CLASS 10TH

UDAAN

Manufacturing Industries

(Social Science) One Shot

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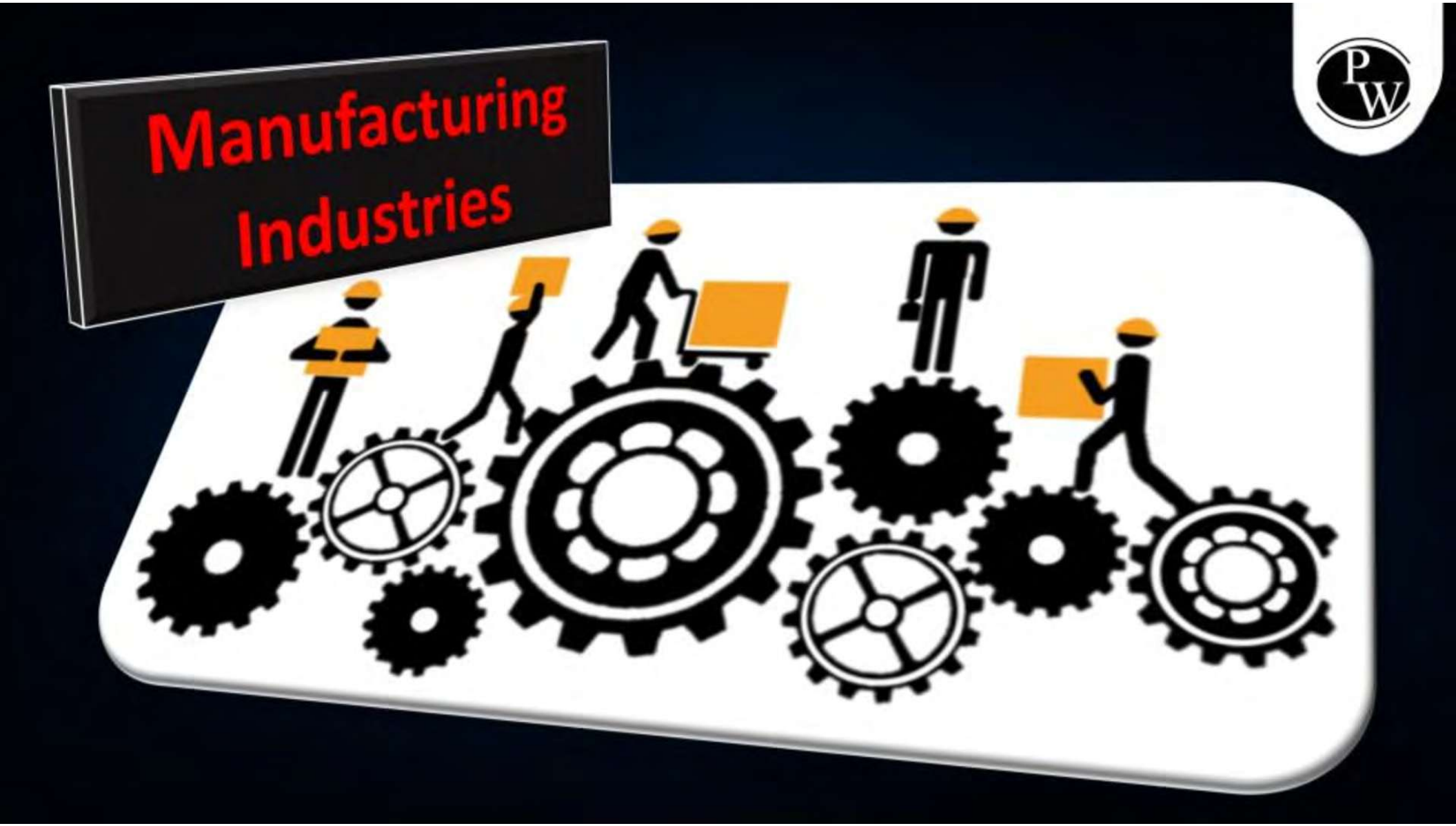
TOPICS to be covered

1. Manufacturing Industries

Industrial Sector
Secondary Sector

Manufacturing Industries



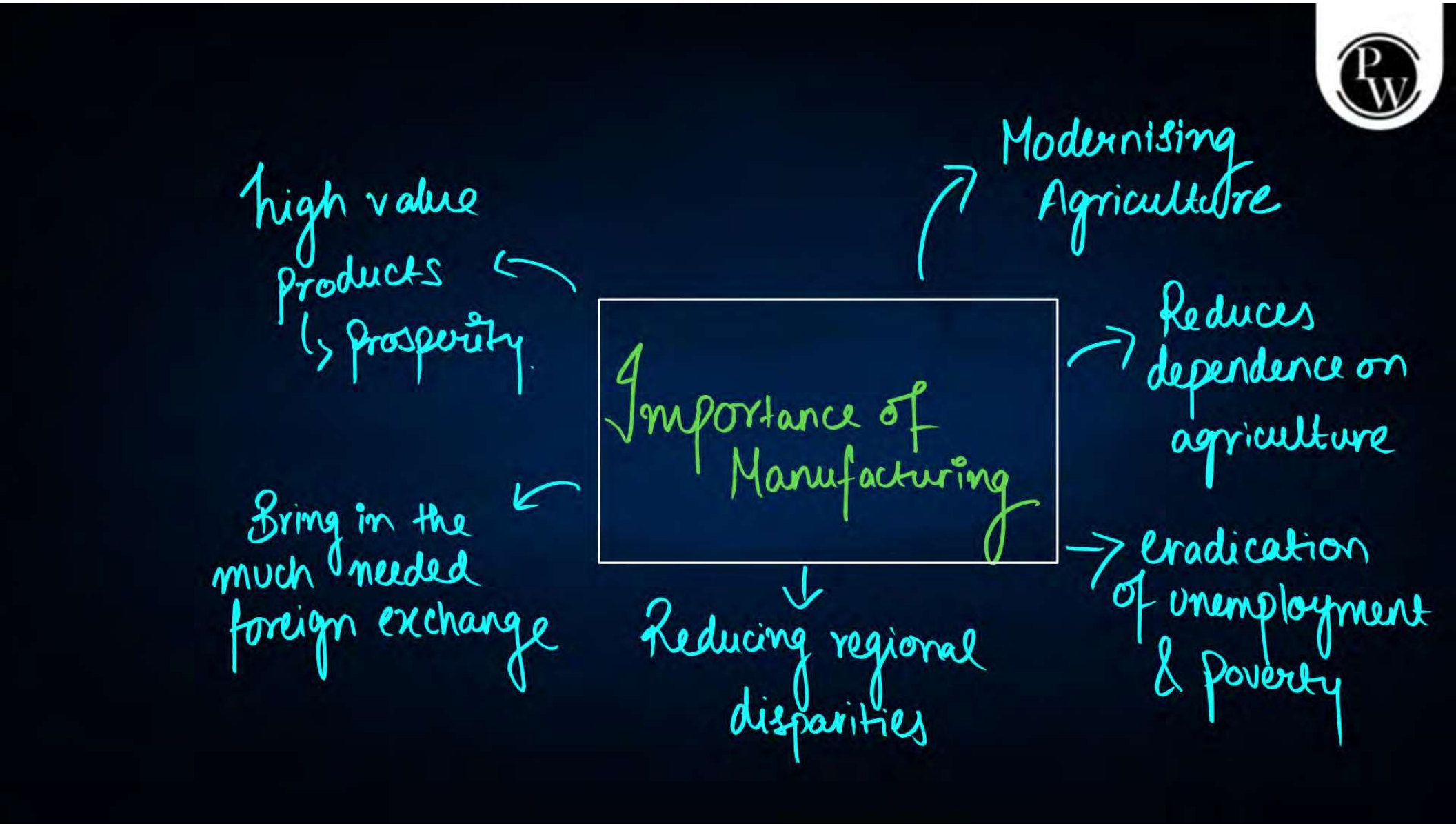
Importance of Manufacturing

(1) Manufacturing industries helps in **modernising agriculture**, which forms the backbone of our economy, they also **reduce the heavy dependence of people on agricultural income** by providing them jobs in secondary and tertiary sectors.

(2) Industrial development is **a precondition for eradication of unemployment and poverty** from our country. This was the main philosophy behind public sector industries and joint sector ventures in India. It was also aimed at **bringing down regional disparities** by establishing industries in tribal and backward areas.

(3) Export of manufactured goods expands trade and commerce, and brings in much needed **foreign exchange.**

(4) Countries that transform their raw materials into a wide variety of **furnished goods of higher value are prosperous**. India's prosperity lies in increasing and diversifying its manufacturing industries as quickly as possible.


Importance of Manufacturing
Modernising Agriculture
Reduces dependence on agriculture
Eradication of unemployment & Poverty
Reducing regional disparities
Bring in the much needed foreign exchange
high value products
Prosperity

Classification of Industries

On the basis of source of raw materials

- Agro based: cotton, woollen, jute, silk textile, rubber and sugar, tea, coffee, edible oil.
- Mineral based: iron and steel, cement, aluminium, machine tools, petrochemicals

Good → Further Production

According to their main role

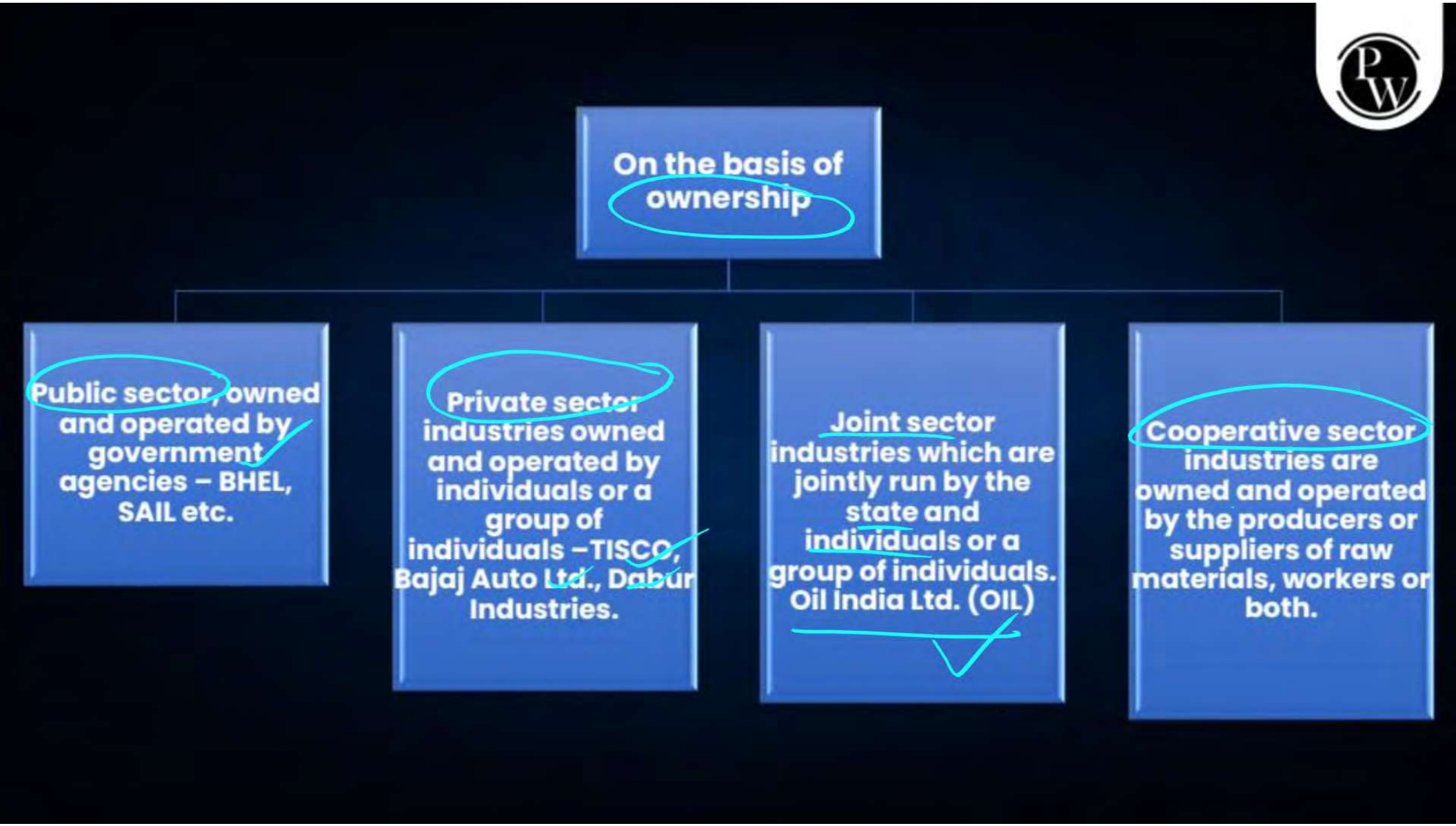
- **Basic or key industries** (iron and steel and copper smelting, aluminum smelting)
- **Consumer industries** (sugar, toothpaste, paper, sewing machines, fans etc.)

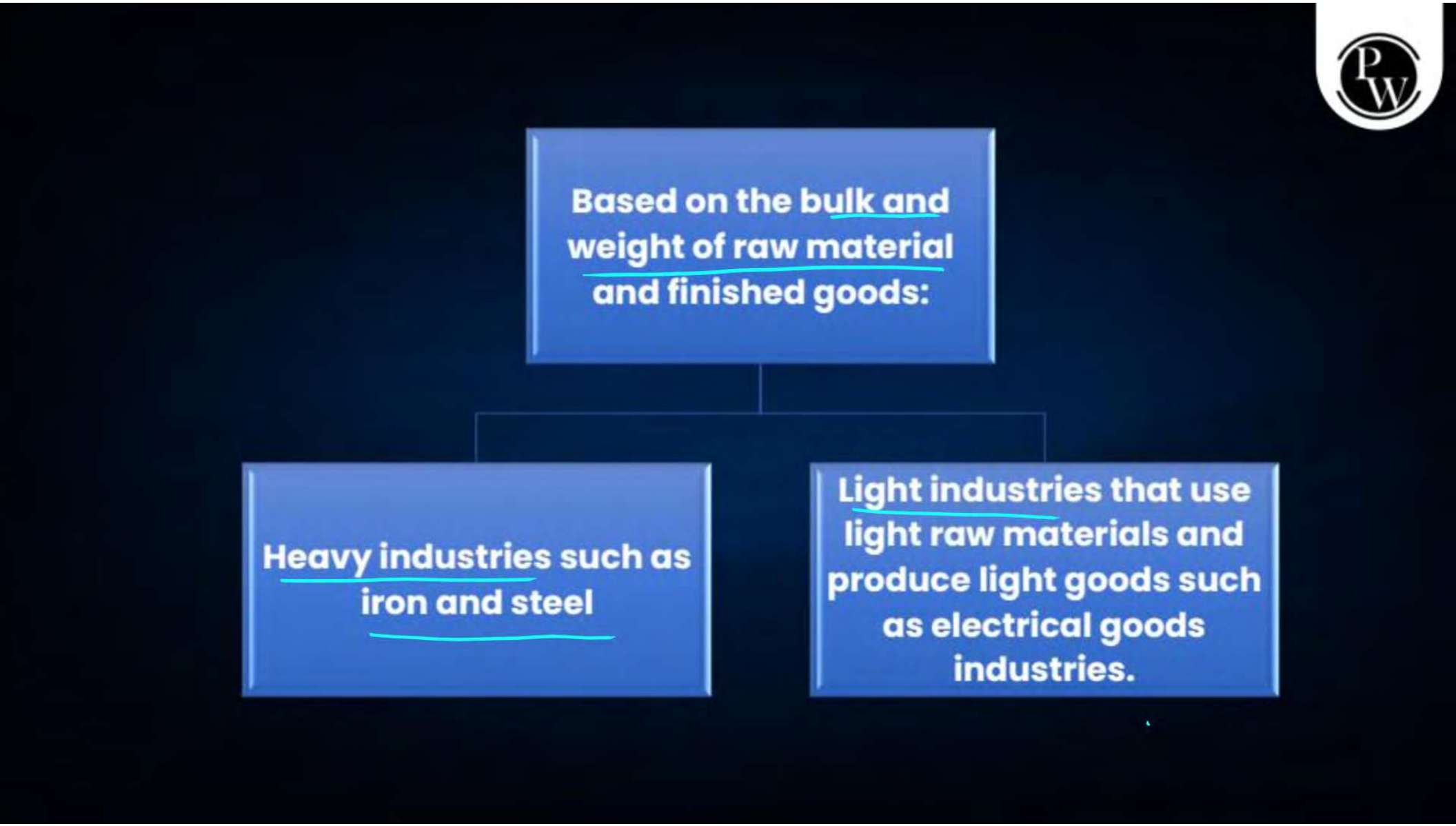
On the basis of capital investment

Small scale industry - maximum investment allowed is rupees one crore.

Large scale

more than 1 Cr.

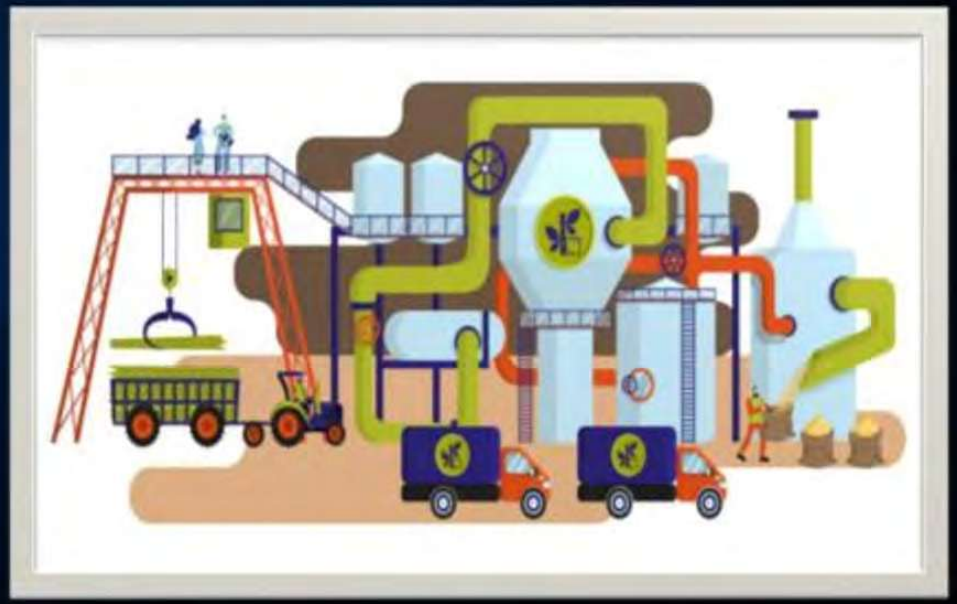

On the basis of ownership
Public sector, owned and operated by government agencies – BHEL, SAIL etc.
Private sector industries owned and operated by individuals or a group of individuals –TISCO, Bajaj Auto Ltd., Dabur Industries.
Joint sector industries which are jointly run by the state and individuals or a group of individuals. Oil India Ltd. (OIL)
Cooperative sector industries are owned and operated by the producers or suppliers of raw materials, workers or both.


Based on the bulk and weight of raw material and finished goods:
Heavy industries such as iron and steel
Light industries that use light raw materials and produce light goods such as electrical goods industries.

Agro Based Industries

→ Raw mat. derived from agriculture.

- Cotton, jute, silk, woollen textiles, sugar and edible oil, etc. industries are based on agricultural raw materials.



Textile Industry

- Occupies unique position in the Indian economy, because it contributes significantly to industrial production, employment generation and foreign exchange earnings.

- It is the only industry in the country, which is self-reliant and complete in the value chain i.e., from raw material to the highest value added products.

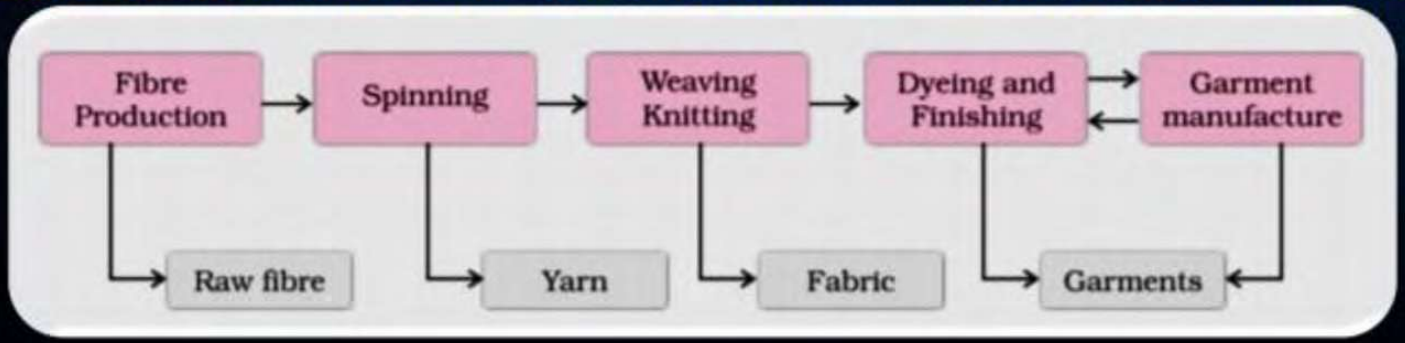
→ Self-reliant

→ Complete in the value chain

{Cotton Industry}

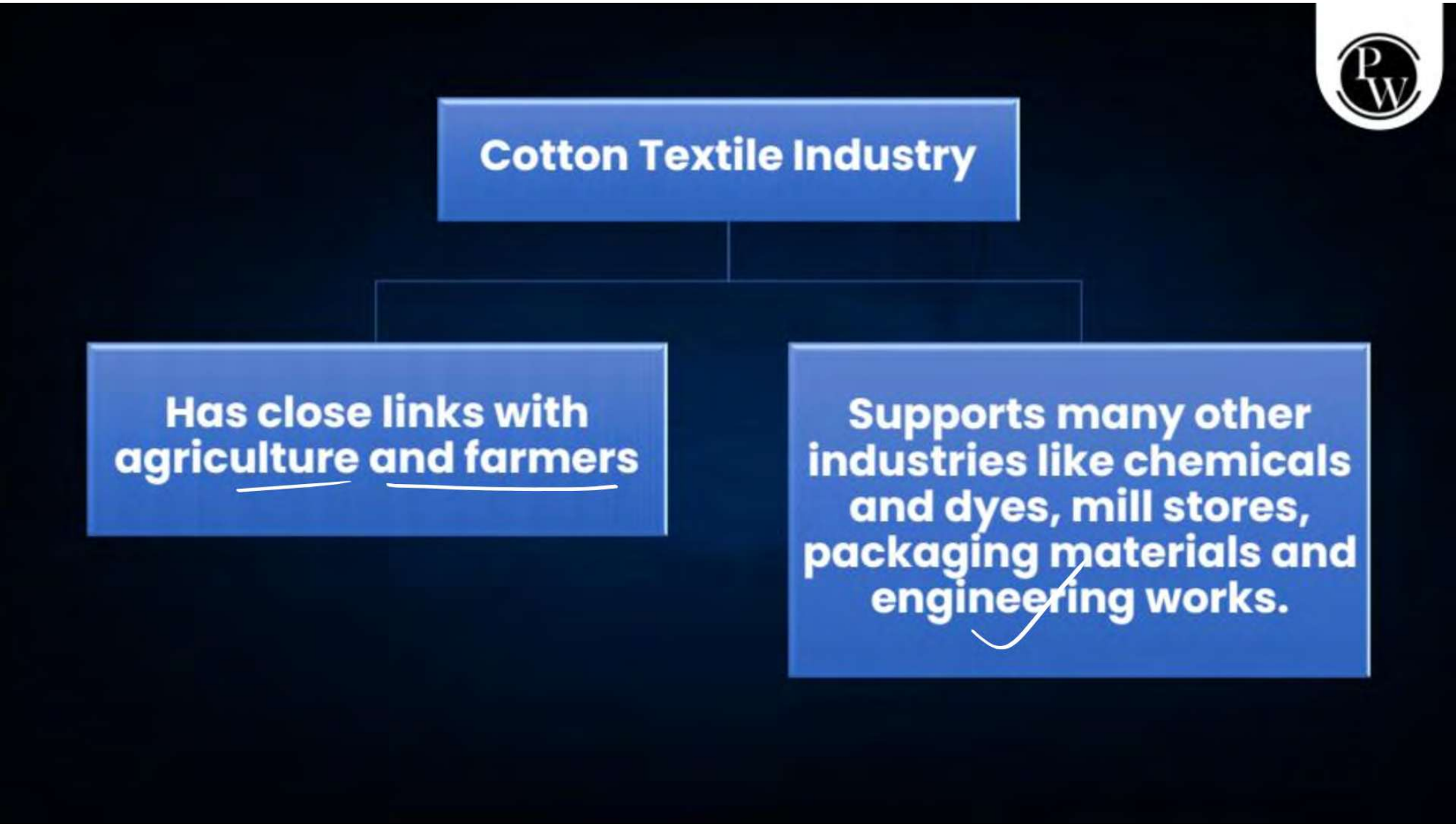
Cotton Textiles

- Ancient India:
- Cotton textiles were produced with hand spinning and handloom weaving techniques.
- After the 18th century:
- Power-looms
- Our traditional industries suffered a setback during the colonial period:
- They could not compete with the mill-made cloth from England.



- Localisation of cotton textile industry in Maharashtra and Gujarat:
- Availability of raw cotton, market, transport including accessible port facilities, labour, moist climate

→ ideal for the growth of cotton crop.


Cotton Textile Industry
Has close links with agriculture and farmers
Supports many other industries like chemicals and dyes, mill stores, packaging materials and engineering works.

Challenges Faced

- **Strong spinning units but weak weaving sector:**

- Spinning continues to be centralised in Maharashtra, Gujarat and Tamil Nadu, weaving is highly decentralised to provide scope for incorporating traditional skills and designs of weaving in cotton, silk, zari, embroidery, etc.

- India has world class production in spinning, but weaving supplies low quality of fabric as it cannot use much of the high quality yarn produced in the country. Weaving is done by handloom, powerloom and in mills.

Jute Textiles

- India is the largest producer of raw jute and jute goods and stands at second place as an exporter after Bangladesh.
- Most of the mills are located in West Bengal, mainly along the banks of the Hugli river, in a narrow belt.

First jute mill was set up near Kolkata in 1859 at Rishra. After Partition in 1947, the jute mills remained in India but three-fourth of the jute producing area went to Bangladesh (erstwhile East Pakistan).

- Industrial Location in Hugli Basin keeping in mind the factors:
- Proximity of the jute producing areas.
- Inexpensive water transport.
- Good network of railways, roadways and waterways to facilitate movement of raw material to the mills.
- Abundant water for processing raw jute
- Cheap labour from West Bengal and adjoining states of Bihar, Orissa and Uttar Pradesh.
- Kolkata as a large urban centre provides banking, insurance and port facilities for export of jute goods.

Sugar Industry

→ Cooperative sector

- India - second as a world producer of sugar.

1st ?

- First place - production of gur and khandsari.
- Raw material used in this industry is bulky, and in haulage its sucrose content reduces.

→ sugarcane

- Where should the mills be ideally located?

Sugar Industry

- The mills are located in Uttar Pradesh, Bihar, Maharashtra, Karnataka, Tamil Nadu, Andhra Pradesh, Gujarat, Punjab, Haryana and Madhya Pradesh. Sixty per cent mills are in Uttar Pradesh and Bihar.

- In recent years - tendency for the mills to shift and concentrate in the southern and western states, especially in Maharashtra:
- Cane produced here has a higher sucrose content.
- Cooler climate also ensures a longer crushing season.
- The cooperatives are more successful in these states.

Major challenges:

Seasonal nature of the industry

Old and inefficient methods of production

Transport delay in reaching cane to factories and the need to maximise the use of baggase.

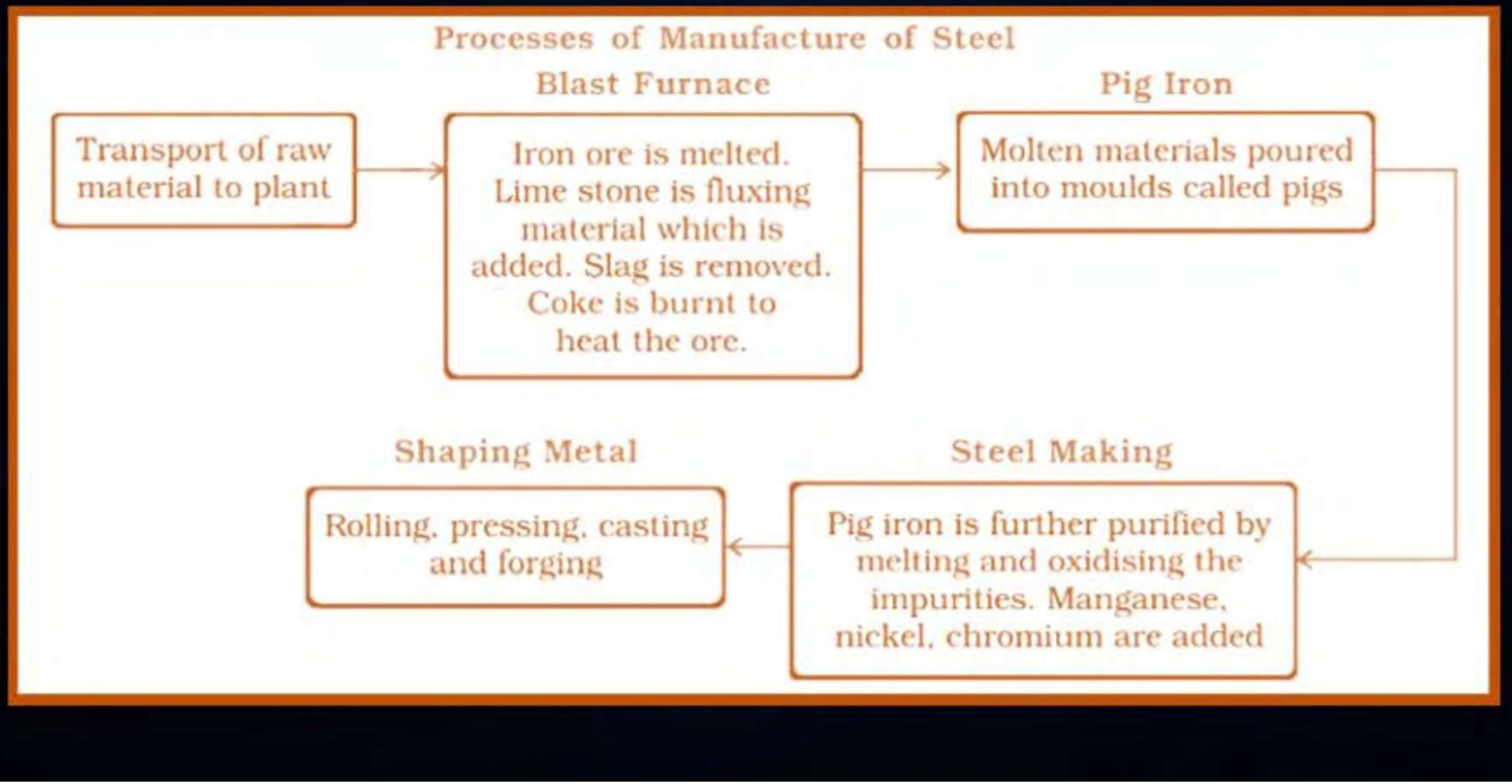
Iron and Steel Industry

Mineral Based

- Basic industry
  - Raw mat. → Iron Ore
- Production and consumption of steel is often regarded as the index of a country's development.
- A heavy industry - Heavy transportation costs.

- Iron ore, coking coal and lime stone are required in the ratio of approximately 4 : 2 : 1.

- Some quantities of manganese, are also required to harden the steel.


Processes of Manufacture of Steel
Blast Furnace
Pig Iron
Transport of raw material to plant
Iron ore is melted. Lime stone is fluxing material which is added. Slag is removed. Coke is burnt to heat the ore.
Molten materials poured into moulds called pigs
Shaping Metal
Steel Making
Rolling, pressing, casting and forging
Pig iron is further purified by melting and oxidising the impurities. Manganese, nickel, chromium are added

- Chhota nagpur plateau region has the maximum concentration of iron and steel industries:

- low cost of iron ore.
- high grade raw materials in proximity.
- cheap labour.
- vast growth potential in the home market.

Aluminium Smelting

Mineral Based Industry

Raw mat → Bauxite

- Second most important metallurgical industry in India.
- It is light, resistant to corrosion, a good conductor of heat, malleable and becomes strong when it is mixed with other metals.
- Used to manufacture aircraft, utensils and wires.
- It has gained popularity as a substitute of steel, copper, zinc and lead in a number of industries.

- Located in Odisha, West Bengal, Kerala, Uttar Pradesh, Chhattisgarh, Maharashtra and Tamil Nadu.

- Bauxite, the raw material used in the smelters is a very bulky, dark reddish coloured rock. The flow chart given below shows the process of manufacturing aluminium.

- Regular supply of electricity and an assured source of raw material at minimum cost are the two prime factors for location of the industry.

4 to 6 tonnes of bauxite → 2 tonnes of alumina → 1 tonne of aluminium

Chemical Industry

- Fast growing and diversifying.
- Comprises both large and small scale manufacturing units.

Inorganic chemicals:

Sulphuric acid (used to manufacture fertilizers, synthetic fibres, plastics, adhesives, paints, dyes stuffs), nitric acid, alkalies, soda ash (used to make glass, soaps and detergents, paper) and caustic soda.

Organic chemicals:

Petrochemicals, which are used for manufacturing of synthetic fibers, synthetic rubber, plastics, dye-stuffs, drugs and pharmaceuticals.

- Chemical industry is its own largest consumer.
- Basic chemicals undergo processing to further produce other chemicals that are used for industrial application, agriculture or directly for consumer markets.

Fertilizer Industry

- Centred around the production of nitrogenous fertilizers (mainly urea), phosphatic fertilizers and ammonium phosphate (DAP) and complex fertilizers which have a combination of nitrogen (N), phosphate (P), and potash (K).
- Potash is entirely imported as the country. Why?
- After the Green Revolution - industry expanded.
- Gujarat, Tamil Nadu, Uttar Pradesh, Punjab and Kerala contribute towards half of the fertilizer production.

Cement Industry

- Cement is essential for construction activity.
- This industry requires bulky and heavy raw materials like limestone, silica and gypsum.
- Coal and electric power are needed apart from rail transportation.
- Industry has strategically located plants in Gujarat that have suitable access to the market in the Gulf countries.

Automobile Industry

- Provide vehicle for quick transport of good services and passengers.
- After the liberalisation, the coming in of new and contemporary models stimulated the demand for vehicles in the market, which led to the healthy growth of the industry including passenger cars, two and three-wheelers.
- The industry is located around Delhi, Gurugram, Mumbai, Pune, Chennai, Kolkata, Lucknow, Indore, Hyderabad, Jamshedpur and Bengaluru.

Information Technology and Electronics Industry

- The electronics industry covers a wide range of products from transistor sets to television, telephones, cellular telecom, telephone exchange, radars, computers and many other equipments required by the telecommunication industry.
- Bengaluru has emerged as the electronic capital of India.
- Important centres for electronic goods are Mumbai, Delhi, Hyderabad, Pune, Chennai, Kolkata, Lucknow and Coimbatore.
- The major industry concentration is at Bengaluru, Noida, Mumbai, Chennai, Hyderabad and Pune.
- A major impact of this industry has been on employment generation. The continuing growth in the hardware and software is the key to the success of IT industry in India.

Air Pollution

- Caused by - undesirable gases, such as sulphur dioxide and carbon monoxide.
- Airborne particulate materials contain both solid and liquid particles like dust, sprays mist and smoke.

- Smoke is emitted by chemical and paper factories, brick kilns, refineries and smelting plants, and burning of fossil fuels in big and small factories that ignore pollution norms.
- Toxic gas leaks can be very hazardous with long-term effects.

Water Pollution

- Is caused by organic and inorganic industrial wastes and affluents discharged into rivers.
- Main culprits are paper, pulp, chemical, textile and dyeing, petroleum refineries, tanneries and electroplating industries that let out dyes, detergents, acids, salts and heavy metals like lead and mercury pesticides, fertilisers, synthetic chemicals with carbon, plastics and rubber, etc. into the water bodies.
- Fly ash, phospo- gypsum and iron and steel slags are the major solid wastes in India.

Thermal Pollution

- When hot water from factories and thermal plants is drained into rivers and ponds before cooling.
- Wastes from nuclear power plants, nuclear and weapon production facilities cause cancers, birth defects and miscarriages.
- Dumping of wastes specially glass, harmful chemicals, industrial effluents, packaging, salts and garbage renders the soil useless.
- Rain water percolates to the soil carrying the pollutants to the ground and the ground water also gets contaminated.

Noise Pollution

- Cause hearing impairment, increased heart rate and blood pressure among other physiological effects.
- Unwanted sound is an irritant and a source of stress.
- Industrial and construction activities, machinery, factory equipment, generators, saws and pneumatic and electric drills also make a lot of noise.

Control of Environmental Degradation

Some suggestions to reduce industrial pollution of fresh water :

(i) minimising use water for processing by reusing and recycling it in two or more successive stages.

(ii) harvesting of rainwater to meet water requirements.

(iii) Treating hot water and effluents before releasing them in rivers and ponds. Treatment of industrial effluents can be done in three phases:

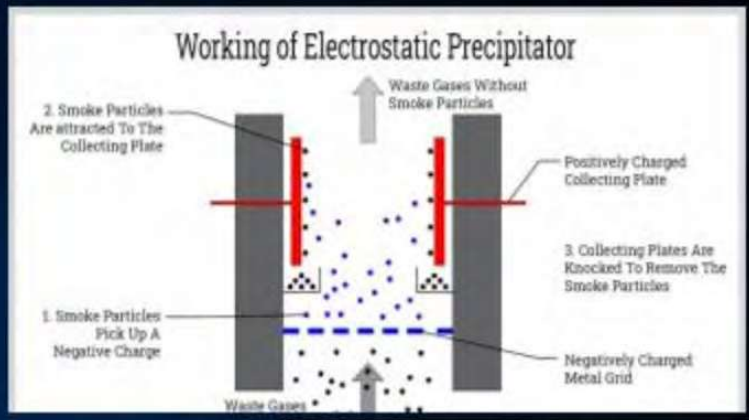
(a) Primary treatment by mechanical means. This involves screening, grinding, flocculation and sedimentation.

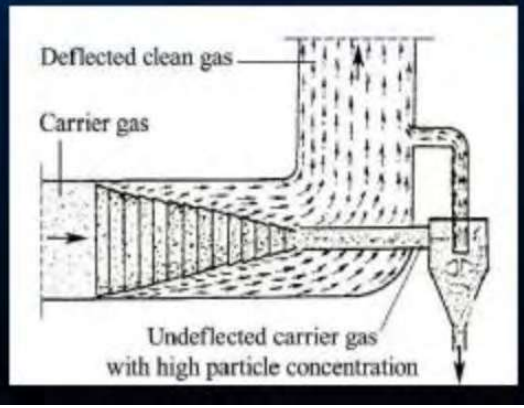
(b) Secondary treatment by biological process.

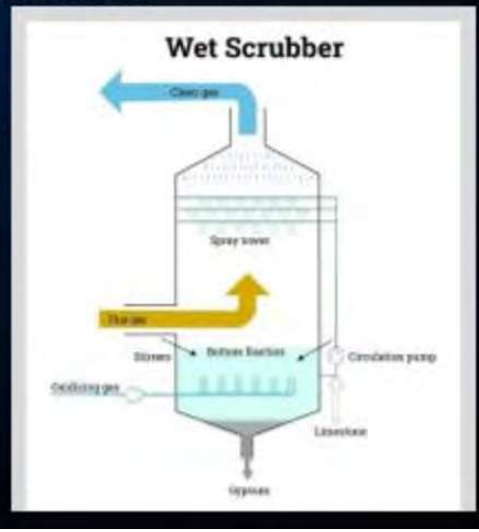
(c) Tertiary treatment by biological, chemical and physical processes. This involves recycling of wastewater.

Control of Environmental Degradation

- Particulate matter in the air can be reduced by fitting smoke stacks to factories with electrostatic precipitators, fabric filters, scrubbers and inertial separators.
- Smoke can be reduced by using oil or gas instead of coal in factories.
- Machinery and equipment can be used and generators should be fitted with silencers. Noise absorbing material may be used apart from personal use of earplugs and earphones.







- NTPC is a major power providing corporation in India. It has ISO certification for EMS (Environment Management System) 14001. The corporation has a pro-active approach for preserving the natural environment and resources like water, oil and gas and fuels in places where it is setting up power plants. This has been possible through:

(a) Optimum utilisation of equipment adopting latest techniques and upgrading existing equipment.

(b) Minimising waste generation by maximising ash utilisation.

(c) Providing green belts for nurturing ecological balance and addressing the question of special purpose vehicles for afforestation.

(d) Reducing environmental pollution through ash pond management, ash water recycling system and liquid waste management.

(e) Ecological monitoring, reviews and online database management for all its power stations.