INDIAN ECONOMY

NOTES UNIT-2

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**UNIT-2**

# Overview of Economic Resources

Business management involves making decisions about how to use resources to produce a product or service. This page introduces five general economic resources.

Economics is the study of using resources to produce goods and services as effectively and efficiently as possible to satisfy the needs and wants of consumers. In agriculture, the producer of goods or services may be an agribusiness firm manufacturing a food product that meets the desires of consumers, or agricultural producers growing a crop to meet the needs of a food processor.  To produce a product (a good or service),  a business needs resources, such as labor (i.e., workers), land (e.g., a building), equipment, cash (capital) and other resources.  Restated:  to operate a business, the manager needs resources, and one of the manager's responsibilities is to decide which resources to use and how to use them.

***Our economic system is based on the idea that the individual who provides the economic resource is entitled to be compensated.***

This page reviews how economic theory describes resources needed to produce a product.  The page also introduces an alternative description that is followed throughout these materials.  A case study provides an example that illustrates an application of the alternative description.  Additional topics on this page are intended to illustrate several applications of our understanding of economic resources.

*The discussion on this page assumes the reader has previously been introduced to the concepts of economic resources, opportunity cost, balance sheet, income statement, return on assets and return on equity.*

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### Economic Theory (Traditional) Description

Economic resources used in the production of goods and services can be categorized as

* Land (all natural resources),
* Labor (all physical and mental talents of individuals),
* Capital (all manufactured aids/tools/equipment used in producing goods and services, and cash), and
* Entrepreneurial ability (the initiator, innovator, strategic decision maker, risk taker, the relationship builder; restated, the person with the willingness and ability to initiate a business, innovate new ideas, bear the risk of owning a business, and establish business relationships with suppliers, customers, lenders, investors, and others).

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The respective returns to these resources is often described as

* rent for land;
* wages for labor;
* interest for capital; and
* Profit for the entrepreneur.

That is, the owner of land is entitled to receive rent, the worker is entitled to receive a wage, the owner of capital is entitled to an interest payment, and the entrepreneur retains any profit.

*Based on*Economic Resources (and their return), McConnell and Brue. Economics 16th ed. Boston: McGraw-Hill Irwin. 2005.

The challenge for a business manager is to decide how to use these economic resources to profitably produce a good or service.

Reminder:  **profit** can be explained as 'using economic resources to produce a product that will generate revenue that is greater than the cost of the resources being used'.

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### Alternative Description of Economic Resources

Would it be helpful to categorize the economic resources and their returns as land (rent), labor (wage), capital (interest), information (royalty), business reputation (goodwill) and assuming the risk of a net operating loss (profit)?

Restated, is there an alternative description for economic resources?  How about:

* land (natural resources),
* labor (physical and mental talents of individuals, including management skills),
* capital (cash and manufactured items [e.g., tools and equipment] used to produce other products),
* information and innovation (assembling information about market opportunities [both buying and selling] and creating production technologies),
* business reputation (industry network, member of industry's supply chain, business ethics), and
* accepting or bearing the risk of business ownership (i.e., a willingness and ability to bear the risk of owning and controlling a business that may incur a net operating loss).

This materials challenge and encourage students to refine their thinking about economic resources; recognize six categories of economic resources, rather than the traditional four categories; and to consider whether six categories can help managers clarify their decision making process.

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The respective returns to these resources would be

* rent for land;
* wages for labor (including management);
* interest for capital;
* royalty for information;
* goodwill for business reputation; and
* profit for bearing the risk of business ownership.

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*Table 1.  Traditional and Alternative Descriptions of*

*Economic Resources and Their Respective Returns*

|  |  |  |  |
| --- | --- | --- | --- |
| **Traditional Description** | **Return** | **Alternative Description** | **Return** |
| Land | Rent | Land | Rent |
| Labor | Wage | Labor | Wage |
| Capital | Interest | Capital | Interest |
| Entrepreneurial ability | Profit | Information | Royalty |
|  |  | Business Reputation | Goodwill |
|  |  | Risk | Profit |

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The primary differences between the two descriptions of economic resources are

* being a manager does not entitle an individual to the profit; a person must accept and bear the risk that the business may incur a net operating loss to be entitled to the profit;
* market information and production technology are economic resources that can be bought, sold and controlled;
* persons who have information are entitled to be compensated for their information; and
* there is a need for business relationships and a business reputation, and there is value (be it a fragile value) in having a positive business reputation.

Precision agriculture is upon agricultural producers, for example.  Producers are using global positioning technology (GPS) to identify locations, sensors to monitor growing crops and livestock, and field equipment to apply seed, fertilizer and pesticides at variable rates.  Each of these technologies relate to information.  Access to such data and application of such information in deciding how to grow agricultural commodities throughout the season illustrate that **the information age is truly upon us**.  Accordingly, our explanation of economic resources needs to be refined to reflect these changes in the agriculture industry.

Similar statements can be made about changes in consumer tastes and preferences for agricultural-based products.  Information about consumer demand, about technology to produce products that align with such demand, and about delivering the products to the consumers also are components of the information age.

Computer technology does not define the information age; computer technology is merely a significant tool for the information age.

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Additional thoughts about the resource categories:

* Management is a type of labor and managers are entitled only to a wage (not profit).
* Business owners can own each of these resources and use them in their own business, or a business owner can acquire each of these resources from another person and then use the resources in the business, such as hiring an employee, renting land or borrowing capital. For example:  
  + Capital is a combination of debt and equity capital.
  + Land is a combination of owned and leased land.
  + Labor is a combination of the owners' effort and employees' efforts.
* Information encompasses production technology and market information.
  + Market information includes information about both input and product markets; for example, where can an input be acquired and at what cost; or, where can a business find buyers for its product and what price are the buyers willing to pay for the business' product.
  + Information can be 1) public, 2) private but available for purchase, or 3) private and unavailable; the implications of these three categories of information are discussed throughout these materials.
* Some resources do not fit neatly into just one category, for example, is it labor when a person knows how to produce a product (that is, a skill of the owner or an employee that is compensated with a wage) or is that knowledge/insight a type of information?
* Risk is a combination of 1) an ability or capacity to bear risk and 2) a willingness to bear risk; both are needed to assume or bear risk.  This combination (ability and willingness) is discussed throughout these materials.
  + A business can pay someone to assume risk, e.g., insurance; but risk also is altered or managed when the business owner pays extra for an input to assure the input is always available for the business operation, e.g., a farmer contracts that the feed supplier provides a delivery each Wednesday morning.
  + A challenge for a business decision maker is to recognize that "if business owners pay for all risks to be assumed by someone else, no profit will remain for themselves".

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A comment from Saxowsky:  as a child decades ago, I remember my Dad making reference to my maternal grandfather (who died when I was a toddler) by posing these questions:

***Can business owners borrow themselves rich?   
Can business owners insure themselves poor?***

How would you answer these questions and how would you explain your answers?

A colleague observed that the alternative description of economic resources can be described as "more thoroughly explaining entrepreneurial ability."

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### Applying the Concept of Six Economic Resources

Can you think of examples where this alternative description of economic resources may impact your analysis of a situation?

* What might be the implications of government subsidized crop insurance? Who is bearing the risk of a failed crop and what might those risk-bearers want in exchange for assuming that risk?
  + Consider the preceding question.  Who is "they" in the question?  HINT -- taxpayers.  What do taxpayers expect in return for taking on risk of a poor crop by allowing tax dollars be used to subsidize crop insurance?
  + Who benefits if taxpayers assume some of the risk of crop failure?  Is the benefit shared by more than taxpayers?
* Consider crops and livestock that have been altered through biotechnology; who has invested what and what is the bio-tech entity entitled to receive (based on economic theory)? Is the developer of biotechnology entitled to a royalty payment?

To what extent can each of these resources be "purchased" if the business owner does not already possess them? To what extent does the business owner have to bring these resources to the enterprise, rather than rely on someone else to provide them?  What is the impact of the business owner "purchasing" the resources, rather than "bringing them" to the business?

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### Additional Applications of the Concept of Economic Resources

*Reminder:* a person who owns an economic resource is entitled to be compensated by the business that uses the economic resource.  Likewise, a person who owns an economic resource and uses it in his or her own business is entitled to be compensated for the use of that resource, that is, the business should return enough to the resource/business owner to compensate for using that resource in their own business.  This expectation is discussed in more detail as part of [Accounting Profit](http://www.ag.ndsu.edu/aglawandmanagement/agmgmt/coursematerials/acctprofit)and [Opportunity Cost](http://www.ag.ndsu.edu/aglawandmanagement/agmgmt/coursematerials/opportunitycost).

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The following table represents the categories of resources used in a business.

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Table 2.

|  |  |
| --- | --- |
| **Owner's Resources** | **Resources belonging to Someone Else** |
| Land that is owned by the business owner and used by the owner in the business | Land owned by another person but leased by the business owner so it can be used in the business |
| The time the owner works in the business; that is the business owner's labor used in the business (this category includes the owner's management) | The labor the owner hires from others |
| The owner's capital that owner uses in the business (equity capital); this category includes investors | The capital the owner borrowers from a lender; this category also includes unpaid creditors such as an input supplier, laborer, or landowner who has not yet been paid (debt capital) |
| The information the owner has that the owner uses in the business, e.g., marketing and production insights | The information the business owner buys from its owner, this category includes technology that is incorporated into equipment or other inputs the owner purchases from others |
| The reputation and relationships with suppliers, customers, lenders, investors and others who interact with the business | The relationships maintained by others that the business owner negotiates to participate in |
| The risk the owner accepts by owning and operating the business; this category includes investors who have committed to providing additional capital in the future if and when additional capital is needed | The risk that others accept in the business, e.g., an insurance company that is paid a premium |

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### 1. Traditional Economic System

The traditional economic system is the most traditional and ancient types of economies in the world. Vast portions of the world still function under a traditional economic system. These areas tend to be rural, second- or third-world, and closely tied to the land, usually through farming. In general, in this type of economic system, a [surplus](http://www.intelligenteconomist.com/consumer-and-producer-surplus/) would be rare. Each member of a traditional economy has a more specific and pronounced role, and these societies tend to be very close-knit and socially satisfied. However, they do lack access to technology and advanced medicine.

### 2. Command Economic System

In a command economic system, a large part of the economic system is controlled by a centralized power. For example, in the USSR most decisions were made by the central government. This type of economy was the core of the communist philosophy.

Since the government is such a central feature of the economy, it is often involved in everything from planning to redistributing resources. A command economy is capable of creating a healthy supply of its resources, and it rewards its people with affordable prices. This capability also means that the government usually owns all the critical industries like utilities, aviation, and railroad.

n a command economy, it is theoretically possible for the government to create enough jobs and provide goods and services at an affordable rate. However, in reality, most command economies tend to focus on the most valuable resources like oil.

China or D.P.R.K. (North Korea) are examples of command economies.

#### Advantages of Command Economic Systems

* If executed correctly, the government can mobilize resources on a massive scale. This mobility can provide jobs for almost all of the citizens.
* The government can focus on the good of society rather than an individual. This focus could lead to a more efficient use of resources.

#### Disadvantages of Command Economic Systems

* It is hard for central planners to provide for everyone’s needs. This challenge forces the government to ration because it cannot calculate demand since it sets prices.
* There is a lack of innovation since there is no need to take any risk. Workers are also forced to pursue jobs the government deems fit.

### 3. Market Economic System

In a [free market economy](https://www.intelligenteconomist.com/free-market/), firms and households act in self-interest to determine how resources get allocated, what goods get produced and who buys the goods. This is opposite to how a command economy works, where the central government gets to keep the profits.

There is no government intervention in a pure market economy (“[*laissez-faire*](http://www.economist.com/research/Economics/alphabetic.cfm?letter=L#laissez-faire)“). However, no truly free market economy exists in the world. For example, while America is a capitalist nation, our government still regulates (or attempts to control) fair trade, government programs, honest business, monopolies, etc.

In this type of economy, there is a separation of the government and the market. This separation prevents the government from becoming too powerful and keeps their interests aligned with that of the markets.

Historically, Hong Kong is considered an example of a free market society.

#### Advantages of a Free Market Economy

* Consumers pay the highest price they want to, and businesses only produce profitable goods and services. There is a lot of incentive for entrepreneurship.
* This competition for resources leads to the most efficient use of the factors of production since businesses are very competitive.
* Businesses invest heavily in research and development. There is an incentive for constant innovation as companies compete to provide better products for consumers.

#### Disadvantages of a Free Market Economy

* Due to the fiercely competitive nature of a free market, businesses will not care for the disadvantaged like the elderly or disabled. This lack of focus on societal benefit leads to higher income inequality.
* Since the market is driven solely by self-interest, economic needs have a priority over social and human needs like providing healthcare for the poor. Consumers can also be exploited by monopolies.

### 4. Mixed Economic System

A mixed economy is a combination of different types of economic systems. This economic system is a cross between a market economy and command economy. In the most common types of mixed economies, the market is more or less free of government ownership except for a few key areas like transportation or sensitive industries like defense and railroad.

However, the government is also usually involved in the regulation of private businesses. The idea behind a mixed economy was to use the best of both worlds – incorporate policies that are socialist and capitalist.

To a certain extent, most countries have a mixed economic system. For example, India and France are mixed economies.

#### Advantages of Mixed Economies

* There is less government intervention than a command economy. This results in private businesses that can run more efficiently and cut costs down than a government entity might.
* The government can intervene to correct [market failures](https://www.intelligenteconomist.com/market-failures/). For example, most governments will come in and break up large companies if they abuse monopoly power. Another example could be the taxation of harmful products like cigarettes to reduce a [negative externality of consumption](https://www.intelligenteconomist.com/externalities/).
* Governments can create safety net programs like healthcare or social security.
* In a mixed economy, governments can use taxation policies to [redistribute income](https://www.intelligenteconomist.com/equitable-distribution-of-income/) and reduce inequality.

#### Disadvantages of Mixed Economies

* There are criticisms from both sides arguing that sometimes there is too much government intervention, and sometimes there isn’t enough.
* A common problem is that the state run industries are often subsidized by the government and run into large debts because they are uncompetitive.

# Factors affecting economic development

Economic development implies an improvement in economic welfare through higher real incomes and other welfare indices such as improved literacy, better infrastructure, reduced poverty and better health care.

Economic development requires a degree of political stability, investment and mixture of public and private initiatives to increase economic potential.

The main factors affecting economic development include

* **Levels of infrastructure** – e.g. transport and communication. In recent years, economic development in Central Africa has been improved due to increased investment in roads, railways and seaports. Part of this investment has come from Chinese companies who have a vested interest in transporting raw materials from Africa to China.
* **Education**. Levels and standards of education have a significant influence on labour productivity. Without basic literacy and numeracy, it is difficult for an economy to develop from manual labour to new higher tech industries in the service sector. For example, good levels of education in India have given opportunities for growth in service industries, such as IT and call centres.
* **Levels of inward investment**. Developing countries that can attract inward investment can see significant growth in development due to higher levels of capital and benefits of attracting multinational companies into their economy. For newly industrialised countries (NICs), inward investment has played a significant role in increasing economic development. For example in 2011, inward investment in Brazil stood at $101bn.
* **Levels of savings/capital**In growth models, such as [Harod Domar,](https://www.economicshelp.org/blog/498/economics/harod-domar-model-of-growth-and-its-limitations/) levels of savings and capital are seen as a key factor in determining economic growth. Higher savings enables a virtuous circle of increased investment, higher growth, and therefore, higher savings.
* **Political stability / Law and order**. Political stability and the protection of private property was ranked as the most important factors for encouraging firms to invest in developing economies. Any sign of instability increases the economic and personal risk of investing in developing countries.

World Bank (2017) report [on inward investment](https://www.worldbank.org/en/topic/competitiveness/publication/global-investment-competitiveness-report)

The biggest block to development is prolonged civil unrest/military conflict as this causes investment to dry up and resources to be wasted in unproductive means.

* **Macroeconomic stability.** Similar to political stability, macroeconomic stability encourages investment and development. This involves low rates of inflation and exchange rate stability. Rapid devaluation can cause capital flight and a decline in growth.
* **Labour mobility**. Is labour able to move from relatively unproductive agriculture to more productive manufacturing?
* **Foreign aid**. Targeted aid, can help improve infrastructure and living standards. It can be important for developing economies with low levels of savings and capital investment. Aid depends on how it is used – whether it is tied to trade deals or used to overcome market failure in areas such as education and health care. There is also some criticism of foreign aid that it can influence incentives and
* **Regional effects**. Economic development is strongly influenced by the development of an economies neighbours. For example, in the 1980s and 1990s, south east Asia showed strong levels of economic growth and development. However, Sub-Saharan African countries experienced very slow growth. This is partly due to the [gravity effect](https://www.economicshelp.org/blog/27917/concepts/gravity-theory-economics/) – the theory that trade is most profitable and efficient with near neighbours. If a neighbour does well, there tends to be spill over effects, such as increased trade and increased investment.
* **Natural resources**. Ceteris paribus countries with higher levels of natural resources can use this for economic development. For example, the revenues gained from oil have enabled the Gulf states to develop rapidly gaining high levels of real GDP. For African and Asian countries, raw materials are an important source of revenue and export earnings which enables higher development.
  + However, the link between natural resources and development is not straightforward. One theory suggests raw materials can lead to a ‘[resource curse](https://www.economicshelp.org/blog/glossary/resource-curse/)‘ where an economy is stuck in producing primary products with no incentive to diversify the economy. It can also depend on whether natural resources are owned by developing economy and actually filter through to different sections of society.
* **Tax rates and levels of corruption –** e.g what percentage of tax rates are actually collected and spent on public services. For foreign multinationals, a low tax rate may be important to encourage investment. However, there needs to be a balance as the government need to collect tax to fund public services and public infrastructure.
* **Free trade vs protectionism**. An important debate in economic development is between the benefits of free trade versus protectionism. Removal of tariff barries can lead to a rise in exports, which contribute towards economic development. Asian countries, such as Korea, Taiwan and China have all benefitted from removal in tariffs. However, for developing economies stuck in producing primary products (where they have static comparative advantage) there is a strong case for temporary tariffs to enable new infant industries to develop.
* **Tourism**. For developing economies with an attractive climate and environment, tourism can be an important source of foreign earnings and incentive to develop infrastructure and new hotels.

# Balanced and unbalanced economic growth

A balanced economy suggests that economic growth is sustainable in the long-term, and the economy is also growing across different sectors – and not focused on one particular industry or area.

A balanced economy has several key features.

* **Low inflation** – avoiding an unsustainable [boom and bust](http://econ.economicshelp.org/2008/11/boom-and-bust-economic-cycles.html) period of economic growth.
* **A balance between saving and consumption**. An unbalanced economy would consume a  high % of income. A more balanced economy would be saving a significant percentage of income to finance investment and future productive capacity. Without sufficient savings and investment, long-term growth will be constrained.
* **Trade balance**. A balanced economy would have a balance between exports and imports – a low (or at least sustainable) current account deficit. If the economy is relying on imports and running a current account deficit, this is a sign of imbalance. A large current account deficit would need to be financed by capital inflows.
* **Housing market which is stable**. A stable housing market helps to balance the economy. A rapid rise in house prices could cause a positive wealth effect and a temporary rise in spending – which later proves unsustainable. A booming housing market raises fear prices could fall in future.
* **Sustainable bank lending.** A balanced economy needs a strong and stable finance sector. Firms need access to credit, but unlike the credit crunch, the bank lending needs to be sustainable and not dependent on other bank loans.
* **Growth across different sectors**. An economy relying on the primary sector for growth is more at risk of fluctuating commodity prices. An economy reliant on growth in only services may struggle to gain sufficient export revenues.
* **Equality of distribution**. Growth evenly distributed across income spectrums and across different geographical regions.
* **Sustainable levels of debt** (Government, private and corporate). If economic growth is financed by debt, then this growth may prove unsustainable, and it may only prove temporary.

### Theory of unbalanced growth

We tend to think ‘unbalanced’ growth is harmful to the long-term prospects of the economy. However, one theory of unbalanced growth suggests – it is not harmful but actually a necessary part of economic development.

The theory of unbalanced growth is associated with Albert O. Hirschman. [Albert O. Hirschman. [The Strategy of Economic Development](http://journals.sagepub.com/doi/abs/10.1177/000271625932500118). Yale University Press, 1958]

Hirschman notes it is not possible to always have broad growth across different sectors. He argues that as long as there is growth in some sector, it will create a dynamic pressure to grow other sectors at a later stage. Hirschman even argues that unbalanced growth and the dynamic tensions it creates helps to speed up economic development.

For example, if there is growth in primary product sector, this creates a complementary investment in transport to get the goods to the export market.

Secondly, if there is growth in one sector, there will be a multiplier effect, and this will cause induced investment in related industries. For example, if mining jobs are created, miners will demand more retail services.

Thirdly, if the mining industry develops and creates more infrastructure, this will later benefit different industries which can make use of the same infrastructure. For example, we built railways to transport coal, but now these railways are used by commuters to get into the city and work in the service sector.

**Evaluation**

Nevertheless, this theory of unbalanced growth is debated.

### Dutch disease – the problem of being resource rich

[Dutch Disease](https://www.economicshelp.org/blog/11977/oil/dutch-disease/) is a model goes to the other extreme and says that an economy which focuses on producing primary products will not get this induced investment, but can crowd out other sectors of the economy. An economy which becomes resource-rich creates problems, such as:

* Appreciation in exchange rate making exports uncompetitive
* Resource attracts investment and labour away from other manufacturing sectors
* Over time, manufacturing sector shrinks as it is crowded out by more profitable resource industry.

But, the price of raw materials can be volatile. Economies like Russia and Venezuela which become dependent on producing oil can have serious economic problems – when the price of oil falls. Arguably, it is desirable for oil rich countries to use proceeds to diversify and invest for the future. Norway is seen as one example.

# Economic Resources: types and definitions

There are four fundamental **types of economic resources**: Land, Labor, Capital, Entrepreneurship

## Economic resource 1: Land

Land is an **economic resource** that includes all natural physical resources like gold, iron, silver, oil etc. Some countries have very rich natural resources and by utilizing these resources they enrich their economy to the peak.  
  
Such as the oil and gas development of North Sea in Norway and Britain or the very high productivity of vast area of farm lands in the United States and Canada. Some other developed countries like Japan have smaller [**economic resources**](https://www.docsity.com/en/resource_markets_-_principles_of_microeconomics_-_lecture_slides_/235121/). Japan is the second largest economy of the world but reliant on imported oil.

## Economic resource 2: Labor

The human input in the production or manufacturing process is known as **labor**. Workers have different work capacity. The work capacity of each worker is based on his own training, education and work experience.  
  
This work capacity is matters in the size and quality of work force. To achieve the **economic growth** the raise in the quality and size of workforce is very essential.

## Economic resource 3: Capital

In economics, **Capital** is a term that means investment in the capital goods. So, that can be used to manufacture other goods and services in future.  
Following are the factors of capital:  
  
**Fixed Capital**  
It includes new technologies, factories, buildings, machinery and other equipments.  
  
**Working Capital**  
It is the stock of finished goods or components or semi-finished goods or components. These goods or components will be utilized in near future.  
  
**Capital productivity**  
New features of capital building, machinery or technology are commonly used to improve the productivity of the labor. Such as the new ways of farming helps to enhance the productivity of the agriculture sector and give more valuable jobs in this sector which motivates people to come out for work.  
  
**Infrastructure**  
It is a stock of capital that is used to maintain the whole economic system. Such as roads, railway tracks, airports etc.

## Economic resource 4: Entrepreneurship

The **Entrepreneur**is person or individual who wants to supply the product to the market, in order to make profit.  **Entrepreneurs**usually invest their own capital in their business. This financial capital is generally based on their savings and they take risks linked to their investments. This risk-taking can be rewarded by the profit of the business. Entrepreneurship is, thus, an important **economic resource**.

**POPULATION EXPLOSION IN INDIA: CAUSES AND EFFECTS!**

Our country has to come to terms with the highly competitive world economy. India will be looking for a leader who can be bold enough to take up the issue of con­trolling population explosion seriously. Unless India can find such a leader, its future cannot be bright.

The post-World War in period (i.e., period after 1945) is generally referred to as a period of population explosion in demographic parlance. It is a pe­riod in which the world population including population in India, experienced unprecedented and accelerated growth leading to Population explosion. For example, while India’s population was estimated to be 100 million in 1600 A.D., it was 120 million in 1800, 238.4 million in 1901, 361.1 million in 1951, 846.3 million in 1991, and estimated to be 100 million in August 1999.

This means that while it in­creased by 20 per cent in 200 years between 1600 and 1800 A.D and by about 100 per cent (exactly 98.66%) in next 100 years between 1800 and 1901, it increased by 319 per cent in the following 99 years (or say about 100 years between 1901 and 1999).

If the growth of population is sub-divided into three distinct periods, say:

(a) From 1901 to 1931,

(b) 1931-1961, and

(c) 1961-1999,

We find that the first period of 30 years witnessed an addition of only 17 per cent, the next 30 years saw an increase of 57.4 per cent, and in the following 38 years (or about four decades), India experi­enced an explosive growth of 127.4 per cent. Thus, population growth prior to 1921 was sporadic, between 1921 and 1951 it was rapid, and after 1951 it can be called explosive.

**Increase in Population:**

According to the National Population Policy draft prepared in 1997 by the Ministry of Health and Family Welfare, the goal of total fertility rate (TFR) of 2.1 will be achieved by the year 2010. But, according to the pro­jections made by the Registrar General, the TFR of 2.1 would not be reached before the year 2026, if the existing demographic trends contin­ued. This shows how lackadaisical the government and the nation have been in controlling the population growth.

The phenomenon of galloping population in India has the following aspects:

i. Every sixth person on the globe today is an Indian, and by the turn of the century, every fifth living person will be an Indian.

ii. India adds 46,500 persons to its population every day.

iii. Addition to India’s population is an equivalent of a Chandigarh (with 6, 40,725 population) in nine days, two Bhopal’s a month, and an Aus­tralia (with 18.52 million population) every eight months. During 1981-91, addition to the population was to the tune of 163 million, equaling to little less than the combined population of France (58.683 million), Britain (58.649 million) and Italy (57.369 million).

By 2035, India would overtake China as the world’s most populous nation. While the rate of annual population growth in India is 3.5 per cent, in China it is 2.1 per cent. Thus, while China’s population would double in 60 years, India’s population would double in 34 years.

v. Around 49 per cent of the increase in India’s population in one dec­ade is in the five states of Bihar, Madhya Pradesh, Assam, Rajasthan and Uttar Pradesh (known as BIMARU states).

vi. More than three times as many couples enter the reproductive span than those leaving it, with the fertility rate of the younger group be­ing three times higher than that of those passing out of the reproductive range.

vii. At the present rate of growth, life for most Indians would be unbearable—medical facilities would be difficult to provide, expenses on education, housing, etc., would be exorbitant, technical and professional education would become the exclusive prerogative or the elite, and the scarcity of food would once again plunge more than half of the nation below the poverty line.

In analysing the growth of population or demographic transition, it may be averred that a country goes through three different phases, having different tendency in each stage. These three phases show a sequence of high birth – high death, high birth – low death, and low birth low death.

In the first ‘stationary’ phase, both fertility and mortality rates are high and uncontrolled, so that the growth of population is low. The sec­ond phase is ‘expansion’ phase because birth-rate is considerably high and death-rate keeps declining. The third phase is of ‘decline type’. India is still going through the second phase, where fertility remains above mor­tality.

Fertility will be lowered only when economic and social conditions are improved to a certain level. Some indices of economic and social change are urbanisation, industrialisation (both of which reduce the importance of the family and kinship ties for achieving goals), literacy, and infant mortality.

**Causes of Population Growth:**

After 1951, the growth of population is explained by a decline in mortal­ity due to availability of curative and preventive medicines, control of famines and epidemics, reduction of wars, and a large base population.

We may identify the following important causes for population ex­plosion:

**Widening Gap between Birth and Death Rates:**

The average annual birth rate in India which was 42 per thousand popula­tion in 1951-61 came down to 28.1 per thousand in 1996. The death rate also came down from over 27 per thousand populations in 1951-61 to 9.1 in 1996 (Manpower Profile, 1998-37).

Thus, since birth rate has shown negligible decline and death rate has gone down rather sharply, the widen­ing gap has increased our population rapidly. The total fertility rate (average number of children born per woman) came down from about six in the fifties to 4.4 in 1993-94. If we add the annual figures of abortions (between 10 and 11 million, including 4 million spontaneous and 6.7 million induced) to the annual number of births (17 million) that take place in the country, we come to the shocking conclusion that in this age of family planning, one out of every five Indian women in the repro­ductive age group of 15-45 years is pregnant at any time.

**Low Age at Marriage:**

Child marriages have been very common in our country. According to the 1931 census, 72 per cent marriages in India were performed before 15 years of age and 34 per cent before ten years of age. Since then, there has been a continuous increase in the mean age of marriage among both males and females. Though the mean age of marriage is estimated to be continu­ously increasing, yet a large number of girls even today marry at an age at which they are not ready for marriage either socially and emotionally, or psychologically and chronologically.

The infant mortality rate is directly related to the age of women at marriage. The average infant mortality rate in India was 74 per 1,000 live- births in 1995—in rural areas it was 80 and in urban areas it was 49. If we divide women in three groups in terms of age at marriage, namely, below 18, 18-20, and 21 and above, the infant mortality rate in each of these three groups in rural areas (in 1978) was 141, 112, and 85 respectively while in the urban areas, it was 78,66 and 46 respectively.

If we relate fer­tility rates (average number of children born per woman) with age groups, we find that as the age group increases, the fertility rate decreases. If population growth is to be controlled, marriage of females (in rural and urban areas) is to be preferred in 21-23 or 23-25 age groups rather than in 15-18 or 18-21 age groups.

**High Illiteracy:**

has a direct link with female education, and female edu­cation is directly associated with age at marriage, general status of women, their fertility and infant mortality rate, and so forth. According to the lat­est 1999 figures given by NSS, the overall literacy percentage in India was 61 as compared to 52.21 in 1991 and 43.56 in 1981.

The male literacy per­centage in 1991 was 64.13 while the female literacy percentage is 39.29 {Ibid-Al). In 1999, it is estimated to be 73 per cent and 49 per cent respec­tively. Education makes a person liberal, broad-minded, open to new ideas, and rational. If both men and women are educated, they will easily understand the logic of planning their family, but if either of them or both of them are illiterate, they would be more orthodox, illogical and re­ligious-minded.

This is evident from the fact that Kerala which has the overall literacy rate of 89.81 per cent and female literacy rate of 86.91 per cent (in 1991) has the lowest birth rate (17.8 per thousand) while Rajasthan’s appallingly low female literacy rate of 20.44 per cent gives rise to the third highest birth rate in the country (34.6 per thou­sand), the highest having been registered in Uttar Pradesh (36 per thousand), followed by Madhya Pradesh (34.7 per one thousand). These statistical figures hold good for most of the other states too.

**Religious Attitude towards Family Planning:**

The religiously orthodox and conservative people are against the use of family planning measures. There are women who disfavour family plan­ning on the plea that they cannot go against the wishes of God. There are some women who argue that the purpose of a woman’s life is to bear chil­dren. Other women adopt a passive attitude: “If I am destined to have many children, I will have them. If not, I will not have them. Why should I bother about it”.

Indian Muslims have a higher birth rate as well as fertility rate than the Hindus (Muslim women having fertility rate of 4.4 as compared to 3.3 among Hindu women). According to a survey conducted among the Mus­lims by the Operations Research Group in 1978, although a majority of both male and female respondents were aware of modern family planning methods, they were either not using them on religious grounds or they lacked clear adequate knowledge about them.

The survey conducted by the Population Research Centre, Udaipur in 1992 showed that out of 218 Muslim male interviewees, 43.1 per cent approved family planning, 26.6 per cent disapproved it, and 30.3 per cent did not give specific response. In comparison to this, out of 2748 Hindu male interviewees, 61.7 per cent approved it, 14.5 per cent disapproved it and 23.8 per cent were unsure. This indicates that Muslims are more conservative towards family planning than the Hindus.

**Other Causes:**

Some of the other causes responsible for the increase in population are: joint family system and lack of responsibility of young couples in these families to bring up their children, lack of recreational facilities, and lack of information or wrong information about the adverse effects of vasec­tomy, tubectomy and the loop.

Many poor parents produce children not because they are ignorant but because they need them. This is evident from that fact that there are some 35 million child workers in our country. If families stop those chil­dren from working, their family incomes will be terribly diminished.

Producing more children by the poor people illustrates the paradox of population-poverty interrelationship. Poverty is both the cause and ef­fect of the population growth. Having produced many children (sons) to combat one’s family’s growing needs, the parents are forced to keep them out of school to supplement their household income.

In turn, unlettered and ignorant children will inherit their father’s lot and like him, opt to have as many sons as are needed to work for sustenance. Ironically, a huge family size is the poor man’s only way to combat poverty caused by the population boom.

**Effects of Population Explosion:**

The growth of population has a direct effect on the living standards of people. This is why, despite our spectacular progress in the agricultural and industrial spheres since independence, our per capita income has not risen appreciably.

How has the population growth affected India? It is estimated that 25 million people (out of 1000 million people, i.e., 2.5%) are homeless, 171 million people (i.e., 17%) have no access to safe drinking water, 328.9 mil­lion adults (i.e., 33%) are illiterate, 53 per cent children below five years are underweight, and country as a whole has 135th position in the World Human Development Index.

The appalling overcrowding of our cities (which like cancerous growths are mushrooming unchecked with slums proliferating) has brought about a virtual breakdown of transportation, electricity and other services. It has also led to the rise of crime and an in­crease in violence in the urban and the semi-urban areas. All this has been directly fuelled by the addition of about 17 million people every year or an annual population growth rate of 2.14.

If the population con­tinues to increase at this rate, in a few years from now, we will have an army of unemployed, hungry and desperate people who will threaten the very foundations of the social, economic and political systems and institu­tions of the country.

All sectoral demands have a numerical dimension. Whether it is education, employment, health, housing, water supply or any other sector, the perennial question is for how many? Even for the present population of 100 crore (in August 1999), it is futile to think of jobs for all or shelter for all or health protection programmes for all by 2000 A.D. especially when another 1.7 crore people will have been added and, hence need to be accommodated.

It has been calculated that for every addition of about 165 lakh peo­ple every year in our country, we will require every year 1.5 lakh primary and middle schools, 10 thousand higher secondary schools, 50 lakh pri­mary and middle school teachers, 1.5 lakh higher secondary school teachers, 5,000 hospitals and dispensaries, 2,000 primary health centres, two lakh hospital beds, 50 thousand doctors, 25 thousand nurses, 5 lakh tonnes cereals, 25,000 metres of cloth and 2.5 million houses and 30 lakh new jobs (The Hindustan Times, July 4,1997).

The impact of the population boom on the quality of life is now being examined in terms of Household Misery Index (HMI), i.e., in terms of peoples’ deprivations and basic needs. The HMI index has five parameters: pakka housing, safe drinking water, electricity, sanita­tion (toilets), and fuel for cooking. Some scholars have examined it (population boom) in terms of effect on human resources (literacy, health, etc.).

At present, 49.1 per cent people in India have no electricity in their households, 69.7 per cent have no toilets (flush or others), 51.5 per cent have no pakka houses, and 19 per cent have no safe drinking water. If we compare Human Development Index (HDI) on certain selected items in India with some other countries in 1990, we notice the serious effects of increasing population on the quality of our life.

According to 1996 UNDP report, India invests only 14 dol­lars (about Rs. 500) per person annually on health and education unlike other developing countries like South Korea and Malaysia which spend 150 to 160 dollars. The impact of this insufficient sum on the 36 per cent population of our country living below the poverty line (i.e., about 34 crore people) can easily be imagined.

What do these figures predict? The countdown for India’s great leap into the twenty-first century has begun. In the beginning of the 1970s, there was light and hope. Then came darkness in a Biblical reversal in the 1980s.

Population explosion, militancy and separatism gathered momen­tum. Matters touched rock-bottom as the 1980s staggered to a close and we entered and then crossed the middle of the 1990s. What do the remain­ing fifteen months of the 1990s have in store for us?

Our country has to come to terms with the highly competitive world economy. India will be looking for a leader who can be bold enough to take up the issue of con­trolling population explosion seriously. Unless India can find such a leader, its future cannot be bright.

Social
• Services like Healthcare and education cant
cope with the rapid increase in population , so
not everyone has acce...India Present Situation
• High proportion of its population in
agriculture (62%), and reside in rural
areas (68.84%)
• Hig...

High Birth rate
The current rate of population growth in India is 1.58% and
the total fertility rate is 2.55. (2013)
Unm...

High Birth rate
Religious beliefs, Traditions and Cultural Norms:
In Islam, one of the leading religions of India, child...

# Relationship between population growth and economic development

The relationship between population growth and economic development has been a topic under debate for a long time. Different economists have brought up their views as to the definitions of population growth, economic development, the relationship between them and how they impact or affect the varying economies (i.e. less developed economies, developed economies and transition economies). The popular Malthus theory postulates that as population increased in a geometric mode, food supply only increased in an arithmetic mode. This is also the view of Todaro et. al. (2009) when he says that Malthus’ postulation of population growth of a country was growing at a geometric rate and can be repressed with a decline in food supply. The food supply he said, will grow at an arithmetic rate as diminishing returns are likely to affect agricultural land produce over time and an increase in population also resulting in competition over the use of land with the opportunity cost of either agricultural use or other needs such as housing, hospitals etc.

The purpose of the course work is a critical evaluation of the effects of population growth on economic development in light of key issues that will help our understanding especially with the use of reviews of various literature and culminating in a possible conclusion.

## Economic Development

Economic development can be understood to mean the process by which the quality of life of the citizenry or population is improved. This can be attained by increasing the standards of living of the people – especially by increasing the consumption level of food, healthcare, education etc; institute political, social and economic sectors that advance the values for human dignity thereby boosting the peoples’ sense of worth and raising the opportunities enjoyed by the people by way of increasing the variety of goods and services available to them.

Economic development can equally mean a more improved state of the economy transiting from a lower level of activity to one characterized by improved advancements and technologic activity. Coale et. al. (1958) explains economic development as a transformation of a major agrarian-based economy to one that utilizes more machinery in the form of tools and equipment, possessing a mix of labor and where amenities such as improved healthcare and sanitation, transportation, law and order, communication etc exist to help reduce the death rate. Thus, the state of economic development can be said to be the beginning of the Industrial Revolutionary era.

## Population Growth

Population growth can be defined as a numerical increase in people who occupy a certain area measured within a period of time. Population increases when people are either born in a country or immigrate to a different country from their country of birth. The population equally decreases as people die out or emigrate out of their country of birth. According to the World Development Indicator (ed. September 2009), total population is defined as ‘based on the de facto definition of population, which counts all residents regardless of legal status or citizenship-except for refugees not permanently settled in the country of asylum, who are generally considered part of the population of their country of origin’ [[i](https://www.ukessays.com/essays/economics/relationship-between-population-growth-and-economic-development-economics-essay.php" \l "ftn1)] .

**Theories of Population Growth**

There are theories that show forth the characteristics of population growth and means by which such population sizes can be controlled – the Malthusian Theory and the Theory of Demographic Transition.

**Malthusian theory**

Malthusian theory is based on two assumptions – that food is a necessity if man will have to exist and that procreation will remain in almost the same state. Malthus’ (1993) theory proposes that if the population is left unimpeded for any reason it will lead to a rise in geometric proportion with subsistence left or constrained to increase in arithmetic proportion. Malthus further explains that an increase in population within a limited land resource is likely to lead to a set-in of diminishing returns. The theory proposes two possible ways to control the increase in population growth – either a means to curb the population growth by way of ‘positive’ methods such as famines, pestilence, wars etc or the ‘preventive’ method which uses sexual abstinence, delayed marriages etc (Bizien, 1979).

According to Malthus, a nation which has an unchecked population growth is likely to experience an unfavorable economic growth, due mainly to the presence of limited resources with which economies are endowed. His opinion was that diminishing returns will most likely affect food and resources as an increase in the population of a country is expected to decrease available natural resources and in the long-run lower the production of goods. Population growth and size also tend to determine the standard of living in an economy that is characterized by low capital accumulation, low technological change as well as being closed or isolated to interactions with the international community.

**Demographic Transition Theory**

Demographic Transition Theory according to Hicks (1957 p.302 cited in Katzen. 1998, p.231) describes the historic ‘unprecedented rise in population’ as being liable for the Industrial Revolution. Rapid population growth was, to Ashton (1966), the major characteristic of the industrial revolution. However, Habakkuk (1971, p.39) also notes that his contemporaries did not only believe that industrialization could be solely responsible for population growth but that an increase in economic activity also plays a role in population growth.

**Relationship between Population Growth and Economic Development**

The relationship between population growth and economic development can be measured by looking at the impact of population growth on economic development and vice-versa.

The phases of Demographic Transition theory can be considered looking at three different time frames i.e. before the transition, during the transition and post-transition to better have an understanding of the population growth pattern. ‘World population growth is entirely the result of natural increase- the excess of births over deaths. For any subdivision of the world, net migration- the difference between out- and in-migration is also a factor’ (National Academy of Sciences.1972). From Bizien (1979), Habakkuk (1971) and Ghatak (1995) the pre-industrial era was mainly agriculturally inclined and so when there was poor harvest, it had a negative effect on the economy e.g. there was increase in epidemics. Therefore, the need for families to want to have more children was high as they provided the labour required to work in the farms and in the long-run they provided support for their parents when the aged. The higher the mortality rate, the higher the fertility rate producing a net population phase. The second transitional stage was the beginning of the industrial era. This period was characterized by a declining death rate though birth rate remained high. This decline in the death rate was mainly attributed to improved health care, more regular food supplies and improved law and order. Population growth was at its peak at this stage as the birth rate was way ahead of the death rate. The third stage of the demographic transition was the era of previously low death rate mixed with a waning and stumpy birth rate. The decreasing birth rate was attributed to an increase in the age of marriage, celibacy, increased awareness on reproductive health and family planning practices etc. This mix stabilized population growth as the decreasing birth rates as well as a stumpy death rate were the present occurrences in the economy.

According to Coale et al.(1958) economic development was responsible for the decline in the death rate that was seen in the demographic transition theory. The changing roles played by women, especially activities they carried out outside the household and the falling importance placed on the family, were some of the changes attributed to economic development. Another feature of economic development was economic mobility as members of families were from time to time moved around as a result of the kind of jobs they did. Also, rising urbanization discouraged the birth of so many children as women later began to view them (children) as burdens rather than assets in helping out with the home front, especially with regards to the care of the aged. Old-age economists like Malthus and Adam Smith also supported this view as population growth was determined by the demand on labor (Habakkuk, 1971).

The impact of economic development on population growth has been considered and it will be proper to also consider the impact of population growth on economic development as a part of this study. The negative impact of a fast growing population on economic development especially with regards to Less Developed Countries will come to bare when not properly managed. These negativities are commonly being referred to as the Cost of Population Growth (Katzen. 1998, p.233).

An increasing population has the tendency of slowing down the per capita income growth in Less Developed Countries leading to income distribution inequalities. It also stifles savings and capital investment thereby limiting the growth rate of the nation’s Gross National Product (National Academy of Sciences.1972, p.2). Therefore, assuming increasing per capita income (or output) is used as an indicator of measuring the improvement in the average standard of living, it then implies an economy with a stagnant total income and a rising population is likely to have its average standard of living worsen over the specified time frame under consideration (Katzen. 1998, p.231-232).

Migration – is the movement of people from one geographical location to another one. A high increase in rural-urban migration tends to lead to a situation in which the rural area is left under-developed as most people move to the urban areas in search of jobs, education or even what they perceive as a ‘better life’. The resultant on one hand is the choking up of the urban areas, whilst on the other hand, the populations in the rural settlements are left decimated. This is also a reflection of what is obtainable in the case of international migration. Todaro et al (2003, p.291) cite many highly educated and skilled workers who move from the Less Developed Countries to developed countries as legal migrants resulting in what is termed as Brain Drain, thereby contributing to stifling the economic development of their parent countries.

Population growth competes with capital formation. A growing population could result in a continuously increasing dependency ratio (i.e. the ratio of the non-working population to the working population) and as such more is spent on the dependent ratio at the expense of other investments (Habakkuk.1971, p.46).

The combination of an increase in birth rate and a decrease in death rate is likely to increase the dependency ratio of the population. The assumption that this dependency ratio is made up of a high number of children between the ages of 15-16 years might aggravate the problem of food supply and employment creation Katzen (1998, p.233).

An increase in population with a fixed amount in land tends to lower man-land and man-resource proportions. This means that a static backward economy without any form of technical progress might lead to an increase in poverty, especially with a growing pressure on available resources (Katzen. 1998, p.232).

## CONCLUSION

According to Jhingan (2005), the impact of population growth on economic development is different in the varying economies. When in developed countries, population growth helped to increase the Gross National Product, in developing countries the reverse is the case.

It has thus been suggested that due to the cost of rapid population growth (as most countries who experience population explosion have high birth rates and low death rates), especially in the case of most Less Developed Countries, that policies be put in place to control the population growth in question. Some countries have gone ahead to put in place Population-Related policies which, according to The National Academy of Sciences, (1972, p.70) and Todaro et al (2003, pp.294-299) can be differentiated along two broad headings, namely the Population-Responsive and Population-Influencing policies are:

Audio and visual media education both in the formal and informal sector to educate people on the need to have small families.

Encourage the establishment of family-planning programs in hospitals.

Teach sex education and the implications of teenage pregnancy to reduce fertility unwanted pregnancies, thus lowering birth rates.

The government can manipulate economic incentives and disincentives to having children by either imposing financial penalties for having more than a certain number of children, subsidization of smaller families through direct money payments, reducing income tax relief when the number of children is kept within the limits stated.

“Raise the social and economic status of women and hence create conditions favorable to delayed marriage and lower marital fertility” (Abadian S., 1996 and Jeejeebhoy S.J, 1995 cited in Todaro et al (2003, pp.296).

Kuznets (1967 cited in Katzen. 1998, p.234) found a positive correlation between population growth and economic development although the analysis never made reference to whether population growth was the cause of economic development. This notion being supported by The National Academy of Sciences (1972, p.65) states that though population growth is one of the variables that affect the quality of life of an economy there are other variables which act on the quality of life. Some of which are the degree of concentration of human settlements, social and cultural diversity of the population, per capita income, state of technology etc.

**Causes of Unemployment in India-**

#### Cause 1# Lack of the Stock of Physical Capital:

The major cause of unemployment and underemployment in underdeveloped countries like India is the deficiency of the stock of capital in relation to the needs of the growing labour force.

In the modern world, man by himself can hardly produce anything. Even the primitive man needed some elementary tools like the bow and arrow to engage in hunting for the earning of his livelihood.

As a result, the country’s ability to offer productive employment to the new entrants in the labour market has been severely limited. This manifests itself in two things: first, the prevalence of large- scale open unemployment in the urban areas as evidenced by the statistics of employment exchanges; second, it manifests itself in the form of open unemployment in the rural areas as well as disguised unemployment in agriculture.

#### Cause 2# Use of Capital-Intensive Techniques:

An important factor responsible for slow growth of employment has been the use of capital-intensive techniques of production, even in consumer goods industries where alternative labour-intensive techniques are available. Even before 1991, under the Industrial Policy Resolution 1956, the development of consumer goods industries was left open for the private sector.

However, private sector prefers to invest in highly capital-intensive plants and equipment on the basis of technology developed in labour-scarce western countries. It is argued by them that the alternative labour-intensive techniques have low productivity and low surplus-generating capacity.

**Relatively low price of capital has been caused by:**

(a) Lower rate of interest,

(b) Liberal depreciation allowance on capital investment permitted in the taxation system of the country,

(c) Relatively cheap capital equipment imported from abroad.

Second, higher wages of labour in the organised sector relative to their productivity under pressure from trade unions. Thirdly, rigid labour laws also discourage the employment of labour. It is difficult to retrench labour even when it is not required in case an industrial unit becomes sick and proposes to close down or exit.

Fourthly, Research and Development (R & D) activity has not been adequately directed to discover and identify labour- intensive appropriate techniques to be used in industries which, though labour-intensive, have also reasonably good productivity.

#### Cause 3# Inequitable Distribution of Land:

Another cause of unemployment prevailing in the developing countries like India is inequitable distribution of land so that many agricultural households have no adequate access to land which is an important asset for agricultural production and employment.

Sub-division of land holdings under the pressure of rapid population growth since 1951 has further reduced access to land for several agricultural households. As a result many persons who were self-employed in agriculture have become landless agricultural labourers who suffer from acute unemployment and underemployment.

#### Cause 4# Rigid Protective Labour Legislation:

Another reason for the slow growth of employment in the organised sector has been the existence of unduly rigid protective labour legislation which makes it very difficult to retrench a worker who has been employed for 240 days.

Labour legislation is so much rigid that it is even difficult to close down the unit and quit the industry. Thus, this excessively protective labour legislation induces private entrepreneurs to prefer the maximum use of capital in place of labour.

#### Cause 5# Neglect of the Role of Agriculture in Employment Generation:

An important factor responsible for slow growth of employment opportunities is the neglect of agriculture for generating employment opportunities. The general perception, as existed in the first three five year plans in India (1951-65) as well as in the theoretical models of growth for dualistic economies such as Lewis’ “Economic Development with Unlimited Supplies of Labour” was that agriculture already contained surplus labour and it was required to withdraw this surplus labour from agriculture and employ them in the modern industrial sector.

By the mid-sixties it was realised that not to speak of employing new entrants to the labour force year after year, the modern industrial sector could not absorb productivity even a fraction of the then existing unemployed persons in the foreseeable feature.

Agriculture though containing surplus labour can generate employment opportunities if proper strategy for its development is adopted. For instance, the empirical evidence shows that on an irrigated hectare of land the number of man-hours employed is almost twice that on the un-irrigated hectare.

Irrigation requires more labour input for watering the fields, but also since output per hectare on irrigated land is much higher, more labour is used for harvesting and threshing the crop. Besides, irrigation makes the adoption of double cropping possible which greatly raises the employment potential of agriculture.

#### Cause 6# Lack of Infrastructure:

We have explained above lack of physical capital with which labour is equipped for productive employment as the cause of unemployment prevailing in the developing countries like India. By capital we generally mean machines, plant and equipment, factory buildings etc. But a similar factor responsible for huge unemployment prevailing in these countries is lack of infrastructure such as roads, power, telecommunications, highways, irrigation facilities in agriculture. Inadequate availability of infrastructure is a great obstacle for the generation of opportunities for productive employment.

## **Summary on Indian Economic Geography: Resources and Energy**

1. Resources are of two broad types, human resources-the functional part and natural resources-the fundamental part of the economy. Natural resources are directly derived from the environment and broadly classified as water resources, mineral resources, energy resources and biotic resources or wildlife.

2. India has 4% of world water resources, deficient monsoons often lead to shortage of drinking and irrigation water, ground water is polluted due to poor land practices, atmospheric deposition of pollutants and direct discharge of sewage into water bodies are limitations of water resources in India.

3. Energy resources are classified as renewable resources; those have either inexhaustible reserve or could be replenished through natural or human efforts. Non-renewable are those which are built over a long geological time spanned and the rate of their formation is very slow. They cannot be replenished within a time frame meaningful to human beings. Ex-Coal, Petroleum, Nuclear material etc.

4. On the pattern of use, energy resources can be recognized as conventional sources like, coal, petroleum, natural gas, hydro energy, nuclear energy resources, etc. Non-conventional source includes alternate and complementary energy resources like solar, wind etc.

5. The natural resources for electricity generation in India are unevenly dispersed and concentrated in a few pockets. Hydro resources are located in the Himalayan foothills and in the North-Eastern Region (NER).

6. Coal reserves are concentrated in Jharkhand, Odisha, Paschim Banga, Chhattisgarh, parts of Madhya Pradesh, whereas lignite is located in Tamil Nadu and Gujarat. North Eastern Region, Sikkim and Bhutan have vast untapped hydro potential estimated to be about 35000 MW in NER, about 8000 MW in Sikkim and about 15000 MW in Bhutan.

7. Energy sector in India has a mix of thermal (68.14%), hydro (17.55%), nuclear (2.12%) and renewable (12.20%) as per installation capacity. Maharashtra is the highest producer of thermal energy followed by Gujarat.

8. India is the fifth largest hydroelectricity producing country with Punjab has highest share followed by Karnataka. Wind energy potential in India is 45600 MW and is the largest non-conventional energy source and 3rd largest energy contributors in India.

9. Nuclear power supplied 20 billion KW (3.7%) of India's electricity in 2011 from 4.4 GWE (of 180 GWE total) capacity. India was planned to have nuclear capacity of 14600 MWe by 2010 and aims to supply 25% of electricity from nuclear power by 2050.

10. Nuclear power plants are located at Narora in Uttar Pradesh, Rawatbhata in Rajasthan, arapur in Maharashtra, Kakrapara in Gujarat, Kudankulam in Tamil Nadu, Kaiga in Karnataka and Kalpakam in Tamil Nadu. The first one was at Tarapur in 1969.

11. Some important renewable energy production sites are: wind-Kanyakumari, geothermal-Manikaran in Kullu district, Puga valley in Ladakh and Taptapani in Odisha, wave energy- Vzhinjam near Thiruvananthapuram and Andaman and Nicobar Islands, tidal- Kandla in Gujarat and Durga Kuani Creek in Sundarvan delta etc. Rajasthan, Gujarat and Ladakh are the ideal areas for the development of solar energy.

12. Ministry of Power launched a unique initiative in 2005-06 to facilitate the development of Ultra Mega Power Projects (UMPPs) each having a capacity of about 4000 MW each, at both the coal pitheads and coastal locations. UMPPs are awarded at Sasan in Madhya Pradesh, Mundra in Gujarat, Krishnapatnam in Andhra Pradesh and Tilaya in Jharkhand.

13. Mineral resources are broadly classified as metallic and non-metallic resources. India produces 4 Fuel minerals, 11 metallic, 52 Non-metallic and 22 minor minerals, totally 89 minerals, India's major mineral resources include Coal (4th largest reserves in the world), Iron ore, Manganese ore (7th largest reserve in the world as in 2013), Mica, Bauxite (5th largest reserve in the world as in 2013) Chromite, Natural gas, Diamonds, Limestone and Thorium (world's largest along Tamil Nadus shores).

14. India's oil reserves, found in Bombay High off the coast of Maharashtra, Gujarat, Rajasthan and in Eastern Assam meet 25% of the country's demand.

15. Japan is the largest importer of Indian iron ore. Bailadila mine is the largest mechanised iron mining in Asia. Nagpur-Bhandara district of Maharastra and Balaghat-Chindwara district of Madhya Pradesh is important manganese producing regions, Odisha is the largest producer of chromite, Malanjkhand belt of Balaghat and Khetri-Singana belt of Jhunjhun are important copper mining centres. Mica is one of the important non-metallic resources in India.

16. A national level agency National Natural Resources Management System (NNRMS) established in 1983 for integrated natural resources management in the country. It is supported by the previously Planning Commission (India), now NITI AYOG and Department of Space.