🧰 What Is an Industry?

Industry refers to any economic activity that involves producing goods, extracting minerals, or providing services. For example:

- Iron and steel industry → produces goods
- Coal mining → extraction of minerals
- Tourism → provides services

📘 Industry – An activity that involves the production of goods, extraction of resources, or offering of services.

📷 *Fig. 4.1 – Stages in food processing (e.g. makhana production)*

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🏭 What Is Manufacturing?

Manufacturing means converting raw materials into useful products that have more value. For example:

- Wood is turned into pulp → pulp is turned into paper → paper is made into notebooks
  At each step, value is added.

📘 Manufacturing – The process of changing raw materials into finished goods of greater value.

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🧱 Types of Industries

Industries are classified on the basis of:

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1️⃣ Raw Materials

- Agro-based: Use plant or animal products. E.g. cotton textiles, dairy

- Mineral-based: Use minerals. E.g. iron and steel
- Marine-based: Use sea products. E.g. seafood processing
- Forest-based: Use forest items. E.g. paper, furniture

📷 *Fig. 4.2 – Sudha Dairy (example of a co-operative agro-based industry)*

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2️⃣ Size

- Small-scale: Small capital, less tech. E.g. silk weaving, food processing
- Large-scale: Big capital, advanced tech. E.g. automobile industry

📘 Cottage Industry – A type of small-scale industry where goods are made by hand, often at home. E.g. basket weaving, pottery

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3️⃣ Ownership

- Private sector: Owned by individuals/groups
- Public sector: Owned by government (e.g. SAIL, HAL)
- Joint sector: Owned jointly by state + individuals (e.g. Maruti Udyog)
- Co-operative sector: Owned by producers/workers (e.g. Amul, Sudha Dairy)

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📍 Factors Affecting Industrial Location

Industries are set up where these are available:

- Raw material
- Labour
- Land
- Water
- Power
- Capital
- Transport
- Market

Sometimes governments give incentives (like cheap power) to promote industries in backward areas.
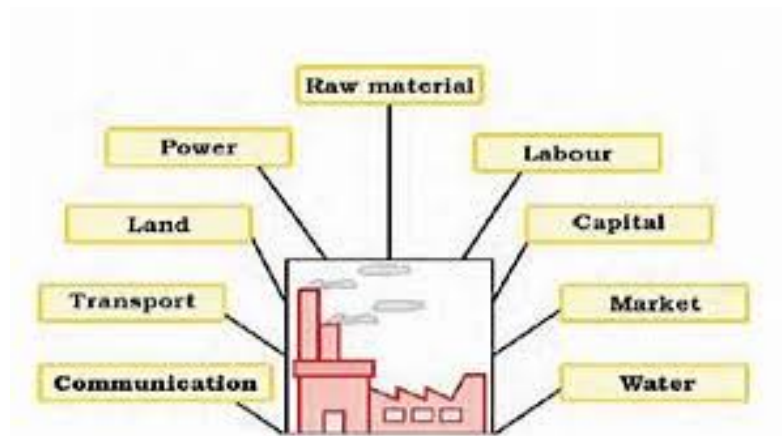

📷 *Fig. 4.3 – Location factors for industries*

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⚙️ The Industrial System

Like farming, industries also work as systems.

- Inputs – Raw material, power, transport, labour
- Processes – Activities that convert input to output
- Outputs – Finished goods and income

📘 Example – In the textile industry:
 Input = cotton → Processes = spinning, weaving → Output = cloth

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🌍 Industrial Regions

Industrial regions develop when many industries are located close together.

📍 Major industrial regions (world):

- Eastern North America
- Western & Central Europe
- Eastern Asia

📍 Major industrial regions (India):

- Mumbai-Pune
- Bangalore-Tamil Nadu
- Chhota Nagpur belt
- Kolkata-Hugli
- Vishakhapatnam-Guntur
- Delhi-Gurgaon-Meerut

- Kollam-Thiruvananthapuram

📷 Fig. 4.4 – World Industrial Regions map

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☣ Industrial Disasters

Industrial accidents often occur due to technical failures or poor handling of hazardous materials.

📍 Bhopal Gas Tragedy (India, 1984) – Worst industrial disaster

- Poisonous MIC gas leaked from Union Carbide factory
- Over 3,000 people died; many still suffer illnesses

📍 China, 2005 – Gas explosion in Gao Qiao

- 243 dead, thousands injured

📷 Fig. – Rescue operation photo (Gao Qiao, China)

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✅ Risk Reduction Measures

- Keep residential areas far from industries
- Inform local people about possible hazards
- Improve fire and safety systems
- Limit storage of toxic substances
- Control pollution effectively

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🏗️ Major Industries of the World

◆ Iron and Steel – Germany, USA, China, Japan, Russia
◆ Textiles – India, South Korea, Hong Kong, Japan
◆ IT (Information Technology) – Silicon Valley (USA), Bangalore (India)

📘 Sunrise Industries – New growing industries like IT, Wellness, Hospitality

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🏭 Iron and Steel Industry: A Case Study

Steel is known as the backbone of modern industry.

- Used in: ships, machines, buildings, vehicles, pipelines, tools

📘 Smelting – Extracting metals from ores by heating

Inputs: iron ore, coal, limestone, labour, water
Process: Smelting in blast furnace → Refining
Output: Steel

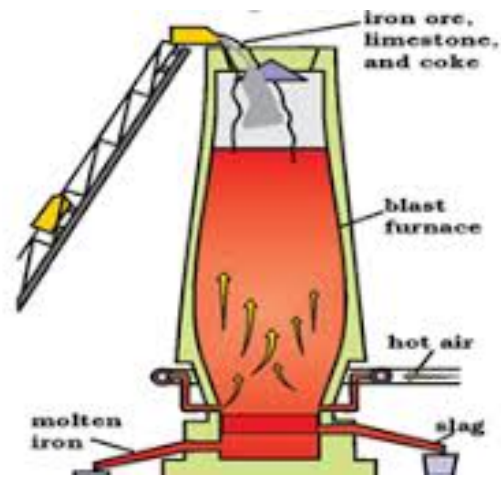📷 *Fig. 4.5 – Steel Manufacturing process*
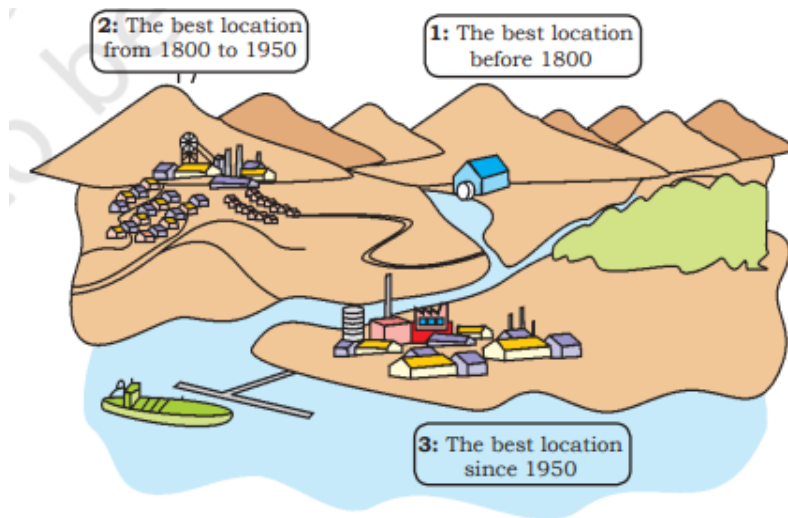
📷 *Fig. 4.6 – Blast Furnace (Smelting)*

📷 *Fig. 4.7 – Changing location trends of iron & steel plants*

Earlier, steel plants were located near raw materials.
Today, they are near ports because iron ore is imported and transport is needed.

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🇮🇳 Iron and Steel Industry in India

Steel plants are located in:

- Jharkhand
- Odisha
- Chhattisgarh
- West Bengal
- Karnataka
- Andhra Pradesh
- Tamil Nadu

📍 Major plants: Jamshedpur, Bhilai, Durgapur, Rourkela, Bokaro, Vishakhapatnam, Bhadravati

📷 *Fig. 4.8 – World Iron Ore Map*

📷 *Fig. 4.9 – Iron and Steel in Jamshedpur*

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🏭 Jamshedpur: India's First Steel City

Tata Iron and Steel Company (TISCO) was set up in 1907 at Sakchi (renamed Jamshedpur), near the rivers Subarnarekha and Kharkai in Jharkhand.

Why Sakchi was chosen:

- Close to raw materials (iron ore, coal, manganese)
- Near railway line and Kolkata market
- Easy water supply from rivers
- Support from British government

📘 Jharia coalfields provide coal
📘 Odisha and Chhattisgarh supply iron ore and other minerals

Today, many other factories are in Jamshedpur — producing chemicals, tinplate, machinery, wires, etc.

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🇺🇸 Pittsburgh: Steel City of the USA

Located in the USA, Pittsburgh developed due to:

- Nearby coal
- Iron ore from Minnesota (transported by ships and trains via Great Lakes)
- Rivers (Ohio, Allegheny, Monongahela) supply water
- Rail and water help in transporting finished steel

📘 Pittsburgh has many industries that use steel: making machinery, railway parts, tools

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📚 Important Terms

Term	Meaning
Industry	Economic activity involving goods, minerals, or services
Manufacturing	Making finished goods from raw materials
Cottage Industry	Small industry, often home-based, handmade
Public Sector	Owned by government
Joint Sector	Owned by government + private group
Smelting	Extracting metal from ore by heating
Sunrise Industry	Newly growing industries (like IT)
Industrial System	Inputs → Process → Output in an industry