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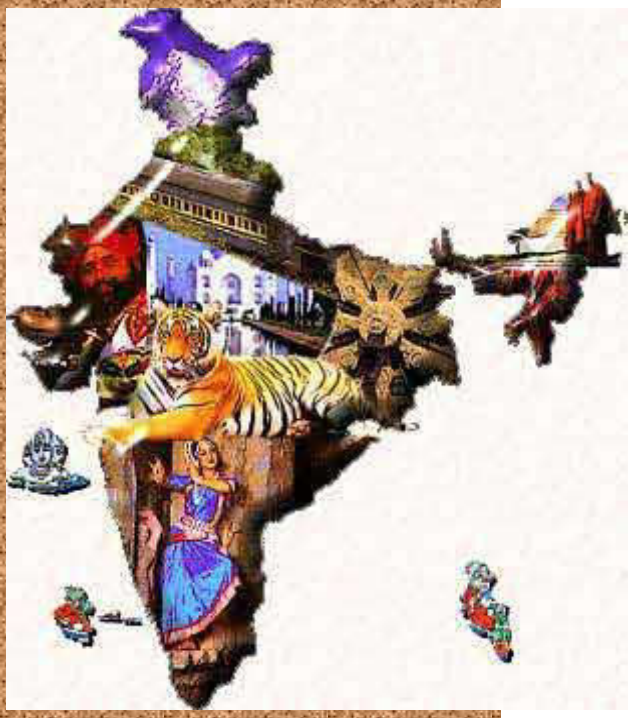

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Indian Economy - Part 1

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Indian Economy – Part 1

FIVE-YEAR PLANS OF INDIA

The economy of India is based in part on planning through its five-year plans, which are developed, executed and monitored by the Planning Commission. The tenth plan completed its term in March 2007 and the eleventh plan is currently underway prior to the fourth plan, the allocation of state resources was based on schematic patterns rather than a transparent and objective mechanism, which led to the adoption of the Gadgil formula in 1969. Revised versions of the formula have been used since then to determine the allocation of central assistance for state plans.

First Five-Year Plan (1951–1956)

The first Indian Prime Minister, Jawaharlal Nehru presented the first five-year plan to the Parliament of India on December 8, 1951.This plan was based on the Harrod-Domar model. The plan addressed, mainly, the agrarian sector, including investments in dams and irrigation. The agricultural sector was hit hardest by the partition of India and needed urgent attention. The total planned budget of ₹2356 crore was allocated to seven broad areas: irrigation and energy (27.2 %), agriculture and community development (17.4 %), transport and communications (24 %), industry (8.4 %), social services (16.64 %), land rehabilitation (4.1 %), and for other sectors and services (2.5 %) The most important feature of this phase was active role of state in all economic sectors. Such a role was justified at that time because immediately after independence, India was facing basic problems—deficiency of capital and low capacity to save.

The target growth rate was 2.1% annual gross domestic product (GDP) growth; the achieved growth rate was 3.6% the net domestic product went up by 15%. The monsoon was good and there were relatively high crop yields, boosting exchange reserves and the per capita income, which increased by 8%. National income increased more than the per

capita income due to rapid population growth. Many irrigation projects were initiated during this period, including the Bhakra Dam and Hirakud Dam. The World Health Organization, with the Indian government, addressed children's health and reduced infant mortality, indirectly contributing to population growth. At the end of the plan period in 1956, five Indian Institutes of Technology (IITs) were started as major technical institutions. The University Grant Commission was set up to take care of funding and take measures to strengthen the higher education in the country.[6] Contracts were signed to start five steel plants, which came into existence in the middle of the second five-year plan. The plan was successful.

Second Five-Year Plan (1956–1961)

The second five-year plan focused on industry, especially heavy industry. Unlike the First plan, which focused mainly on agriculture, domestic production of industrial products was encouraged in the Second plan, particularly in the development of the public sector. The plan followed the Mahalanobis model, an economic development model developed by the Indian statistician Prasanta Chandra Mahalanobis in 1953. The plan attempted to determine the optimal allocation of investment between productive sectors in order to maximise long-run economic growth. It used the prevalent state of art techniques of operations research and optimization as well as the novel applications of statistical models developed at the Indian Statistical Institute. The plan assumed a closed economy in which the main trading activity would be centered on importing capital goods. Hydroelectric power projects and five steel mills at Bhilai, Durgapur, and Rourkela were established. Coal production was increased. More railway lines were added in the north east.The Atomic Energy Commission was formed in 1958 with Homi J. Bhabha as the first chairman. The Tata Institute of Fundamental Research was established as a research institute. In 1957 a talent search and scholarship program was begun to find talented young students to train for work in nuclear power.The total amount allocated under the second five year plan in India was Rs. 4,800 crore. This amount was allocated among various sectors:

- Power and irrigation
- Social services
- Communications and transport
- Miscellaneous

Third Five-Year Plan (1961–1966)

The third plan stressed on **agriculture** and improvement in the production of wheat, but the brief Sino-Indian War of 1962 exposed weaknesses in the economy and shifted the focus towards the [Defence industry].

In 1965–1966, India fought a [Indo-Pak] War with Pakistan.Due to this there was a severe drought in 1965. The war led to inflation and the priority was shifted to price stabilisation. The construction of dams continued. Many cement and fertilizer plants were also built. Punjab began producing an abundance of wheat.

Many primary schools have been started in rural areas. In an effort to bring democracy to the grassroot level, Panchayat elections have been started and the states have been given more development responsibilities.

State electricity boards and state secondary education boards were formed. States were made responsible for secondary and higher education. State road transportation corporations were formed and local road building became a state responsibility. The target growth rate of GDP (gross domestic product)was 5.6 %

The achieved growth rate was 2.2 percent.

Fourth Five-Year Plan (1969–1974)

At this time Indira Gandhi was the Prime Minister. The Indira Gandhi government nationalised 14 major Indian banks and the Green Revolution in India advanced agriculture. In addition, the situation in East Pakistan (now Bangladesh) was becoming dire as the Indo-Pakistani War of 1971 and Bangladesh Liberation War took

Funds earmarked for the industrial development had to be diverted for the war effort. India also performed the Smiling Buddha underground nuclear test in 1974, partially in response to the United States deployment of the Seventh Fleet in the Bay of Bengal. The fleet had been deployed to warn India against attacking West Pakistan and extending the war.

Target Growth: 5.7% Actual Growth: 3.30%

Fifth Five-Year Plan (1974–1979)

Stress was by laid on employment, poverty alleviation, and justice. The plan also focused on self-reliance in agricultural production and defence. In 1978 the newly elected Morarji

Desai government rejected the plan. Electricity Supply Act was enacted in 1975, which enabled the Central Government to enter into power generation and transmission.

The Indian national highway system was introduced and many roads were widened to accommodate the increasing traffic. Tourism also expanded.

Target Growth: 4.4% Actual Growth: 5.0

Sixth Five-Year Plan (1980–1985)

The sixth plan also marked the beginning of economic liberalization. Price controls were eliminated and ration shops were closed. This led to an increase in food prices and an increase in the cost of living. This was the end of Nehruvian Plan and Rajiv Gandhi was prime minister during this period.

Family planning was also expanded in order to prevent overpopulation. In contrast to China's strict and binding one-child policy, Indian policy did not rely on the threat of force. More prosperous areas of India adopted family planning more rapidly than less prosperous areas, which continued to have a high birth rate.

Target Growth: 5.2% Actual Growth: 5.4%[5]

Seventh Five-Year Plan (1985–1990)

The Seventh Plan marked the comeback of the Congress Party to power. The plan laid stress on improving the productivity level of industries by upgrading of technology.

The main objectives of the 7th five year plans were to establish growth in areas of increasing economic productivity, production of food grains, and generating employment

As an outcome of the sixth five year plan, there had been steady growth in agriculture, control on rate of Inflation, and favourable balance of payments which had provided a strong base for the seventh five Year plan to build on the need for further economic growth. The 7th Plan had strived towards socialism and energy production at large. The thrust areas of the 7th Five year plan have been enlisted below:

- Social Justice
- Removal of oppression of the weak
- Using modern technology
- Agricultural development

- Anti-poverty programs
- Full supply of food, clothing, and shelter
- Increasing productivity of small and large scale farmers
- Making India an Independent Economy

Based on a 15-year period of striving towards steady growth, the 7th Plan was focused on achieving the pre-requisites of self-sustaining growth by the year 2000. The Plan expected a growth in labour force of 39 million people and employment was expected to grow at the rate of 4 percent per year.

Some of the expected outcomes of the Seventh Five Year Plan India are given below:

- Balance of Payments (estimates): Export – ₹33,000 crore (US$6.6 billion), Imports – (-)₹54,000 crore (US$10.8 billion), Trade Balance – (-)₹21,000 crore (US$4.2 billion)
- Merchandise exports (estimates): ₹60,653 crore (US$12.1 billion)
- Merchandise imports (estimates): ₹95,437 crore (US$19 billion)
- Projections for Balance of Payments: Export – ₹60,700 crore (US$12.1 billion), Imports – (-) ₹95,400 crore (US$19 billion), Trade Balance- (-) ₹34,700 crore (US$6.9 billion)

Under the Seventh Five Year Plan, India strove to bring about a self-sustained economy in the country with valuable contributions from voluntary agencies and the general populace.

Target Growth: 5.0% Actual Growth: 5.7%[5]

Eighth Five-Year Plan (1992–1997)

1989–91 was a period of economic instability in India and hence no five year plan was implemented. Between 1990 and 1992, there were only Annual Plans. In 1991, India faced a crisis in Foreign Exchange (Forex) reserves, left with reserves of only about US$1 billion. Thus, under pressure, the country took the risk of reforming the socialist economy. P.V. Narasimha Rao was the twelfth Prime Minister of the Republic of India and head of Congress Party, and led one of the most important administrations in India's modern history overseeing a major economic transformation and several incidents affecting national security. At that time Dr. Manmohan Singh (currently, Prime Minister of India) launched India's free market reforms that brought the nearly bankrupt nation back from the edge. It was the beginning of privatisation and liberalisation in India.

Modernization of industries was a major highlight of the Eighth Plan. Under this plan, the gradual opening of the Indian economy was undertaken to correct the burgeoning deficit and foreign debt. Meanwhile India became a member of the World Trade Organization on 1 January 1995.This plan can be termed as Rao and Manmohan model of Economic development. The major objectives included, controlling population growth, poverty reduction, employment generation, strengthening the infrastructure, Institutional building,tourism management, Human Resource development, Involvement of Panchayat raj, Nagar Palikas, N.G.O'S and Decentralization and people's participation. Energy was given priority with 26.6% of the outlay. An average annual growth rate of 6.78% against the target 5.6% was achieved.

To achieve the target of an average of 5.6% per annum, investment of 23.2% of the gross domestic product was required. The incremental capital ratio is 4.1.The saving for investment was to come from domestic sources and foreign sources, with the rate of domestic saving at 21.6% of gross domestic production and of foreign saving at 1.6% of gross domestic production.

Ninth Five-Year Plan (1997–2002)

Ninth Five Year Plan India runs through the period from 1997 to 2002 with the main aim of attaining objectives like speedy industrialization, human development, full-scale employment, poverty reduction, and self-reliance on domestic resources.

Background of Ninth Five Year Plan India: Ninth Five Year Plan was formulated amidst the backdrop of India's Golden jubilee of Independence.

The main objectives of the Ninth Five Year Plan of India are:

- to prioritize agricultural sector and emphasize on the rural development
- to generate adequate employment opportunities and promote poverty reduction
- to stabilize the prices in order to accelerate the growth rate of the economy
- to ensure food and nutritional security
- to provide for the basic infrastructural facilities like education for all, safe drinking water, primary health care, transport, energy
- to check the growing population increase
- to encourage social issues like women empowerment, conservation of certain benefits for the Special Groups of the society
- to create a liberal market for increase in private investments

During the Ninth Plan period, the growth rate was 5.35 per cent, a percentage point lower than the target GDP growth of 6.5 per cent.

Tenth Five-Year Plan (2002–2007)

- Attain 8% GDP growth per year.
- Reduction of poverty ratio by 5 percentage points by 2007.
- Providing gainful and high-quality employment at least to the addition to the labour force.
- Reduction in gender gaps in literacy and wage rates by at least 50% by 2007.
- 20 point program was introduced.

Target growth:8.1% Growth achieved:7.7%

Eleventh Five-Year Plan (2007–2012)

The eleventh plan has the following objectives:

1. Income & Poverty
    - Accelerate GDP growth from 8% to 10% and then maintain at 10% in the 12th Plan in order to double per capita income by 2016–17
    - Increase agricultural GDP growth rate to 4% per year to ensure a broader spread of benefits
    - Create 70 million new work opportunities.
    - Reduce educated unemployment to below 5%.
    - Raise real wage rate of unskilled workers by 20 percent.
    - Reduce the headcount ratio of consumption poverty by 10 percentage points.
2. Education
    - Reduce dropout rates of children from elementary school from 52.2% in 2003–04 to 20% by 2011–12
    - Develop minimum standards of educational attainment in elementary school, and by regular testing monitor effectiveness of education to ensure quality
    - Increase literacy rate for persons of age 7 years or above to 85%
    - Lower gender gap in literacy to 10 percentage point
    - Increase the percentage of each cohort going to higher education from the present 10% to 15% by the end of the plan
3. Health
    - Reduce infant mortality rate to 28 and maternal mortality ratio to 1 per 1000 live births

- Reduce Total Fertility Rate to 2.1
- Provide clean drinking water for all by 2009 and ensure that there are no slip-backs
- Reduce malnutrition among children of age group 0–3 to half its present level
- Reduce anemia among women and girls by 50% by the end of the plan

2. Women and Children
   - Raise the sex ratio for age group 0–6 to 935 by 2011–12 and to 950 by 2016–17
   - Ensure that at least 33 percent of the direct and indirect beneficiaries of all government schemes are women and girl children
   - Ensure that all children enjoy a safe childhood, without any compulsion to work
3. Infrastructure
   - Ensure electricity connection to all villages and BPL households by 2009 and round-the-clock power.
   - Ensure all-weather road connection to all habitation with population 1000 and above (500 in hilly and tribal areas) by 2009, and ensure coverage of all significant habitation by 2015
   - Connect every village by telephone by November 2007 and provide broadband connectivity to all villages by 2012
   - Provide homestead sites to all by 2012 and step up the pace of house construction for rural poor to cover all the poor by 2016–17
4. Environment
   - Increase forest and tree cover by 5 percentage points.
   - Attain WHO standards of air quality in all major cities by 2011–12.
   - Treat all urban waste water by 2011–12 to clean river waters.
   - Increase energy efficiency by 20 %

Target growth:8.33% Growth achieved:7.94%

PLANNING COMMISSION

The **Planning Commission** is an institution in the Government of India, which formulates India's Five-Year Plans, among other functions.

History

Rudimentary economic planning, deriving the sovereign authority of the state, first began in India in 1930s under the British Raj, and the colonial government of India formally established a planning board that functioned from 1944 to 1946. Private industrialists and economist formulated at least three development plans in 1944.

After India gained independence, a formal model of planning was adopted, and the planning commission, reporting directly to the Prime Minister of India was established. Accordingly, the Planning Commission was set up on 15 March 1950, with Prime Minister Jawaharlal Nehru as the chairman. Planning Commission though is a non statutory as well extra constitutional body, i.e. has been brought by an executive order.

The first Five-year Plan was launched in 1951 and two subsequent five-year plans were formulated till 1965, when there was a break because of the Indo-Pakistan Conflict. Two successive years of drought, devaluation of the currency, a general rise in prices and erosion of resources disrupted the planning process and after three Annual Plans between 1966 and 1969, the fourth Five-year plan was started in 1969.

The Eighth Plan could not take off in 1990 due to the fast changing political situation at the Centre and the years 1990-91 and 1991-92 were treated as Annual Plans. The Eighth Plan was finally launched in 1992 after the initiation of structural adjustment policies.

For the first eight Plans the emphasis was on a growing public sector with massive investments in basic and heavy industries, but since the launch of the Ninth Plan in 1997, the emphasis on the public sector has become less pronounced and the current thinking on planning in the country, in general, is that it should increasingly be of an indicative nature.

Organisation

Montek Singh Ahluwalia, current Deputy Chairman of the Planning Commission of India, at the World Economic Forum

The composition of the Commission has undergone a lot of change since its inception. With the Prime Minister as the ex-officio Chairman, the committee has a nominated Deputy Chairman, who is given the rank of a full Cabinet Minister. Mr. Montek Singh Ahluwalia is presently the Deputy Chairman of the Commission.

Cabinet Ministers with certain important portfolios act as part-time members of the Commission, while the full-time members are experts of various fields like Economics, Industry, Science and General Administration.

The Commission works through its various divisions, of which there are three kind:

- General Planning Divisions
- Programme Administration Divisions

The majority of experts in the Commission are economists, making the Commission the biggest employer of the Indian Economic Services.

Functions

The Planning Commission's functions as outlined by the Government's 1950 resolution are following:

1. To make an assessment of the material, capital and human resources of the country, including technical personnel, and investigate the possibilities of augmenting those resources which are found to be deficient in relation to the nation's requirement.
2. To formulate a plan for the most effective and balanced utilisation of country's resources.
3. To define the stages, on the basis of priority, in which the plan should be carried out and propose the allocation of resources for the due completion of each stage.
4. To indicate the factors that tends to retard economic development.
5. To determine the conditions which need to be established for the successful execution of the plan within the incumbent socio-political situation of the country.
6. To determine the nature of the machinery required for securing the successful implementation of each stage of the plan in all its aspects.
7. To appraise from time to time the progress achieved in the execution of each stage of the plan and also recommend the adjustments of policy and measures which are deemed important vis-a-vis a successful implementation of the plan.
8. To make necessary recommendations from time to time regarding those things which are deemed necessary for facilitating the execution of these functions. Such recommendations can be related to the prevailing economic conditions, current policies, measures or development programmes. They can even be given out in response to some specific problems referred to the commission by the central or the state governments.

From a highly centralised planning system, the Indian economy is gradually moving towards indicative planning where the Planning Commission concerns itself with the building of a long-term strategic vision of the future and decide on priorities of nation. It works out sectoral targets and provides promotional stimulus to the economy to grow in the desired direction. It also plays an integrative role in the development of a holistic approach to the policy formulation in critical areas of human and economic development. In the social sector, schemes that require coordination and synthesis like rural health, drinking water, rural energy needs, literacy and environment protection have yet to be subjected to coordinated policy formulation. It has led to multiplicity of agencies. The commission has now been trying to formulate and integrated approach to deal with this issue.

TRANSPORT

Transport or **transportation** is the movement of people, animals and goods from one location to another. Modes of transport include air, rail, road, water, cable, pipeline, and space. The field can be divided into infrastructure, vehicles, and operations. Transport is important since it enables trade between peoples, which in turn establishes civilizations.

Transport infrastructure consists of the fixed installations necessary for transport, and may be roads, railways, airways, waterways, canals and pipelines, and terminals such as airports, railway stations, bus stations, warehouses, trucking terminals, refueling depots (including fueling docks and fuel stations), and seaports. Terminals may be used both for interchange of passengers and cargo and for maintenance.

Vehicles traveling on these networks may include automobiles, bicycles, buses, trains, trucks, people, helicopters, and aircraft. Operations deal with the way the vehicles are operated, and the procedures set for this purpose including financing, legalities and policies. In the transport industry, operations and ownership of infrastructure can be either public or private, depending on the country and mode.

Passenger transport may be public, where operators provide scheduled services, or private. Freight transport has become focused on containerization, although bulk transport is used for large volumes of durable items. Transport plays an important part in economic growth and globalization, but most types cause air pollution and use large amounts of land. While it is heavily subsidized by governments, good planning of transport is essential to make traffic flow, and restrain urban sprawl.

A mode of transport is a solution that makes use of a particular type of vehicle, infrastructure and operation. The transport of a person or of cargo may involve one mode or several modes, with the latter case being called intermodal or multimodal transport. Each mode has its advantages and disadvantages, and will be chosen for a trip on the basis of cost, capability, route, and speed.

Human-powered

Human powered transport is the transport of people and/or goods using human muscle-power, in the form of walking, running and swimming. Modern technology has allowed machines to enhance human-power. Human-powered transport remains popular for reasons of cost-saving, leisure, physical exercise and environmentalism. Human-powered transport is sometimes the only type available, especially in underdeveloped or inaccessible regions. It is considered an ideal form of sustainable transportation.

Although humans are able to walk without infrastructure, the transport can be enhanced through the use of roads, especially when using the human power with vehicles, such as bicycles and inline skates. Human-powered vehicles have also been developed for difficult environments, such as snow and water, by watercraft rowing and skiing; even the air can be entered with human-powered aircraft.

Animal-powered

Animal-powered transport is the use of working animals for the movement of people and goods. Humans may ride some of the animals directly, use them as pack animals for carrying goods, or harness them, alone or in teams, to pull sleds or wheeled vehicles.

Air

A fixed-wing aircraft, commonly called airplane, is a heavier-than-air craft where movement of the air in relation to the wings is used to generate lift. The term is used to distinguish from rotary-wing aircraft, where the movement of the lift surfaces relative to the air generates lift. A gyroplane is both fixed-wing and rotary-wing. Fixed-wing aircraft range from small trainers and recreational aircraft to large airliners and military cargo aircraft.

Two things necessary for aircraft are air flow over the wings for lift and an area for landing. The majority of aircraft also need an airport with the infrastructure to receive maintenance, restocking, refueling and for the loading and unloading of crew, cargo and

passengers. While the vast majority of aircraft land and take off on land, some are capable of take off and landing on ice, snow and calm water.

The aircraft is the second fastest method of transport, after the rocket. Commercial jets can reach up to 955 kilometers per hour (593 mph), single-engine aircraft 555 kilometers per hour (345 mph). Aviation is able to quickly transport people and limited amounts of cargo over longer distances, but incur high costs and energy use; for short distances or in inaccessible places helicopters can be used. As of April 28, 2009 *The Guardian* article notes that, "the WHO estimates that up to 500,000 people are on planes at any time."

Rail

Rail transport is where a train runs along a set of two parallel steel rails, known as a railway or railroad. The rails are anchored perpendicular to ties (or sleepers) of timber, concrete or steel, to maintain a consistent distance apart, or gauge. The rails and perpendicular beams are placed on a foundation made of concrete, or compressed earth and gravel in a bed of ballast. Alternative methods include monorail and maglev.

A train consists of one or more connected vehicles that run on the rails. Propulsion is commonly provided by a locomotive, that hauls a series of unpowered cars, that can carry passengers or freight. The locomotive can be powered by steam, diesel or by electricity supplied by trackside systems. Alternatively, some or all the cars can be powered, known as a multiple unit. Also, a train can be powered by horses, cables, gravity, pneumatics and gas turbines. Railed vehicles move with much less friction than rubber tires on paved roads, making trains more energy efficient, though not as efficient as ships.

Intercity trains are long-haul services connecting cities; modern high-speed rail is capable of speeds up to 350 km/h (220 mph), but this requires specially built track. Regional and commuter trains feed cities from suburbs and surrounding areas, while intra-urban transport is performed by high-capacity tramways and rapid transits, often making up the backbone of a city's public transport. Freight trains traditionally used box cars, requiring manual loading and unloading of the cargo. Since the 1960s, container trains have become the dominant solution for general freight, while large quantities of bulk are transported by dedicated trains.

Road

A road is an identifiable route, way or path between two or more places. Roads are typically smoothed, paved, or otherwise prepared to allow easy travel; though they need not be, and

historically many roads were simply recognizable routes without any formal construction or maintenance. In urban areas, roads may pass through a city or village and be named as streets, serving a dual function as urban space easement and route.

The most common road vehicle is the automobile; a wheeled passenger vehicle that carries its own motor. Other users of roads include buses, trucks, motorcycles, bicycles and pedestrians. As of 2002, there were 590 million automobiles worldwide.

Automobiles offer high flexibility and with low capacity, but are deemed with high energy and area use, and the main source of noise and air pollution in cities; buses allow for more efficient travel at the cost of reduced flexibility Road transport by truck is often the initial and final stage of freight transport.

Water

Water transport is the process of transport a watercraft, such as a barge, boat, ship or sailboat, makes over a body of water, such as a sea, ocean, lake, canal or river. The need for buoyancy unites watercraft, and makes the hull a dominant aspect of its construction, maintenance and appearance.

In the 19th century the first steam ships were developed, using a steam engine to drive a paddle wheel or propeller to move the ship. The steam was produced in a boiler using wood or coal and fed through a steam external combustion engine. Now most ships have an internal combustion engine using a slightly refined type of petroleum called bunker fuel. Some ships, such as submarines, use nuclear power to produce the steam. Recreational or educational craft still use wind power, while some smaller craft use internal combustion engines to drive one or more propellers, or in the case of jet boats, an inboard water jet. In shallow draft areas, hovercraft are propelled by large pusher-prop fans. (See Marine propulsion.)

Although slow, modern sea transport is a highly efficient method of transporting large quantities of goods. Commercial vessels, nearly 35,000 in number, carried 7.4 billion tons of cargo in 2007. Transport by water is significantly less costly than air transport for transcontinental shipping; short sea shipping and ferries remain viable in coastal areas.

Other modes

Pipeline transport sends goods through a pipe, most commonly liquid and gases are sent, but pneumatic tubes can also send solid capsules using compressed air. For liquids/gases,

any chemically stable liquid or gas can be sent through a pipeline. Short-distance systems exist for sewage, slurry, water and beer, while long-distance networks are used for petroleum and natural gas.

Cable transport is a broad mode where vehicles are pulled by cables instead of an internal power source. It is most commonly used at steep gradient. Typical solutions include aerial tramway, elevators, escalator and ski lifts; some of these are also categorized as conveyor transport.

Spaceflight is transport out of Earth's atmosphere into outer space by means of a spacecraft. While large amounts of research have gone into technology, it is rarely used except to put satellites into orbit, and conduct scientific experiments. However, man has landed on the moon, and probes have been sent to all the planets of the Solar System.

Suborbital spaceflight is the fastest of the existing and planned transport systems from a place on Earth to a distant other place on Earth. Faster transport could be achieved through part of a Low Earth orbit, or following that trajectory even faster using the propulsion of the rocket to steer it.

INDUSTRY

Industry is the production of an economic good or service within an economy.

Industrial sectors

Industry is often classified into three sectors: primary or extractive, secondary or manufacturing, and tertiary or services. Some authors add quaternary (knowledge) or even quinary (culture and research) sectors.

Industries can be classified on the basis of raw materials, size and ownership.

- Raw Materials: Industries may be agriculture based, Marine based, Mineral based, Forest based.
- Size: It refers to the amount of capital invested, number of people employed and the volume of production.
- Ownership: Industries can be classified into private sector, state owned or public sector, joint sector and co-operative sector

Industry in the sense of manufacturing became a key sector of production and labour in European and North American countries during the Industrial Revolution, which upset previous mercantile and feudal economies through many successive rapid advances in technology, such as the steel and coal production. It is aided by technological advances, and has continued to develop into new types and sectors to this day. Industrial countries then assumed a capitalist economic policy. Railroads and steam-powered ships began speedily establishing links with previously unreachable world markets, enabling private companies to develop to then-unheard of size and wealth. Following the Industrial Revolution, perhaps a third of the world's economic output is derived from manufacturing industries—more than agriculture's share.

Many developed countries and many developing/semi-developed countries (People's Republic of China, India etc.) depend significantly on industry. Industries, the countries they reside in, and the economies of those countries are interlinked in a complex web of interdependence.

Industry is divided into four sectors. They are:

Sector	Definition
Primary	This involves the extraction of resources directly from the Earth, this includes farming, mining and logging. They do not process the products at all. They send it off to factories to make a profit.
Secondary	This group is involved in the processing products from primary industries. This includes all factories—those that refine metals, produce furniture, or pack farm products such as meat.
Tertiary	This group is involved in the provision of services. They include teachers, managers and other service providers.
Quaternary	This group is involved in the research of science and technology. They include scientists.
Quinary Sector	Some consider there to be a branch of the quaternary sector called the quinary sector, which includes the highest levels of decision making in a society or economy. This sector would include the top executives or officials in such

fields as government, science, universities, nonprofit, healthcare, culture, and the media.

IRRIGATION

Irrigation is the artificial application of water to the land or soil. It is used to assist in the growing of agricultural crops, maintenance of landscapes, and revegetation of disturbed soils in dry areas and during periods of inadequate rainfall. Additionally, irrigation also has a few other uses in crop production, which include protecting plants against frost, suppressing weed growing in grain fields and helping in preventing soil consolidation. In contrast, agriculture that relies only on direct rainfall is referred to as rain-fed or dryland farming. Irrigation systems are also used for dust suppression, disposal of sewage, and in mining. Irrigation is often studied together with drainage, which is the natural or artificial removal of surface and sub-surface water from a given area.

History

Archaeological investigation has identified evidence of irrigation where the natural rainfall was insufficient to support crops.

Perennial irrigation was practised in the Mesopotamian plain whereby crops were regularly watered throughout the growing season by coaxing water through a matrix of small channels formed in the field.

Ancient Egyptians practiced *Basin irrigation* using the flooding of the Nile to inundate land plots which had been surrounded by dykes. The flood water was held until the fertile sediment had settled before the surplus was returned to the watercourse. There is evidence of the ancient Egyptian pharaoh Amenemhet III in the twelfth dynasty (about 1800 BCE) using the natural lake of the Faiyum Oasis as a reservoir to store surpluses of water for use during the dry seasons, the lake swelled annually from flooding of the Nile.

The Ancient Nubians developed a form of irrigation by using a waterwheel-like device called a *sakia*. Irrigation began in Nubia some time between the third and second millennium BCE. It largegly depended upon the flood waters that would flow through the Nile River and other rivers in what is now the Sudan.

In "sub-Saharan Africa" irrigation reached the Niger River region cultures and civilizations by the first or second millennium BCE and was based on wet season flooding and water harvesting.

Terrace irrigation is evidenced in pre-Columbian America, early Syria India and China. In the Zana Valley of the Andes Mountains in Peru, archaeologists found remains of three irrigation canals radiocarbon dated from the 4th millennium BCE, the 3rd millennium BCE and the 9th century CE. These canals are the earliest record of irrigation in the New World. Traces of a canal possibly dating from the 5th millennium BCE were found under the 4th millennium canal. Sophisticated irrigation and storage systems were developed by the Indus Valley Civilization in present-day Pakistan and North India, including the reservoirs at Girnar in 3000 BCE and an early canal irrigation system from circa 2600 BCE. Large scale agriculture was practiced and an extensive network of canals was used for the purpose of irrigation.

Ancient Persia (modern day Iran) as far back as the 6th millennium BCE, where barley was grown in areas where the natural rainfall was insufficient to support such a crop. The Qanats, developed in ancient Persia in about 800 BCE, are among the oldest known irrigation methods still in use today. They are now found in Asia, the Middle East and North Africa. The system comprises a network of vertical wells and gently sloping tunnels driven into the sides of cliffs and steep hills to tap groundwater. The noria, a water wheel with clay pots around the rim powered by the flow of the stream (or by animals where the water source was still), was first brought into use at about this time, by Roman settlers in North Africa. By 150 BCE the pots were fitted with valves to allow smoother filling as they were forced into the water.

The irrigation works of ancient Sri Lanka, the earliest dating from about 300 BCE, in the reign of King Pandukabhaya and under continuous development for the next thousand years, were one of the most complex irrigation systems of the ancient world. In addition to underground canals, the Sinhalese were the first to build completely artificial reservoirs to store water. Due to their engineering superiority in this sector, they were often called 'masters of irrigation'. Most of these irrigation systems still exist undamaged up to now, in Anuradhapura and Polonnaruwa, because of the advanced and precise engineering. The system was extensively restored and further extended during the reign of King Parakrama Bahu (1153–1186 CE).

The oldest known hydraulic engineers of China were Sunshu Ao (6th century BCE) of the Spring and Autumn Period and Ximen Bao (5th century BCE) of the Warring States period,

both of whom worked on large irrigation projects. In the Szechwan region belonging to the State of Qin of ancient China, the Dujiangyan Irrigation System was built in 256 BCE to irrigate an enormous area of farmland that today still supplies water. By the 2nd century AD, during the Han Dynasty, the Chinese also used chain pumps that lifted water from lower elevation to higher elevation. These were powered by manual foot pedal, hydraulic waterwheels, or rotating mechanical wheels pulled by oxen. The water was used for public works of providing water for urban residential quarters and palace gardens, but mostly for irrigation of farmland canals and channels in the fields.[21]

In 15th century Korea, the world's first water gauge, *uryanggye* (Korean) was invented in 1441. The inventor was Jang Yeong-sil, a Korean engineer of the Joseon Dynasty, under the active direction of the king, Sejong the Great. It was installed in irrigation tanks as part of a nationwide system to measure and collect rainfall for agricultural applications. With this instrument, planners and farmers could make better use of the information gathered in the survey.

In the Americas, extensive irrigation systems were created by numerous groups in prehistoric times. One example is seen in the recent archaeological excavations near the Santa Cruz River in Tucson, Arizona. They have located a village site dating from 4,000 years ago. The floodplain of the Santa Cruz River was extensively farmed during the Early Agricultural period, circa 1200 BC to AD 150. These people constructed irrigation canals and grew corn, beans, and other crops while gathering wild plants and hunting animals.

Present extent

In the middle of the 20th century, the advent of diesel and electric motors led for the first time to systems that could pump groundwater out of major aquifers faster than it was recharged. This can lead to permanent loss of aquifer capacity, decreased water quality, ground subsidence, and other problems. The future of food production in such areas as the North China Plain, the Punjab, and the Great Plains of the US is threatened.

At the global scale, 2,788,000 km^2 (689 million acres) of agricultural land was equipped with irrigation infrastructure around the year 2000. About 68% of the area equipped for irrigation is located in Asia, 17% in America, 9% in Europe, 5% in Africa and 1% in Oceania. The largest contiguous areas of high irrigation density are found in North India and Pakistan along the rivers Ganges and Indus, in the Hai He, Huang He and Yangtze basins in China, along the Nile river in Egypt and Sudan, in the Mississippi-Missouri river basin and in parts of California. Smaller irrigation areas are spread across almost all

populated parts of the world. Only 8 years later in 2008, the scale of irrigated land increased to an estimated total of 3,245,566 km², what is nearly the size of India.

Types

Various types of irrigation techniques differ in how the water obtained from the source is distributed within the field. In general, the goal is to supply the entire field uniformly with water, so that each plant has the amount of water it needs, neither too much nor too little. The modern methods are efficient enough to achieve this goal.

Surface

In **surface irrigation** systems, water moves over and across the land by simple gravity flow in order to wet it and to infiltrate into the soil. Surface irrigation can be subdivided into furrow, *borderstrip or basin irrigation*. It is often called **flood irrigation** when the irrigation results in flooding or near flooding of the cultivated land. Historically, this has been the most common method of irrigating agricultural land.

Where water levels from the irrigation source permit, the levels are controlled by dikes, usually plugged by soil. This is often seen in terraced rice fields (rice paddies), where the method is used to flood or control the level of water in each distinct field. In some cases, the water is pumped, or lifted by human or animal power to the level of the land.

Localized

Localized irrigation is a system where water is distributed under low pressure through a piped network, in a pre-determined pattern, and applied as a small discharge to each plant or adjacent to it. Drip irrigation, spray or micro-sprinkler irrigation and bubbler irrigation belong to this category of irrigation methods.

Drip

Drip irrigation, also known as trickle irrigation, functions as its name suggests. In this system water falls drop by drop just at the position of roots. Water is delivered at or near the root zone of plants, drop by drop. This method can be the most water-efficient method of irrigation, if managed properly, since evaporation and runoff are minimized.

In modern agriculture, drip irrigation is often combined with plastic mulch, further reducing evaporation, and is also the means of delivery of fertilizer. The process is known as *fertigation*.

Deep percolation, where water moves below the root zone, can occur if a drip system is operated for too long or if the delivery rate is too high. Drip irrigation methods range from very high-tech and computerized to low-tech and labor-intensive. Lower water pressures are usually needed than for most other types of systems, with the exception of low energy center pivot systems and surface irrigation systems, and the system can be designed for uniformity throughout a field or for precise water delivery to individual plants in a landscape containing a mix of plant species. Although it is difficult to regulate pressure on steep slopes, pressure compensating emitters are available, so the field does not have to be level. High-tech solutions involve precisely calibrated emitters located along lines of tubing that extend from a computerized set of valves.

Sprinkler

In sprinkler or overhead irrigation, water is piped to one or more central locations within the field and distributed by overhead high-pressure sprinklers or guns. A system utilizing sprinklers, sprays, or guns mounted overhead on permanently installed risers is often referred to as a *solid-set* irrigation system. Higher pressure sprinklers that rotate are called *rotors* and are driven by a ball drive, gear drive, or impact mechanism. Rotors can be designed to rotate in a full or partial circle. Guns are similar to rotors, except that they generally operate at very high pressures of 40 to 130 lbf/in² (275 to 900 kPa) and flows of 50 to 1200 US gal/min (3 to 76 L/s), usually with nozzle diameters in the range of 0.5 to 1.9 inches (10 to 50 mm). Guns are used not only for irrigation, but also for industrial applications such as dust suppression and logging. Sprinklers can also be mounted on moving platforms connected to the water source by a hose. Automatically moving wheeled systems known as *traveling sprinklers* may irrigate areas such as small farms, sports fields, parks, pastures, and cemeteries unattended. Most of these utilize a length of polyethylene tubing wound on a steel drum. As the tubing is wound on the drum powered by the irrigation water or a small gas engine, the sprinkler is pulled across the field. When the sprinkler arrives back at the reel the system shuts off. This type of system is known to most people as a "waterreel" traveling irrigation sprinkler and they are used extensively for dust suppression, irrigation, and land application of waste water.

Center pivot

Center pivot irrigation is a form of sprinkler irrigation consisting of several segments of pipe (usually galvanized steel or aluminum) joined together and supported by trusses, mounted on wheeled towers with sprinklers positioned along its length. The system moves in a circular pattern and is fed with water from the pivot point at the center of the arc. These systems are found and used in all parts of the world and allow irrigation of all types of terrain. Newer systems have drop sprinkler heads as shown in the image that follows.

Most center pivot systems now have drops hanging from a u-shaped pipe attached at the top of the pipe with sprinkler heads that are positioned a few feet (at most) above the crop, thus limiting evaporative losses. Drops can also be used with drag hoses or bubblers that deposit the water directly on the ground between crops. Crops are often planted in a circle to conform to the center pivot. This type of system is known as LEPA (Low Energy Precision Application). Originally, most center pivots were water powered. These were replaced by hydraulic systems (*T-L Irrigation*) and electric motor driven systems (Reinke, Valley, Zimmatic). Many modern pivots feature GPS devices.

Lateral move (side roll, wheel line)

A series of pipes, each with a wheel of about 1.5 m diameter permanently affixed to its midpoint and sprinklers along its length, are coupled together at one edge of a field. Water is supplied at one end using a large hose. After sufficient water has been applied, the hose is removed and the remaining assembly rotated either by hand or with a purpose-built mechanism, so that the sprinklers move 10 m across the field. The hose is reconnected. The process is repeated until the opposite edge of the field is reached. This system is less expensive to install than a center pivot, but much more labor intensive to operate, and it is limited in the amount of water it can carry. Most systems utilize 4 or 5-inch (130 mm) diameter aluminum pipe. One feature of a lateral move system is that it consists of sections that can be easily disconnected. They are most often used for small or oddly shaped fields, such as those found in hilly or mountainous regions, or in regions where labor is inexpensive.

Sub-irrigation

Subirrigation has been used for many years in field crops in areas with high water tables. It is a method of artificially raising the water table to allow the soil to be moistened from below the plants' root zone. Often those systems are located on permanent grasslands in

lowlands or river valleys and combined with drainage infrastructure. A system of pumping stations, canals, weirs and gates allows it to increase or decrease the water level in a network of ditches and thereby control the water table.

Sub-irrigation is also used in commercial greenhouse production, usually for potted plants. Water is delivered from below, absorbed upwards, and the excess collected for recycling. Typically, a solution of water and nutrients floods a container or flows through a trough for a short period of time, 10–20 minutes, and is then pumped back into a holding tank for reuse. Sub-irrigation in greenhouses requires fairly sophisticated, expensive equipment and management. Advantages are water and nutrient conservation, and labor-saving through lowered system maintenance and automation. It is similar in principle and action to subsurface drip irrigation.

Manual using buckets or watering cans

These systems have low requirements for infrastructure and technical equipment but need high labor inputs. Irrigation using watering cans is to be found for example in peri-urban agriculture around large cities in some African countries.

ATOMIC ENERGY COMMISSION OF INDIA

Formed	August 3, 1948 (63 years ago)
Preceding Agency	Department of Scientific Research
Jurisdiction	Indian government
Headquarters	Mumbai
Employees	Classified
Agency executive	Dr.Ratan Kumar Sinha, Chairman

The Atomic Energy Commission is a governing body functioning under the Department of Atomic Energy (DAE), Government of India. The DAE is under the direct charge of the Prime Minister.

History

The Indian Atomic Energy Commission was first set up in August 1948 in the then Department of Scientific Research, which was created a few months earlier in June 1948. The Department of Atomic Energy (DAE) was set up on August 3, 1954 under the direct

charge of the Prime Minister through a Presidential Order. Subsequently, in accordance with a Government Resolution dated March 1, 1958, the Atomic Energy Commission (AEC) was established in the Department of Atomic Energy. The then Prime Minister, Pandit Jawaharlal Nehru also laid a copy of this Resolution on the table of the Lok Sabha on March 24, 1958.Dr Homi Jehangir Bhabha was the first chairman of the commission.

Organization

According to the Resolution constituting the AEC, the Secretary to the Government of India in the Department of Atomic Energy is ex-officio Chairman of the Commission. The other Members of the AEC are appointed for each calendar year on the recommendation of the Chairman, AEC with the approval of the Prime Minister.

Current members

Name	Designation	Role
R. K. Sinha	Secretary, Department of Atomic Energy	Chairman
V. Narayanasamy	Minister of State, Prime Minister's Office	Member
Shivshankar Menon	National Security Advisor	Member
Pulok Chatterji	Principal Secretary to the Prime Minister	Member
Ajit Kumar Seth	Cabinet Secretary	Member
Ranjan Mathai	Foreign Secretary	Member
Sumit Bose	Secretary Dept of Expenditure	Member
V. V. Bhat	Secretary to Government of India	Member for Finance
C. N. R. Rao, Honorary	Honorary President, Jawaharlal Nehru Centre for Advanced Scientific Research, Bengaluru	Member
Dr. M.R. Srinivasan	Former Member(Energy) Planning Commission & ex-Chairman AEC	Member
Prof. P. Rama Rao	Former Secretary, Department of Science and Technology	Member
Dr. Anil Kakodkar	Former Chairman, AEC and Homi Bhabha Professor	Member
Dr. R. B. Grover	Principal Adviser, Department of Atomic Energy	Member
Arun Srivastava	Member, Strategic Planning Group, Scientific Officer-H, DAE	Secretary

FAMILY PLANNING

Family planning is the planning of when to have children, and the use of birth control and other techniques to implement such plans. Other techniques commonly used include sexuality education, prevention and management of sexually transmitted infections, pre-conception counseling and management, and infertility management.

Family planning is sometimes used as a synonym for the use of birth control, however, it often includes a wide variety of methods, and practices that are not birth control. It is most usually applied to a female-male couple who wish to limit the number of children they have and/or to control the timing of pregnancy (also known as *spacing children*). Family planning may encompass sterilization, as well as abortion.

Family planning services are defined as "educational, comprehensive medical or social activities which enable individuals, including minors, to determine freely the number and spacing of their children and to select the means by which this may be achieved."

Purposes

Raising a child requires significant amounts of resources: time, social, financial, and environmental. Planning can help assure that resources are available. The purpose of family planning is to make sure that any couple, man or woman who has the desire to have a child has the resources that are needed in order to complete this goal. With these resources a couple, man or women can explore the options of natural birth, surrogacy, artificial insemination or adoption. In the other case, if the person does not wish to have a child at the specific time, they can investigate the resources that are needed to prevent pregnancy, such as birth control, contraceptives, or physical protection and prevention.

Health

Waiting until the mother is at least 18 years old before trying to have children improves maternal and child health. Also, if additional children are desired after a child is born, it is healthier for the mother and the child to wait at least 2 years after the previous birth before attempting to conceive (but not more than 5 years). After a miscarriage or abortion, it is healthier to wait at least 6 months.

When planning a family women who are over the age of 35 should be aware of the risks of having a child at that age. Older women are at a higher risk of having a child with autism and down syndrome, the chances of having multiple births increases, which cause further

late-pregnancy risks, they have an increased chance of developing gestational diabetes, the need for a Caesarian-section is greater, older women's bodies are not as well-suited for delivering a baby. The risk of prolonged labor is higher. Older mothers have a higher risk of a long labor, putting the baby in distress.

"Family planning benefits the health and well-being of women and families throughout the world. Using contraception can help to avoid unwanted pregnancies and space births; protect against STDs, including HIV/AIDS; and provide other health benefits."

Modern methods

Some families use modern medical advances in family planning. For example in surrogacy treatments a woman agrees to become pregnant and deliver a child for another couple or person.

There are two types of surrogacy: traditional and gestational. Traditional Surrogacy is where the Surrogate uses her own eggs AND carries the child for her Intended Parents. This procedure is done in a doctor's office through IUI. This type of surrogacy obviously includes a genetic connection between the surrogate and the child. Legally speaking, the Surrogate will have to disclaim any interest in the child to complete the transfer to the Intended Parents. A gestational surrogacy occurs when the Intended Mother's or a donor egg is fertilized outside the body and then the embryos are transferred into the uterus. The woman who carries the child is often referred to as a Gestational Carrier. The legal steps to confirm parentage with the Intended Parents are generally easier than in a traditional because there is no genetic connection between child and Carrier.

In sperm donations, pregnancies are usually achieved using donated sperm by artificial insemination (either by intracervical insemination or intrauterine insemination) and less commonly by invitro fertilization (IVF), usually known in this context as Assisted reproductive technology (ART), but insemination may also be achieved by a donor having sexual intercourse with a woman for the sole purpose of initiating conception. This method is known as natural insemination (NI).

There is generally a demand for sperm donors who have no genetic problems in their family, 20/20 eyesight, with excellent visual acuity, a college degree, and sometimes a value on a certain height and age.

In cases were couples may not want to have children just yet and plan with time family planning programs help a lot. Federal family planning programs reduced childbearing among poor women by as much as 29 percent, according to a University of Michigan study.

Adoption sometimes used to build a family. There are seven steps that one must make towards adoption. You must decide to pursue an adoption, apply to adopt, complete an adoption home study, get approved to adopt, be matched with a child, receive an adoptive placement, and then legalize the adoption.

Finances

Family planning is among the most cost-effective of all health interventions "The cost savings stem from a reduction in unintended pregnancy, as well as a reduction in transmission of sexually transmitted infections, including HIV."

Childbirth and prenatal health care cost averaged $7,090 for normal delivery in the US in 1996. US Department of Agriculture estimates that for a child born in 2007, a US family will spend an average of $11,000 to $23,000 per year for the first 17 years of child's life. (Total inflation adjusted estimated expenditure: $196,000 to $393,000, depending on household income.)

If this is your first baby you'll need to budget for things like a buggy, car seat, cot, clothes, nappies; milk, bottles, sterilizing equipment, if you're not solely breastfeeding; and baby food and toys. Don't feel you have to buy everything new – friends and family can help with second-hand clothes, buggies, cots and toys, and you can often find cheaper or second-hand items online. However, you shouldn't buy a second-hand car seat unless you're sure it's never been involved in a road traffic accident.

Birth control

Birth control is techniques used to prevent unwanted pregnancy.

There are a range of contraceptive methods, each with unique advantages and disadvantages. Any of the widely recognized methods of birth control is much more effective than no method. Behavioral methods that include intercourse, such as withdrawal and calendar based methods have little up front cost and are readily available, but are much less effective in typical use than most other methods. Long-acting reversible contraceptive methods, such as IUD and implant are highly effective and convenient, requiring little user action. When cost of failure is included, IUDs and vasectomy are much less costly than

other methods. In addition to providing birth control, male or female condoms protect against sexually transmitted diseases (STD). Condoms may be used alone, or in addition to other methods, as backup or to prevent STD. Surgical methods (tubal ligation, vasectomy) provide long term contraception for those who have completed their families.

Before choosing a birth control method, think about your overall health,how often you have sex,the number of sex partners you have,if you want to have children someday,how well each method works to prevent pregnancy,possible side effects, and your comfort level with using the method. [20]

Policy

The world's largest international source of funding for population and reproductive health programs is the United Nations Population Fund (UNFPA). The main goals of the International Conference on Population and Development Program of Action are:

- Universal access to reproductive health services by 2015
- Universal primary education and closing the gender gap in education by 2015
- Reducing maternal mortality by 75% by 2015
- Reducing infant mortality
- Increasing life expectancy
- Reducing HIV infection rates in persons aged 15–24 years by 25% in the most-affected countries by 2005, and by 25% globally by 2010

The World Health Organization (WHO) and World Bank estimate that $3.00 per person per year would provide basic family planning, maternal and neonatal health care to women in developing countries. This would include contraception, prenatal, delivery and post-natal care in addition to postpartum family planning and the promotion of condoms to prevent sexually transmitted infections.

NATIONAL INCOME OF INDIA

National Income of India

- According to the National Income Committee (1949), "A national income estimate measures the volume of commodities and services turned out during a given period counted without duplication".

Thus, national income measures the net value of goods and services produced in a country during a year and it also includes net earned foreign income.

- In other words, a total of national income measures the flow of goods and services in an economy. National income is a flow not a stock.

As contrasted with national wealth, which measures the stock of commodities held by the nationals of a country at a point of time, national income measures the productive power of an economy in a given period to turn out goods and services for final consumption.

- In India, National income estimates are related with the financial year (April 1 to March 31).
- Concepts of National Income India

he various concepts of national income are as follows :

1. Gross National Product Formula (GNP): Gross National Product refers to the money value of total output or production of final goods and services produced by the nationals of a country during a given period of time, generally a year.

As we include all final goods and services produced by nationals of a country during a year in the calculation of GNP, we include the money value of goods and services produced by nationals outside the country.

Hence, income produced and received by nationals of a country within the boundaries of foreign countries should be added in Gross Domestic Product (GDP) of the country. Similarly, income received by foreign nationals within the boundary of the country should be excluded from GDE

In Gross National Product Equation Form :

GNP = GDP + X – M,

where,
X = Income earned and received by nationals within the boundaries of foreign countries
M = Income received by foreign nationals from within the country.

If X = M, then GNP = GDP.

Similarly, in a closed economy X = M = 0, then also GNP = GDP.

- Gross Domestic Product (GDP) is the total money value of all final goods and services produced within the geographical boundaries of the country during a given period of time.

As a conclusion, it must be understood while domestic product emphasizes the total output which is raised within the geographical boundaries of the country; national product focuses attention not only on the domestic product, but also on goods and services produced outside the boundaries of a nation. Besides, any part of GDP which is produced by nationals of a country, should be included in GNP.

2. Net National Product Formula (NNP): NNP is obtained by subtracting depreciation value (i.e., capital stock consumption) from GNP.

In Net National Product Equation Form :

NNP = GNP – Depreciation

3. National Income: GNP, explained above, is based on market prices of produced goods which includes indirect taxes and subsidies.

NNP can be calculated in two ways:

1. at market prices of goods and services. 2. at factor cost.

- When NNP is obtained at factor cost, it is known as National Income. National Income is calculated by subtracting net indirect taxes (i.e., total indirect tax-subsidy) from NNP at market prices. The obtained value is known as NNP at factor cost or National income.

- **In NNP Equation Form :**

NNP at factor cost or National Income = NNP at Market price – (Indirect Taxes – Subsidy) = NNPMP – Indirect Tax + Subsidy.

- **Personal Income:** Personal income is that income which is actually obtained by nationals. Personal income is obtained by subtracting corporate taxes and payments made for social securities provisions from national income and adding to it government transfer payments, business transfer payments and net interest paid by the government

In Personal Income Equation Form :

Personal Income = National income – undistributed profits of Corporations – payments for social security provisions – corporate taxes + government transfer payments + Business transfer payments + Net interest paid by government.

- It should always be kept in mind that personal income is a flow concept.
- **Disposable Personal Income** : When personal direct taxes are subtracted from personal income the obtained value is called disposable personal income (DPI).

In Disposable Personal Income Equation Form :

[Disposal Personal Income] = [Personal Income] – [Direct Texes].

Methods of Measuring National Income

- According to Simon Kuznets, national income of a country is calculated by following mentioned three methods:

1. **Product Method:** S. Kuznets gave a new name to this method, i.e., product service method. In this method, net value of final goods and services produced in a country during a year is obtained, which is called total final product. This represents Gross Domestic Product (GDP). Net income earned in foreign boundaries by nationals is added and depreciation is subtracted from GDP.

2. Income Method: In this method, a total of net incomes earned by working people in different sectors and commercial enterprises are obtained. Incomes of both categories of people – paying taxes and not paying taxes are added to obtain national income.

For adopting this method, sometimes a group of people from various income groups is selected and on the basis of their income national income of the country is estimated. In a broad sense, by income method national income is obtained by adding receipts as total rent, total wages, total interest and total profit.

Symbolically:

National Income = Total Rent + Total Wages + Total Interest + Total Profit.

3.Consumption Method: It is also called expenditure method. Income is either spent on consumption or saved. Hence, national income is the addition of total consumption and

total savings. For using this method, we need data related to income and savings of the consumers.

- Generally reliable data of saving and consumption are not easily available. Therefore, expenditure method is generally not used for estimating national income.
- In India, a combination of production method and income method is used for estimating national income.

Estimates of National Income in India

- No specific attempts were made for estimating national income in India during pre-independence era. In 1868, the first attempt was made by Dadabhai Naoroji.

He, in his book 'Poverty and Un-British Rule in India', estimated Indian per capita annual income at a level of Rs.20. Some other economists followed it and gave various estimates of Indian national income. Some of these estimates are as follows:

	Rs. per capita
Findlay Shirr as (1911)	49
Wadia and Joshi (1913-14)	44-30
Dr. V.K.R.V. Rao (1925-29)	76

- Soon after independence, the Government of India appointed the National Income Committee in Aug 1949 under the chairmanship of Prof. PC Mahalanobis, to compile authoritative estimates of national income. The committee submitted its first report in 1951 and the final report 1954.

According to this report, the total national income of the country was estimated at a level of Rs.8,650 crore and per capita income at a level of Rs.246.90. The final report appeared in 1954 gave estimates of national income during the period 1950-1954. For further estimation of national income, the government established Central Statistical Organization (CSO) which now regularly publishes income national data.

- Recently CSO has introduced a new series on National Income with 1999-2000 as base year. National income includes the contribution of three sectors of the economy primary Sector (Agriculture, Forest, Fisheries, Mining), Secondary Sector (Industries – Manufacturing and Construction) and Tertiary Sector (Trade, Transport, Communications, Banking, Insurance, Real Estate, Community and Personal Services).

MAJOR HIGHLIGHTS OF THE CENSUS 2011

The population of the country as per the provisional figures of Census 2011 is 1210.19 million of which 623.7 million (51.54%) are males and 586.46 million (48.46%) are females. The provisional figures of Census 2011 were released in New Delhi on Thursday by Union home secretary Shri G.K.Pillai and RGI Shri C Chandramouli.

The major highlights of the Census 2011 (Provisional figures) are as under:

*The population of India has increased by more than 181 million during the decade 2001-2011.

*Percentage growth in 2001-2011 is 17.64; males 17.19 and females 18.12.

*2001-2011 is the first decade (with the exception of 1911-1921) which has actually added lesser population compared to the previous decade.

*Uttar Pradesh (199.5 million) is the most populous State in the country followed by Maharashtra with 112 million.

*The percentage decadal growth rates of the six most populous States have declined during 2001-2011 compared to 1991-2001:

-Uttar Pradesh (25.85% to 20.09%)

-Maharashtra (22.73% to 15.99%)

-Bihar (28.62% to 25.07%)

-West Bengal (17.77 % to 13.93%)

-Andhra Pradesh (14.59% to 11.10%)

-Madhya Pradesh (24.26% to 20.30%)

*During 2001-2011, as many as 25 States/UTs with a share of about 85% of the country's population registered an annual growth rate of less than 2% as compared to, 15 States/UTs with a share of about 42% during the period 1991-2001.

*15 States/UTs have grown by less than 1.5 per cent per annum during 2001-2011, while the number of such States/UTs was only 4 during the previous decade.

*The total number of children in the age-group 0-6 is 158.8 million (-5 million since 2001)

*Twenty States and Union Territories now have over one million children in the age group 0-6 years. On the other extreme, there are five States and Union Territories in the country that are yet to reach the one hundred thousand mark.

*Uttar Pradesh (29.7 million), Bihar (18.6 million), Maharashtra (12.8 million), Madhya Pradesh (10.5 million) and Rajasthan (10.5 million) constitute 52% children in the age group of 0-6 years.

*Population (0-6 years) 2001-2011 registered minus (-)3.08 percent growth with minus (-)2.42 for males and -3.80 for females.

*The proportion of Child Population in the age group of 0-6 years to total population is 13.1 percent while the corresponding figure in 2001 was 15.9 percent. The decline has been to the extent of 2.8 points.

*Overall sex ratio at the national level has increased by 7 points to reach 940 at Census 2011 as against 933 in Census 2001. This is the highest sex ratio recorded since Census 1971 and a shade lower than 1961. Increase in sex ratio is observed in 29 States/UTs.

*Three major States (J&K, Bihar & Gujarat) have shown decline in sex ratio as compared to Census 2001.

*Kerala with 1084 has the highest sex ratio followed by Puducherry with 1038, Daman & Diu has the lowest sex ratio of 618.

*Child sex ratio (0-6 years) is 914. Increasing trend in the child sex ratio (0-6) seen in Punjab, Haryana, Himachal Pradesh, Gujarat, Tamil Nadu, Mizoram and A&N Islands. In all remaining 27 States/UTs, the child sex ratio show decline over Census 2001.

*Mizoram has the highest child sex ratio (0-6 years) of 971 followed by Meghalaya with 970. Haryana is at the bottom with ratio of 830 followed by Punjab with 846.

*Literacy rate has gone up from 64.83 per cent in 2001 to 74.04 per cent in 2011 showing an increase of 9.21 percentage points.

*Percentage growth in literacy during 2001-2011 is 38.82; males : 31.98% & females : 49.10%.

*Literates constitute 74 per cent of the total population aged seven and above and illiterates form 26 per cent.

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