

BPSC Mains

Relevance: GS-2 SEC-3; Science and Technology

Importance of Science and Technology in India

Science and technology (S&T) play a crucial role in the development and progress of India, impacting multiple dimensions of society, economy, and governance. India's focus on S&T has helped it achieve significant milestones and improve the quality of life for its citizens.

Economic Growth and Industrial Development

- 1. Information Technology (IT) and Software Services**
 - **Fact:** The IT sector contributes about 8% to India's GDP.
 - **Case Study:** Bangalore, known as the "Silicon Valley of India," hosts numerous IT companies like Infosys and Wipro, driving economic growth and providing millions of jobs.
- 2. Manufacturing and Make in India**
 - **Fact:** The "Make in India" initiative aims to increase the manufacturing sector's GDP contribution to 25% by 2025.
 - **Case Study:** The automotive industry in Chennai, dubbed the "Detroit of Asia," leverages advanced manufacturing technologies, significantly boosting local and national economies.

Healthcare and Biotechnology

- 1. Pharmaceutical Industry**
 - **Fact:** India is the largest provider of generic drugs globally, supplying over 50% of global demand.
 - **Case Study:** The development of generic drugs and vaccines by companies like Dr. Reddy's Laboratories and Bharat Biotech has made essential medicines affordable and accessible worldwide.
- 2. Medical Research and Innovations**
 - **Fact:** India's biotechnology industry is expected to grow to \$100 billion by 2025.
 - **Case Study:** The development of the indigenous COVID-19 vaccine, Covaxin, by Bharat Biotech, demonstrated India's capability in rapid medical innovation.

Agriculture and Food Security

- 1. Green Revolution**
 - **Fact:** The Green Revolution in the 1960s and 1970s led to a significant increase in food grain production.
 - **Case Study:** The use of high-yielding variety (HYV) seeds, fertilizers, and irrigation technology transformed Punjab into the "Granary of India."
- 2. Agri-tech Innovations**

- **Fact:** Precision farming and digital agriculture tools are enhancing productivity and sustainability.
- **Case Study:** The use of drones for crop monitoring and the adoption of mobile apps for market price information in states like Maharashtra are helping farmers make informed decisions.

Space Technology and Exploration

1. ISRO's Achievements

- **Fact:** The Indian Space Research Organisation (ISRO) has launched over 300 satellites for 33 countries.
- **Case Study:** The Mars Orbiter Mission (Mangalyaan) made India the first country to reach Mars in its first attempt and at a fraction of the cost of other missions.

2. Satellite Technology

- **Fact:** ISRO's satellite technology supports communication, weather forecasting, and disaster management.
- **Case Study:** The Indian Regional Navigation Satellite System (IRNSS), also known as NavIC, provides accurate position information services to users in India and the surrounding region.

Energy and Environment

1. Renewable Energy

- **Fact:** India aims to achieve 175 GW of renewable energy capacity by 2022.
- **Case Study:** The solar power project in the Thar Desert, Rajasthan, is one of the world's largest, contributing significantly to India's renewable energy capacity.

2. Sustainable Practices

- **Fact:** India ranks fourth globally in installed renewable energy capacity.
- **Case Study:** The implementation of the National Green Tribunal (NGT) has helped in the enforcement of environmental laws, contributing to sustainable development.

Education and Human Resource Development

1. STEM Education

- **Fact:** India produces the largest number of engineers annually.
- **Case Study:** The Indian Institutes of Technology (IITs) are renowned for their world-class engineering education, producing graduates who lead global technology companies.

2. Research and Innovation

- **Fact:** India ranks among the top 10 countries in terms of scientific publications.
- **Case Study:** The Council of Scientific and Industrial Research (CSIR) is known for its significant contributions to scientific research and industrial development in India.

Defense and National Security

1. Indigenous Defense Technology

- **Fact:** India's defense sector has developed advanced technologies such as ballistic missiles, fighter jets, and naval ships.
- **Case Study:** The successful development and deployment of the Agni series of ballistic missiles have bolstered India's strategic defense capabilities.

2. Cybersecurity

- **Fact:** India is enhancing its cybersecurity infrastructure to protect against digital threats.
- **Case Study:** The establishment of the Indian Computer Emergency Response Team (CERT-In) monitors and responds to cyber threats, safeguarding national security.

Conclusion

Science and technology are indispensable to India's progress and development. From driving economic growth and industrial innovation to enhancing healthcare, agriculture, and national security, the contributions of S&T are profound and far-reaching. Continued investment in and emphasis on science and technology will ensure that India remains at the forefront of global innovation and development, improving the quality of life for its citizens and securing its place as a leading global power.

For any Course related Query: **9113430228**

For any Book/ Order/ Shipment related Query: **7291877972**

Please drop a message on whatsapp if Call is busy/Not answered. Your queries will be resolved in due course.

Our Flagship Courses

RESONANCE 3.0

DAKSH-70

ESSAY COURSE FOR BPSC

Visit www.bpsconceptwallah.com