

## SNA Basic Level: Lesson 4 - Production and Output

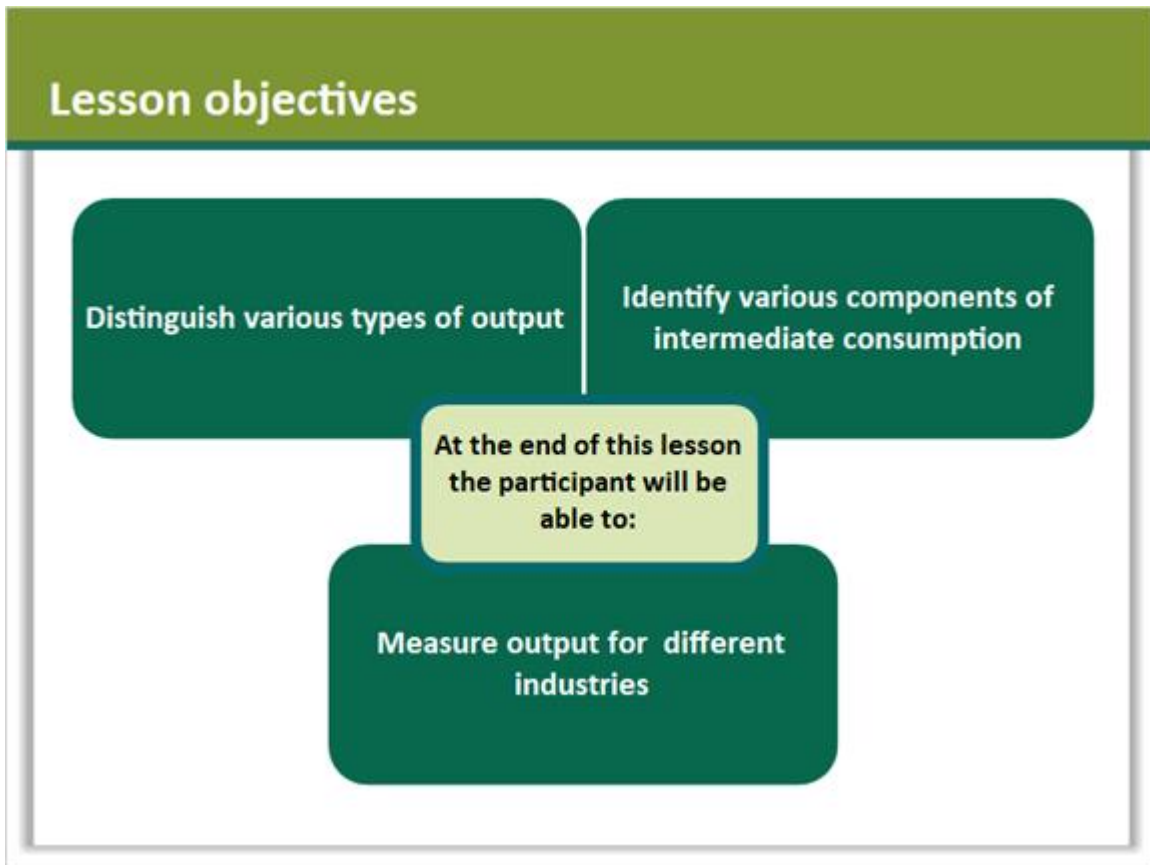
### *4.1 Production and Output*



#### **Notes:**

Welcome to the fourth lesson of the System of National Accounts Basic Course. This lessons introduces the concepts of production and output.



## 4.2 Lesson objectives



Notes:

### 4.3 Summary

## Lesson 4 - summary

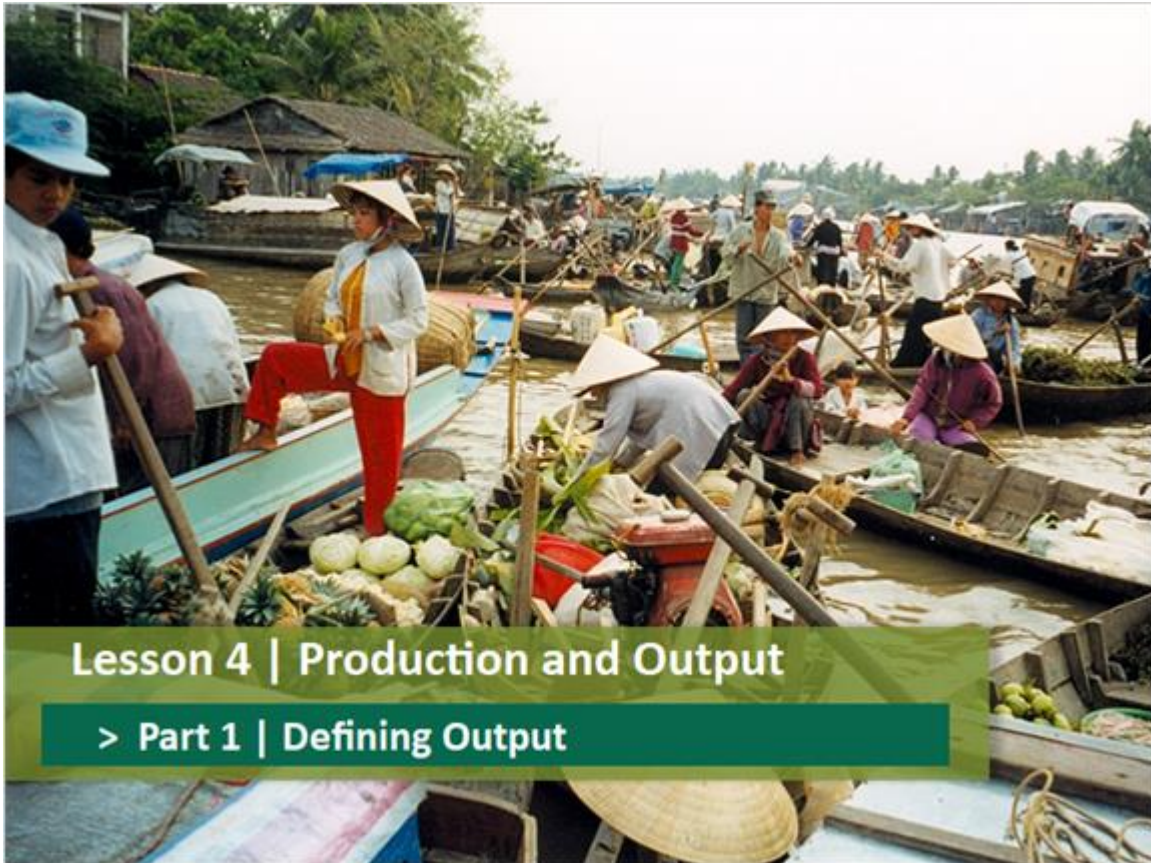
-  **Part 1 – Defining Output**
-  **Part 2 – Measuring Output**
-  **Part 3 – Intermediate Consumption**

Please click on the box to access the different parts of the lesson

**Notes:**

This lesson is divided into 3 different parts. You can directly access each section through the provided menu.

## 4.4 Defining Output



Lesson 4 | Production and Output

> Part 1 | Defining Output

### Notes:

This first section revisits the concept of production and continues with defining output.



#### ***4.5 Concept of Production***

### Concept of Production

- **Production** is an activity, carried out by an institutional unit, that uses inputs of labour, capital, and goods and services to produce outputs of goods and services.
- Value added is a measure of the value created through the production. Value added defined as the difference between the value of output of goods and services and the value of inputs of goods and services.

**Notes:**

## 4.6 Definition of Output

### Definition of Output

**Output is defined as the goods & services produced by an establishment**

**Excludes goods and services**

- a. used in an activity for which the establishment does not assume the *risk* of using the products in production, i
- b. consumed by the same establishment, except for goods and services used for *capital formation* (fixed capital or changes in inventories) or *own final consumption*. i

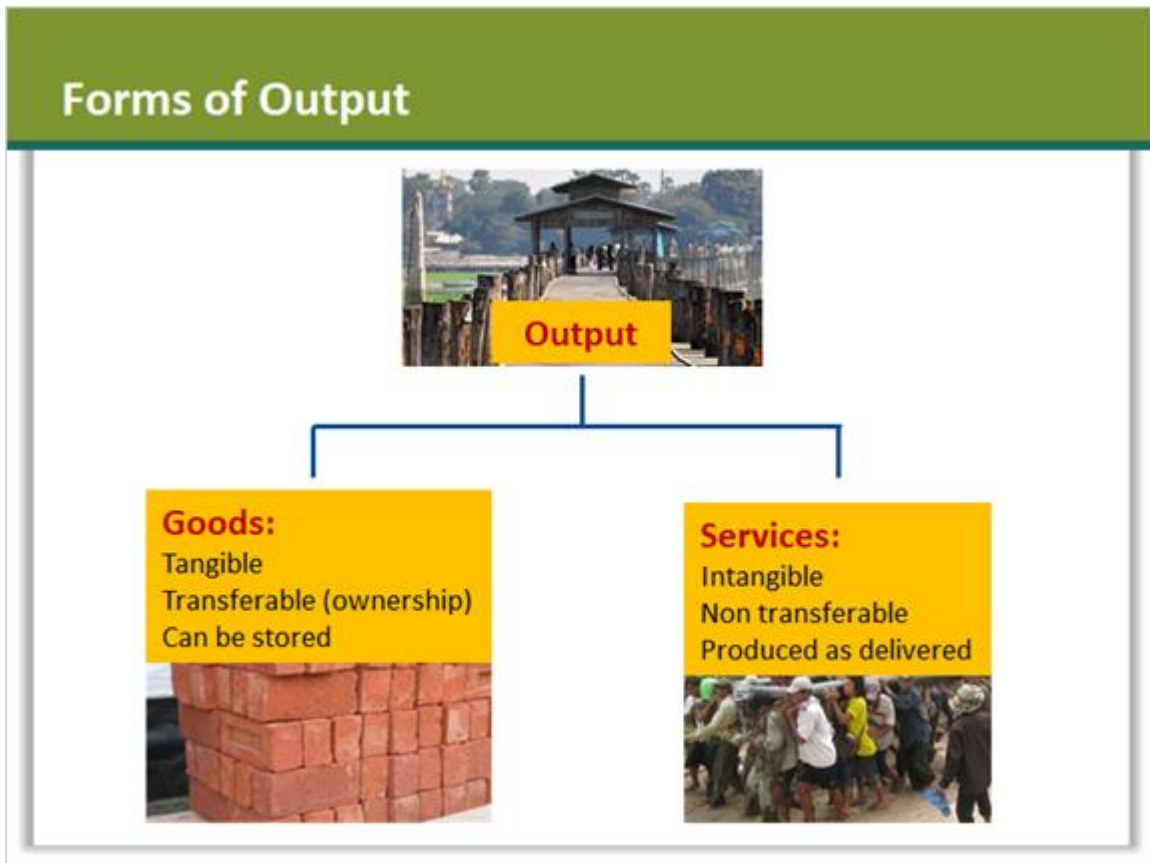
### Notes:

The '*risk* of using' stated here means either the risk of being able to sell or consume or store or use as capital goods. *Own final consumption* - like farmer growing crops for self-consumption in its household - is included in **output**. Capital goods (say a factory shed) constructed by a firm for using them for carrying out its production activities are also included in **output**.

(i) **Risk:** The '*risk* of using' stated here means either the risk of being able to sell or consume or store or use as capital goods.  
 This illustrated in the following slides.

(i) **Own final consumption:** - like farmer growing crops for self-consumption in its household – is included in **output**.  
 Capital goods (say a factory shed) constructed by a firm for using them for carrying out its production activities are also included in **output**.

## 4.7 Forms of Output



### Notes:

Output constitutes goods and services from the process of production. Goods are tangible products and can be transferred from one owner to another. They can also be stored and are treated as a stock. Services on the other hand are intangible, non-transferable and are produced as delivered.

## 4.8 Processing Service



### Notes:

Processing services are one example of how a service is produced. In this context, enterprise A manufactures cloth and contracts another enterprise B to turn the cloth into garments such as shirts, shorts etc. Enterprise A takes full risk of this process and the owner of the output while enterprise B simply charges for the service it renders to A. The service charges are an output of enterprise B and cost for enterprise B.



## 4.9 Output - Processing Service

### Output- Processing service



The enterprise A (garment-seller in the example) owns both the raw materials (cloth) sent for processing as well as the finished product (garments).



The receiving enterprise B (for example an independent tailor working for a garment-seller) does not take on the responsibility or the risk of disposal of the finished product.

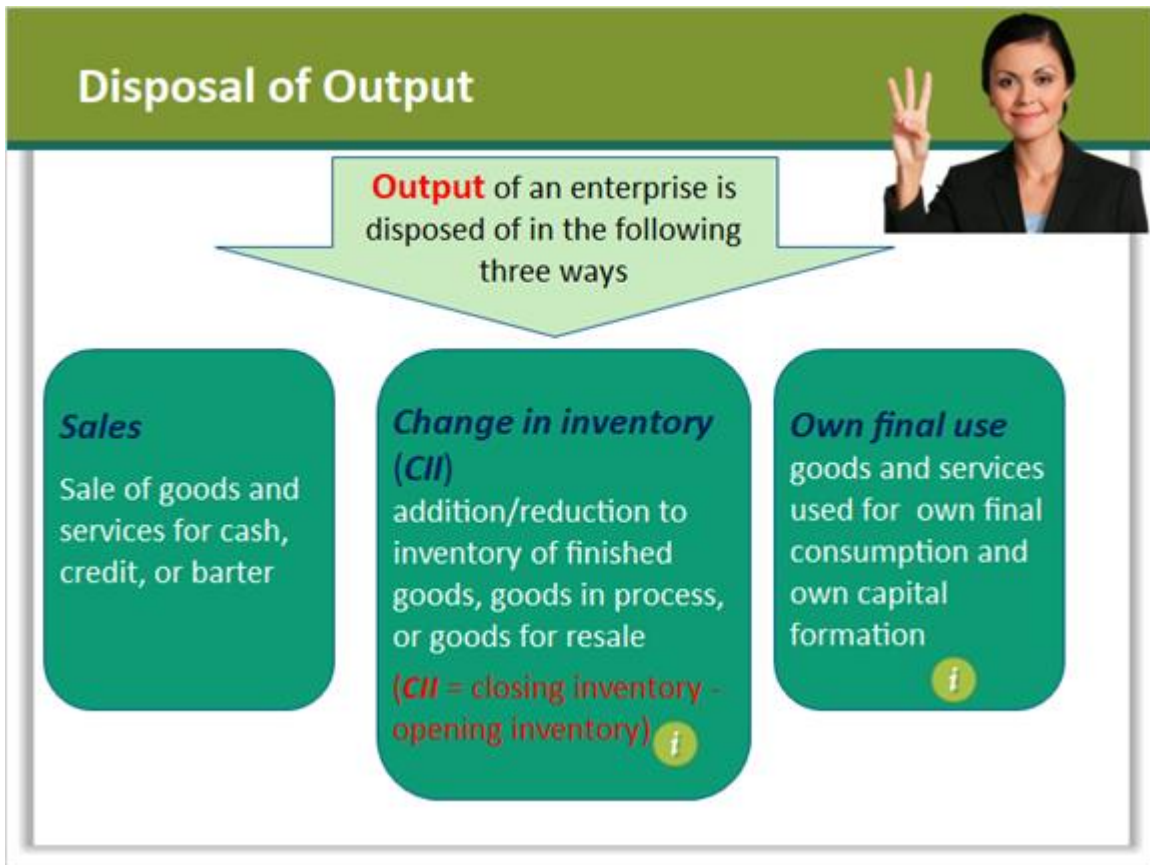
**Gross value of output:**

**GVO of A:** value of garments

**GVO of B:** *processing services* it receives from A.

Notes:

## 4.10 Disposal of Output



### Notes:

Output of an enterprise is disposed through sales, changes in stocks (inventories) and own use.

**CII = closing inventory - opening inventory:**

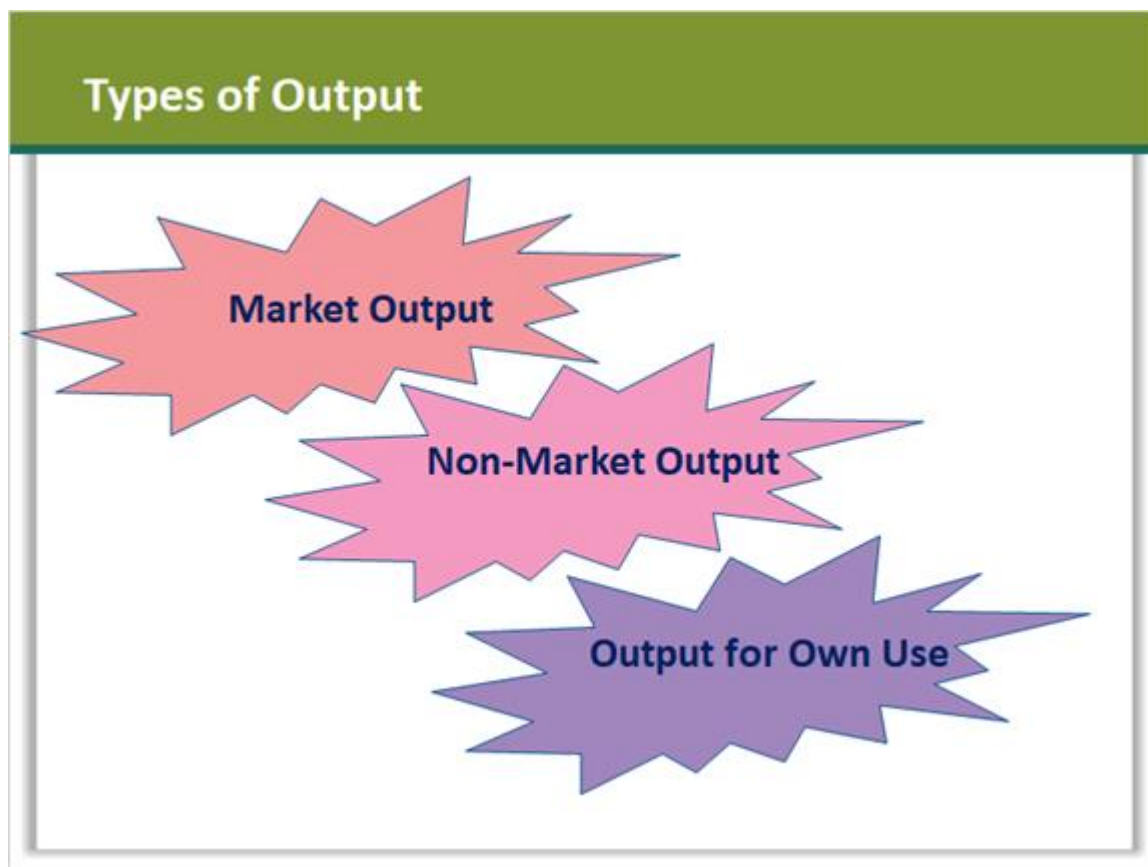
- Goods and services produced by an enterprise is mostly sold in the market.
- A part of it may remain unsold during the reporting period. This part goes to the **inventory**, resulting in a positive **CII**.
- When sold in the following reporting period, these are treated as withdrawal from inventories, negative **CII**.

**Own final use:**

Often goods are also produced for own **final use** like:

- capital goods produced by the enterprise for its own use form part of its **output** as well as its **capital formation**.
- farmers growing rice for consumption of its household.

## 4.11 Types of Output



### Notes:

#### The 2008 SNA makes a three way distinction of output:

**Market output** is intended for sale at economically significant prices. The gross value of (market) output includes the value of produced goods & services sold at economically significant prices, bartered in exchange for other goods, services or assets and used for payments in kind, including compensation in kind. The gross value of (market) output includes the value of produced goods & services used for intra-enterprise deliveries from one establishment to another that are used as intermediate inputs, entering in inventories of finished goods and work-in-progress intended for one or other of the above uses and the margins charged on the supply of goods and services (trade & transport margins, margins on the acquisition and disposal of financial assets).

**Non-market output** consists of goods and individual or collective services produced by non-profit institutions serving households (NPISHs) or government that are supplied free, or at prices that are not economically significant, to other institutional units or the community as a whole.

**Output for own use** consists of goods and services produced by different institutional units for their own use. Examples include a construction company building its own office block or a farmer growing crops for own consumption.

#### 4.12 Answer the Quiz

**Quiz**

Following is considered part of output.

1. Value of products sold in the market  
 True  False
2. Value of the flour that a small miller turns out from the wheat provided by a customer  
 True  False
3. Value of machinery purchased by a firm for use as capital goods  
 True  False

Please state whether these statements are True or False.

**Notes:**

1. Value of products sold in the market > **True**
2. Value of the flour that a small miller turns out from the wheat provided by a customer > **False**
3. Value of machinery purchased by a firm for use as capital goods > **Fales**

### 4.13 Answer the Quiz

**Quiz**

Following is considered part of output

4. Costs incurred for erecting a workshop constructed by a factory for its own use

True  False


5. Value of cars made in an automobile factory that remained unsold during the accounting period

True  False

6. Cost of fertilizers unused during the accounting period incurred by a farmer

True  False

Please state whether these statements are True or False.

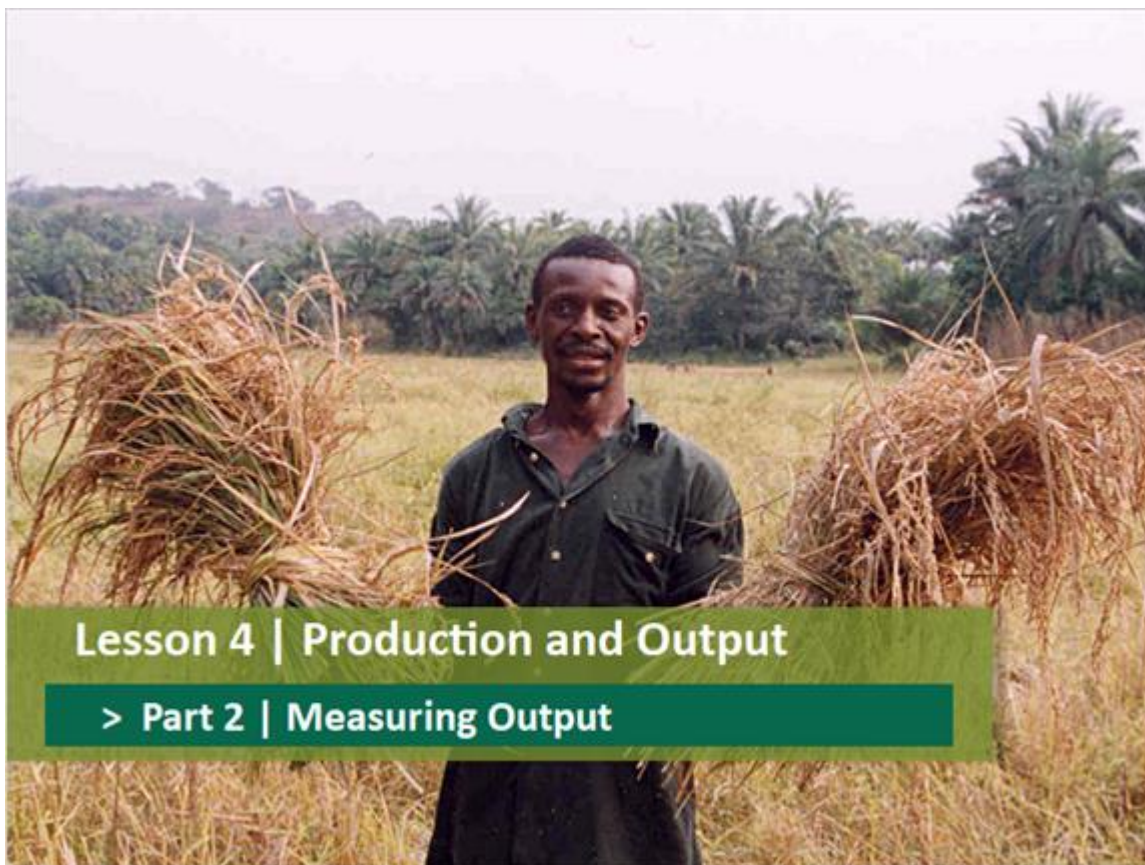


**Notes:**

4. Costs incurred for erecting a workshop constructed by a factory for its own use > **True**
5. Value of cars made in an automobile factory that remained unsold during the accounting period > **True**
6. Cost of fertilizers unused during the accounting period incurred by a farmer > **False**



## **4.14 Measuring Output**



**Notes:**

This second section will discuss the measuring output.

## 4.15 Measuring Output

### Measuring Output

- One of the first few tables of a country's NAS publication typically looks like this
- It consists of gross value added (GVA) estimates of for each industrial sector which sum up to the GDP of the country

| Industrial sector                                     | 2007-08          | 2008-09          | 2009-10          |
|---|------------------|------------------|------------------|
| <b>1. AGRICULTURE AND FORESTRY</b>                    | <b>422,233</b>   | <b>783,242</b>   | <b>862,615</b>   |
| a) Crops & horticulture                               | 401,182          | 524,876          | 601,704          |
| b) Animal Farmings                                    | 96,821           | 107,803          | 121,182          |
| c) Forest and related services                        | 24,230           | 50,563           | 39,729           |
| <b>2. MINING</b>                                      | <b>143,248</b>   | <b>177,827</b>   | <b>197,901</b>   |
| <b>3. MINING AND QUARRYING</b>                        | <b>46,451</b>    | <b>53,217</b>    | <b>43,917</b>    |
| a) Natural gas and crude petroleum                    | 25,683           | 28,413           | 31,641           |
| b) Other mining & coal                                | 20,768           | 24,804           | 12,276           |
| <b>4. MANUFACTURING</b>                               | <b>489,227</b>   | <b>811,780</b>   | <b>939,008</b>   |
| a) Large & medium scale                               | 489,736          | 576,881          | 667,587          |
| b) Small scale  | 199,491          | 234,899          | 271,421          |
| <b>5. ELECTRICITY, GAS AND WATER SUPPLY</b>           | <b>53,915</b>    | <b>55,989</b>    | <b>60,704</b>    |
| a) Electricity  | 44,511           | 43,871           | 49,311           |
| b) Gas  | 3,940            | 6,312            | 7,542            |
| c) Water  | 5,464            | 5,806            | 3,851            |
| <b>6. CONSTRUCTION</b>                                | <b>327,970</b>   | <b>375,432</b>   | <b>438,938</b>   |
| <b>7. WHOLESALE AND RETAIL TRADE</b>                  | <b>569,842</b>   | <b>666,113</b>   | <b>762,203</b>   |
| <b>8. HOTEL AND RESTAURANTS</b>                       | <b>28,532</b>    | <b>32,085</b>    | <b>38,809</b>    |
| <b>9. TRANSPORT, STORAGE &amp; COMMUNICATION</b>      | <b>432,056</b>   | <b>498,084</b>   | <b>568,974</b>   |
| a) Land transport                                     | 328,467          | 368,528          | 428,375          |
| b) Water transport                                    | 21,370           | 31,067           | 36,213           |
| c) Air transport                                      | 3,803            | 5,084            | 5,460            |
| d) Support transport services, storage                | 12,084           | 14,299           | 17,689           |
| e) Post and tele-communications                       | 76,472           | 69,096           | 81,317           |
| <b>10. FINANCIAL INTERMEDIATIONS</b>                  | <b>66,539</b>    | <b>77,456</b>    | <b>89,748</b>    |
| a) Monetary intermediation (Banks)                    | 48,348           | 57,889           | 65,544           |
| b) Insurance  | 14,256           | 16,397           | 19,500           |
| c) Other financial intermediation                     | 3,935            | 3,170            | 3,694            |
| <b>11. REAL ESTATE, RENTING AND BUSINESS ACTIVITY</b> | <b>323,569</b>   | <b>349,286</b>   | <b>390,590</b>   |
| <b>12. PUBLIC ADMINISTRATION AND DEFENCE</b>          | <b>116,555</b>   | <b>127,432</b>   | <b>144,276</b>   |
| <b>13. EDUCATION</b>                                  | <b>89,345</b>    | <b>117,740</b>   | <b>135,315</b>   |
| <b>14. HEALTH AND SOCIAL WORKS</b>                    | <b>96,220</b>    | <b>103,046</b>   | <b>113,391</b>   |
| <b>15. COMMUNITY, SOCIAL AND PERSONAL SERVICES</b>    | <b>382,832</b>   | <b>455,676</b>   | <b>502,602</b>   |
| <b>GDP at current market prices</b>                   | <b>4,137,279</b> | <b>4,724,749</b> | <b>5,478,224</b> |
| <b>Growth rate</b>                                    | <b>13.14</b>     | <b>13.65</b>     | <b>15.72</b>     |

Note: - Figures revised

#### Notes:

Your standard table for national accounts shows GDP on the basis of gross value added by industry. This table can be broken further down into market, non-market and output for own use by industry using GVA. As a general practice is to **GDP** by production-approach is compiled as the sum of **GVA**s estimated industry by industry. The industry-wise **GVA**s often referred to as distribution of **GDP** by industry / economic activity - are presented at either basic prices or at market prices. Finally, the **GDP** for the economy is always produced at market prices.

## 4.16 Measuring Output

### Measuring Output

Valuation – according to disposal

**Output can be valued using the following criteria**

**Basic Prices**

- Prices before taxes on products are added and subsidies on products are subtracted

**Market Prices**

- Actual prices agreed upon by transactors

### Notes:

To obtain **GDP** (at market prices), the industry-wise **GVA**s, if primarily estimated at *basic price*, have to be converted to *market price*. The prices to be applied for valuation of output at *market prices* depends on the mode of disposal. **Sales** - are valued at *producer price* (+ product taxes paid directly by the consumers if any). **Change in inventory**: for finished product - always at *basic price*, for purchased raw materials - always at purchaser's price. **Own final use** - always at *basic price*.

#### 4.17 Example

Example

**For example, if a farmer produces rice and**

- **sells 100 kgs** in the market at 110\$ per kg;  
     *of which*, 10\$ per kg is product tax
- **retains 50 kg** for consumption of its household; and
- **stores 15 kg** for use as seeds the next year.

?

**The farmer had 10 kg of rice from the previous year that he used as seeds for current year production.**

**What is the value of the farmers' output at market prices?**

?

The gross value of output of the farmer is 16,500  
 = 11000 [=110\*100 for the rice sold]  
 + 5000 [=50\*100 for rice retained for self-consumption]  
 + 500 [= 5\*100 for the *CII*].

**Notes:**

This example illustrates the procedure for estimating the output of rice by a farmer. Take note that rice retained for use as seed or consumption is also considered part of output

#### 4.18 Non-Market Output

### Non-Market Output

#### Non-market output

It is recommended to be measured at production costs, when it is provided without

- charge to households or
- at a nominal cost



#### Notes:

Output at production costs is the sum of intermediate consumption, compensation of employees, consumption of fixed capital and other taxes (*less* subsidies) on production.



## 4.19 Market Output

### Market Output

- Market output is valued at prices that take into account all profit margins, trade margins and net taxes.
- Prices used are economically significant to guarantee a profit



#### Notes:

The gross value of (market) output includes the value of produced goods & services sold at economically significant prices, bartered in exchange for other goods, services or assets and used for payments in kind, including compensation in kind.

## 4.20 Output for Own Use

### Output for Own Use

- **Output for own final use** consists of products retained by the producer for his own use as final consumption or capital formation
- Be valued at the basic prices at which the goods and services could be sold if offered for sale on the market



#### Notes:

Output for own use consists of goods produced by an unincorporated enterprise and consumed by the same household; services provided to households by paid domestic staff; imputed services of owner-occupied dwellings; fixed assets produced by an establishment that are retained;(own-account gross fixed capital formation); changes in inventories of finished goods and work-in-progress intended for one or other of the above uses.

Output for own final use should be valued at the basic prices at which the goods and services could be sold if offered for sale on the market. When reliable market prices cannot be obtained, the value is deemed to be equal to the sum of their costs of production (intermediate consumption, compensation of employees, net return to fixed capital, consumption of fixed capital, other taxes on production).

#### 4.21 Output of selected industries

### Output of selected industries

#### Output of Trading

The output of trading activities is *trade margin* defined as:

$$\mathbf{GVO} = \text{Sale} - \text{cost of goods sold}$$

$$\begin{aligned} \text{Cost of goods sold} = & \text{Purchases of goods for resale} \\ & + \text{opening stock of goods for resale} \\ & - \text{closing stock of goods for resale} \end{aligned}$$

$$\text{Thus, } \mathbf{GVO} = \text{Sale} + \text{closing stock} - \text{opening stock} - \text{purchases of goods for resale.}$$

#### Notes:

This is an illustration of how output and gross value added of a trading enterprise is compiled. Take note that the output of any trading enterprise is essentially its trade margins. The output is measure as the difference of total sales and the costs of purchasing items for resale. The cost of goods for resale is adjusted for stocks.

#### 4.22 Output of Trading example

### Output of Trading – an example

For example consider a retail store that recorded the following transactions in 2006:

|  |          |
|--|----------|
| Sale                                   | = 50,000 |
| Purchases of goods for sale            | = 30,000 |
| Opening stock = 4,000    Closing stock | = 5,000  |
| Utilities                              | = 200    |
| Expenditure on supplies                | = 500    |
| Other services paid                    | = 50     |

$$GVO = 50,000 + (5000 - 4000) - 30,000 = \underline{21,000}$$

$$GVA = 21,000 - (200 + 500 + 50) = 21,000 - 750 = \underline{20,250}$$



#### 4.23 Output of selected industries

### Output of selected industries

|  |   |
|--|---|
| <p style="color: #c00000; font-weight: bold;">Commercial Banks</p> <p>The gross value of output of commercial banks is</p> <p style="text-align: center;"><b>GVO</b> = service charges and other receipt from services + <b>FISIM</b> ( financial intermediation services indirectly measured)</p> | <p style="color: #c00000; font-weight: bold;">Cultivated Forests</p> <p>The <i>gross value of output</i> of cultivated assets is obtained as</p> <p style="text-align: center;"><b>GVO</b> = Sales + change in inventory + own final use</p> <ul style="list-style-type: none"> <li>• The <i>GVO</i> of cultivated forest is obtained as sum of           <ul style="list-style-type: none"> <li>■ sales,</li> <li>■ change in inventory and</li> <li>■ own final use.</li> </ul> </li> </ul> |
|--|---|

**Notes:**

**FISIM** (financial intermediation services indirectly measured) is the value of services integrated in computation of interest on deposit and loans estimated as difference between interest charged and received. Refer to the example on page 53 of the *Reading Materials* for estimation of output of cultivated forests.



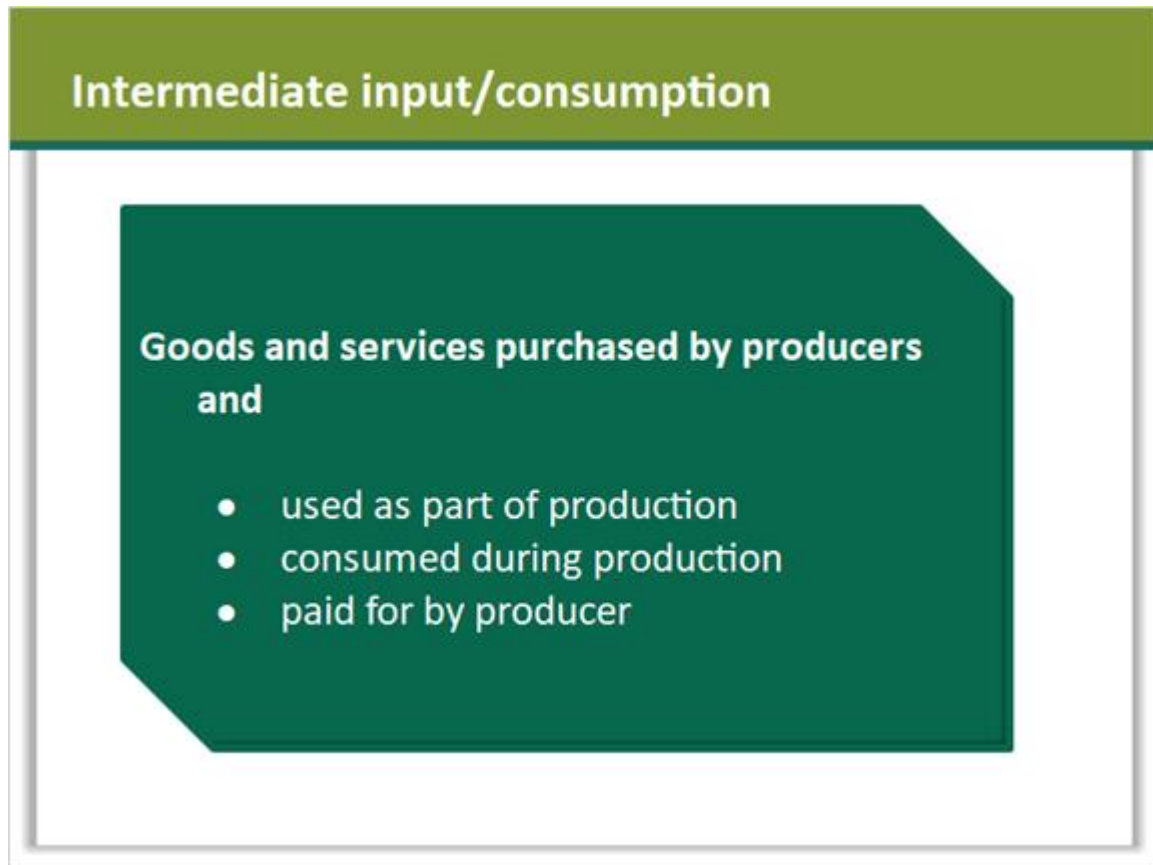
## 4.24 Intermediate Consumption



### Notes:

The third section introduces the concept of intermediate consumption.

#### **4.25 Intermediate input/consumption**



**Intermediate input/consumption**

**Goods and services purchased by producers and**

- used as part of production
- consumed during production
- paid for by producer

**Notes:**

Intermediate consumption consists of the value of all goods (non-durable) and services consumed in the process of production. It includes rentals paid on use of fixed assets, goods and services supplied by other establishments of same enterprise, goods and services used as inputs for the ancillary activity expenditure that an owner-occupier incurs on the maintenance and repair of the dwelling. Some examples are seeds, fertilizers, raw materials, fuel, electricity, water charges, chemicals, packing material, transport charges, accounting / business services, food material in restaurants, linens in hotels, wrapper in retail trade, insurance services charge, etc.

Intermediate consumption excludes value of consumption of fixed capital used, goods and services (intermediate products) produced and used within the establishment, bad debt provisions/write-offs, taxes, fines, donations, dividends, amortization of goodwill, exchange rate losses, land rent, loss on sale of assets, interest (other than allocated FISIM) and expenditures on valuables (work of arts, precious metals, etc.) as stores of value.

## 4.26 Answer the Quiz

Quiz

1. Processing services are considered part of output

True  False


2. Crops grown for own consumption by farmers are excluded from calculating GDP

True  False

3. The output of retail and wholesale services disregards trade margins

True  False

Please state whether these statements are True or False.



### Notes:

1. Processing services are considered as part of output. > **True**
2. Crops grown for own consumption by farmers are excluded from calculating GDP. > **False**
3. The output of retail and wholesale services disregards trade margins. > **False**

#### 4.27 Answer the Quiz

Quiz

4. Intermediate consumption consists of the value of all goods (non-durable) and services consumed in the process of production.

True  False


5. Output for own use is valued at market prices.

True  False

6. Dividends and salaries are examples of intermediate consumption costs.

True  False


Please state whether these statements are True or False.



**Notes:**

4. Intermediate consumption consists of the value of all goods (non-durable) and services consumed in the process of production. > **True**
5. Output for own use is valued at market prices.> **False**
6. Dividends and salaries are examples of intermediate consumption costs.> **False**

## 4.28 End of Lesson



**Congratulations!**

You have successfully completed the interactive lecture of the Lesson:

**Production and Output**

You can now answer the **"Lesson Completion Test"** to finalize the lesson.