaires through enumerators by interview method. However, to improve the coverage of big establishments engaged in education and human health activities under census parts, some data were also extracted from the annual reports of the establishments. The collected responses were edited and coded first at the PBS Regional/Field Offices and then at Headquarters, Islamabad. The data was entered through a specialized data entry program developed by the Data Processing (DP) Centre of the PBS. The final results relating to various industries were compiled by the DP Centre based on industry-specific tabulation plans. The survey results have been used for the estimation of gross value added and gross fixed capital formation for various industries under the Rebasing of National Accounts from 2005-06 to 2015-16.