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To The Point

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GS Paper 2 – International Relations

1 23rd Meeting of the SCO Council of Heads of Government

Context: The **23rd Meeting of the Shanghai Cooperation Organization (SCO) Council of Heads of Government** was recently hosted by **Islamabad**. The summit saw the signing of eight significant agreements, focusing on issues like the **SCO budget**, the operations of the **SCO Secretariat**, and **counterterrorism efforts**.

Key Takeaways from the Summit:

1. **India's Focus**: India emphasized the need to combat the three evils: **terrorism, extremism, and separatism**, which threaten regional peace and development.
2. **Opposition to China's BRI**: India reiterated its position of **not endorsing China's Belt and Road Initiative (BRI)** due to concerns over territorial integrity and sovereignty.
3. **Criticism of Unilateral Sanctions**: Some members criticized **Western sanctions** imposed on countries like Russia, calling them unfair and counterproductive.
4. **India's Digital Agenda**: India pushed forward its digital initiatives, emphasizing **Digital Public Infrastructure (DPI)** and **digital inclusion**, incorporating them into the SCO's cooperation framework.

Significance of SCO for India:

- **Counterterrorism Cooperation**: India benefits from the **Regional Anti-Terrorist Structure (RATS)**, which provides crucial intelligence and information on terrorist movements and drug trafficking.
- **Platform for Central Asian Engagement**: The SCO offers India a forum for pursuing its **Connect Central Asia policy**, strengthening its ties with Central Asian nations.
- **Indo-Russian Cooperation**: SCO is an important platform for **India-Russia collaboration**, especially in the face of changing global dynamics.
- **Energy Security**: The SCO region is rich in energy resources, holding about **4% of the world's natural gas** and **3% of oil reserves**, which is crucial for India's energy needs.
- **Balancing China's Influence**: India's involvement in the SCO allows it to counterbalance China's regional dominance through projects like **Chabahar Port** and the **International North-South Transport Corridor (INSTC)**.

About the SCO

- **Headquarters**: **Beijing, China**
- **Established**: 2001 in **Shanghai**, by Kazakhstan, China, Kyrgyzstan, Russia, Tajikistan, and Uzbekistan.
- **Current Members**: India, Iran, Kazakhstan, China, Kyrgyzstan, Pakistan, Russia, Tajikistan, Uzbekistan, and Belarus.
- **Observers**: Afghanistan and Mongolia.
- **Goals**: The SCO aims to strengthen **mutual trust, cooperation, and neighbourly relations** among member states and to promote cooperation in political, economic, and cultural spheres.

Challenges within the SCO:

- **Disputes among Member States**: Ongoing tensions between member countries, including India and Pakistan, sometimes hinder effective cooperation.
- **Competition for Dominance**: The rivalry between **China and Russia** for influence within the SCO complicates its operations.
- **Divergent Interests**: Member countries often have varying political and economic interests, creating challenges in formulating a cohesive strategy

GS Paper 2 – Science and Technology, Defence

2 Evaluating Trustworthy Artificial Intelligence (ETAI) Framework

Context: The **Evaluating Trustworthy Artificial Intelligence (ETAI) Framework** has been introduced by India's Chief of Defence Staff, aiming to integrate trustworthy AI into critical defence operations. This **risk-based assessment framework** is tailored specifically for the defence sector to ensure that the adoption of AI technologies aligns with key ethical and operational principles.

Key Features of the ETAI Framework:

1. **Five Principles of Trustworthy AI**:
    - **Reliability and Robustness**: Ensuring that AI systems function consistently under various conditions, without failures or unpredictable behaviour.
    - **Safety and Security**: AI systems must safeguard against malicious attacks or misuse, especially in sensitive defence contexts.
    - **Transparency**: Providing clear insights into AI operations, decision-making processes, and the reasoning behind AI-driven actions.
    - **Fairness**: AI systems should prevent bias and ensure equitable treatment across different scenarios.
    - **Privacy**: Protecting sensitive information and ensuring that AI systems adhere to privacy standards.
2. **Comprehensive Evaluation Criteria**: The framework defines structured criteria to **evaluate AI trustworthiness** and guide the development and deployment of AI technologies in defence operations.

AI's Role in Revolutionizing Modern Warfare:

1. **Intelligent Weapons Systems**: AI enhances the capabilities of **autonomous systems** such as drones and other unmanned vehicles. Examples include **Israeli UAVs Harpy and Harop**, which leverage AI for improved targeting and operational efficiency.
2. **Command and Control**: AI can process vast amounts of battlefield data in real-time, helping military leaders make informed decisions. An example is **Sarvatra Pehchaan**, an AI-based intrusion detection system integrated with command stations.
3. **Decision-Support Systems**: AI-driven systems help assess complex battlefield scenarios and suggest optimal strategies. For instance, the **Storm drone**, used by the Indian Army, enhances battlefield situational awareness.

Concerns Regarding AI Use in Defence:

1. **Accidental Damage**: The use of **autonomously controlled weapons**, such as **killer robots**, poses risks of **civilian casualties** and unintended harm during operations.
2. **Legal and Ethical Ambiguity**: AI systems in warfare raise questions around **human rights violations** and **civilian casualties**, as accountability and oversight are often unclear.
3. **Other Issues**:
    - **Cybersecurity risks**: AI systems can be vulnerable to cyber-attacks.
    - **Lack of reliability**: Unforeseen malfunctions may cause operational failures.
    - **Potential for unrest**: AI-driven weapons could intensify conflicts and escalate tensions.

Steps Taken by India for AI Adoption in Defence:

1. **Defence AI Council (DAIC)**: Established to **provide strategic guidance and policy changes** for adopting AI in defence.
2. **Defence AI Project Agency (DAIPA)**: Prepares the **roadmap** for developing AI-enabled applications within the defence sector.
3. **AI Roadmap for Defence Public Sector Units (DPSUs)**: A set of **61 defence-specific AI projects** has been identified for development and implementation.
4. **Innovations for Defence Excellence (iDEX)**: This framework promotes **innovation and collaboration** within the defence sector by supporting AI-related projects.

India's move towards AI integration in defence through the ETAI framework reflects a commitment to **technological advancement** while ensuring **trustworthiness, ethical integrity, and operational safety**.

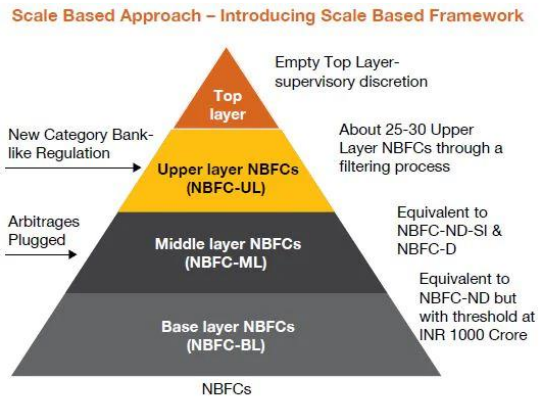
GS Paper 3 – Economy and Financial Sector Reforms

3 RBI bars four NBFCs from Granting Loans

Context: The **Reserve Bank of India (RBI)** has barred four Non-Banking Financial Companies (NBFCs) from **granting loans** due to concerns over their lending practices. This action was taken under **Section 45L(1)(b)** of the **Reserve Bank of India Act, 1934**. The decision is based on **supervisory concerns** regarding their **pricing policies**, specifically related to the **weighted average lending rate (WALR)** and the interest spread charged over their cost of funds.

Key Points About NBFCs:

1. **Classification**: NBFCs are regulated by the RBI and categorized into **four layers** based on their size, activity, and perceived risk:
    - **Base Layer**
    - **Middle Layer**
    - **Upper Layer**
    - **Top Layer**



Source: RBI's Discussion Paper on Revised Regulatory Framework for NBFCs - A Scale-Based Approach

2. **NBFC Definition**: An NBFC is a company registered under the **Companies Act, 1956**, primarily involved in lending, but excluding those involved in **agriculture, industrial activity, trading goods (except securities)**, and the **construction or sale of immovable property**.
3. **Differences from Banks**:
    - **Cannot accept demand deposits**.
    - **Not part of the payment and settlement system**, hence cannot issue cheques.
    - **Deposit insurance** from the Deposit Insurance and Credit Guarantee Corporation (DICGC) is not available to NBFC depositors.

Issues Faced by NBFCs:

- **Multiple Regulatory Bodies**: Different NBFCs fall under various regulators like **SEBI, IRDAI**, etc., creating a complex regulatory environment.
- **Maturity Mismatch**: NBFCs often borrow funds for the **short term** but lend for **long tenures**, leading to liquidity issues.
- **Non-Performing Assets (NPAs)**: Many NBFCs face the problem of increasing NPAs, affecting their financial health.

The RBI's decision reflects its ongoing efforts to ensure that NBFCs operate under sound financial principles and do not engage in unfair lending practices.

GS Paper 1 – World History

4 Key Facts about Petra

Context: Recent archaeological excavations in Petra, Jordan, have uncovered a **2,000-year-old tomb** containing skeletons and a chalice resembling the **Holy Grail**.

About Petra:

- **Location**: Petra is a historic city located in **southern Jordan**.
- **Establishment**: Petra was founded around **312 BC**, making it approximately **2,000 years old**.
- **Capital of Nabataeans**: Petra became the capital of the **Nabataeans**, an Arab tribe known for their mention in the Bible.
- **Trade Hub**: Under Nabataean rule, Petra thrived as a center for the **spice trade**, connecting China, Egypt, Greece, and India.
- **Roman Conquest**: In **106 AD**, Petra was conquered by the Romans and became a Roman province.
- **Islamic Era and Rediscovery**: Petra continued to grow until the 7th century when it fell under **Islamic rule**. It remained largely hidden until it was rediscovered by **Swiss explorer Johann Ludwig Burckhardt** in 1812.

Features:

- **Architecture**: Petra is famous for its **rock-cut architecture**, with buildings carved directly into sandstone cliffs.
- **Meaning of Name**: The name **Petra** is derived from the Greek word for "**rock**."
- **Geography**: Petra is built on a **terrace** with the **Wadi Musa** (Valley of Moses) running through it.
- **Colourful Cliffs**: The city's cliffs display a stunning range of colours, from **red** and **purple** to **pale yellow**.
- **Tombs**: Petra houses around **800 tombs**, earning it the title **"Royal Tombs"**, with the most famous structure being **The Treasury**.
- **Hydrology**: To sustain its population, Petra had an extensive **hydrological system**, including dams, cisterns, and water channels.
- **Rose City**: Petra is often called the **"Rose City"** because of the pinkish hue of its stone buildings.

UNESCO World Heritage Site:

- Petra was designated as a **UNESCO World Heritage Site** in **1985** due to its cultural and historical significance.

What is a UNESCO World Heritage Site?

A **World Heritage Site** is a location recognized by **UNESCO** for its outstanding cultural, historical, or natural value to humanity. These sites are protected under an international convention administered by UNESCO, aimed at preserving the heritage for future generations. Sites designated as **World Heritage** are considered of exceptional value and importance to the global community.

GS Paper 2 – Energy Security, Renewable Energy, Infrastructure Development

5 World Energy Outlook 2024

Context: According to the **World Energy Outlook 2024**, India is expected to experience a significant increase in energy demand over the next decade, more than any other country. This report, published annually by the **International Energy Agency (IEA)**, serves as a vital resource for understanding global energy trends, security, and economic implications.

About the World Energy Outlook 2024:

- **Publication Authority**: International Energy Agency (IEA)
- **Significance**: Considered the most authoritative source for global energy analysis and projections.
- **Focus Areas**:
    - Energy demand and supply trends
    - Implications for energy security and emissions
    - Economic development projections

Highlights from the 2024 Report:

- **Emerging Energy Context**: The world is entering a new energy phase characterized by geopolitical challenges alongside abundant fuels and technologies.
- **Surplus Projections**: A surplus of oil and liquefied natural gas (LNG) is expected in the latter half of the 2020s, coupled with a rise in clean energy manufacturing capabilities.
- **Electricity Generation**: Low-emission energy sources are anticipated to generate more than half of the world's electricity by 2030.
- **Peak Demand**: The demand for coal, oil, and gas is predicted to peak by the end of this decade.
- **Electricity Demand Growth**: Global electricity demand is projected to accelerate, adding an annual consumption equivalent to Japan's total use.

Highlights Related to India:

- **Energy Demand Increase**: India is set to face the highest growth in energy demand globally, attributed to its size and rising demand across all sectors.
- **Vehicle Growth**: By 2035, India is projected to add over **12,000 cars daily**.
- **Construction Expansion**: Built-up space is expected to increase by over **1 billion square meters annually**, surpassing South Africa's total built space.
- **Industrial Growth**: Iron and steel production is set to grow by **70%**, and cement output is expected to rise by nearly **55%** by 2035.

- **Air Conditioning Demand**: The stock of air conditioners is projected to increase by over **4.5 times**, leading to electricity demand that exceeds Mexico's total expected consumption by 2035.
- **Overall Energy Demand**: Total energy demand in India is anticipated to increase by nearly **35%** by 2035, with electricity generation capacity nearly tripling to **1400 GW**.
- **Coal's Role**: Coal is expected to maintain a significant role in India's energy mix, with projections to add about **60 gigawatts** of new coal-fired power capacity by 2030. Coal-based electricity generation is forecasted to increase by over **15%**, with coal providing **40%** of energy for industries like steel, cement, and manufacturing in 2023.

What is the International Energy Agency (IEA)?

- **Type**: Autonomous inter-governmental organization within the OECD framework.
- **Mission**: To collaborate with governments and industry to shape a secure and sustainable energy future globally.
- **Establishment**: Founded in **1974** in response to the 1973-1974 oil crisis, aimed at ensuring the security of oil supplies.
- **Membership**: Comprises **31 member countries** and **11 association countries**.

Conclusion: The **World Energy Outlook 2024** underscores India's impending energy demand surge, reflecting both challenges and opportunities for sustainable development. As the country navigates this complex landscape, effective policies and technological advancements will be critical to meeting its energy needs while addressing environmental concerns.

GS Paper 2 – International Organizations, Global Hunger and Poverty Alleviation

6 Hand-in-Hand Initiative

Context: The **Hand-in-Hand Initiative**, recently highlighted during the third Hand-in-Hand Investment Forum opened by the Director-General of the **Food and Agricultural Organization (FAO)**, aims to address pressing issues related to poverty and hunger.

About the Hand-in-Hand Initiative

- **Launch Year**: 2019
- **Agency**: A flagship initiative of the FAO.
- **Focus**: Targets countries and territories with the highest levels of poverty and hunger, limited national capacities, or significant operational challenges due to natural or man-made crises.

Objectives:

- **Eradicate Poverty (SDG 1)**: Work towards eliminating extreme poverty in all its forms.
- **End Hunger and Malnutrition (SDG 2)**: Ensure that all people have sufficient and nutritious food year-round.
- **Reduce Inequalities (SDG 10)**: Promote inclusive growth that benefits everyone.

Approach:

- Utilizes **geospatial**, **biophysical**, and **socio-economic data** along with advanced analytics to identify areas where agricultural transformation and sustainable management of forests and fisheries can significantly alleviate poverty and hunger.
- **Interventions Include**:
  - Developing value chains for priority commodities.
  - Building agro-industries and efficient water management systems.
  - Introducing digital services and precision agriculture practices.

Member Countries

- The initiative has garnered support from **72 countries**.

What is the FAO?

- **Full Name**: Food and Agricultural Organization of the United Nations.
- **Established**: October 1945, making it the oldest permanent specialized agency of the UN.
- **Mandate**: Focused on improving nutrition, increasing agricultural productivity, enhancing the standard of living for rural populations, and contributing to global economic growth.
- **Membership**: Comprises **194 Member States** and the **European Union**.
- **Headquarters**: Located in **Rome, Italy**.

What are Sustainable Development Goals (SDGs)?

- **Introduction**: The **2030 Agenda for Sustainable Development**, adopted by all UN Member States in 2015, serves as a blueprint for peace and prosperity for people and the planet.
- **Core**: The agenda includes **17 Sustainable Development Goals (SDGs)**, which represent a universal call to action for all countries—both developed and developing—to work in partnership toward sustainable development.

Conclusion: The **Hand-in-Hand Initiative** represents a crucial step in the global effort to tackle hunger and poverty, emphasizing collaboration and targeted interventions in the most vulnerable regions. By harnessing data and promoting sustainable practices, the initiative aligns closely with the broader objectives of the FAO and the United Nations' Sustainable Development Goals.

GS Paper 3 – Agriculture and Food Processing

7 SARTHI System

Context: The **Solar Assisted Reefer Transportation with Hybrid Controls and Intelligence (SARTHI)** system has been introduced by the **National Institute of Food Technology Entrepreneurship and Management (NIFTEM-K)** in Kundli. This innovative solution aims to minimize post-harvest losses during the transportation of perishable food items.

Key Features of the SARTHI System

- **Dual Compartment Design**: The system includes dual compartments specifically designed to store fruits and vegetables at different temperatures, catering to their distinct storage requirements.
- **Integration of IoT**:
  - The SARTHI system utilizes **Internet of Things (IoT)** technology for real-time monitoring.
  - It incorporates sensors that gather crucial data regarding the transportation environment.
- **Real-Time Data Monitoring**:
  - The sensors measure essential quality parameters such as:
    - **Temperature**
    - **Humidity**
    - **Ethylene levels**
    - **CO2 levels**
  - This data is transmitted to the cloud and can be accessed through a mobile app, providing transporters with real-time information on the quality of the produce and any physiological changes occurring during transit.
- **Solar-Powered Air Handling Unit**:
  - The system includes a solar-powered air handling unit that helps maintain optimal temperature control during halts, ensuring that the produce remains in ideal conditions throughout the journey.

Significance of the SARTHI System

- **Shelf-Life Extension**: By monitoring and controlling environmental conditions, the SARTHI system helps extend the shelf life of perishable goods, reducing spoilage.
- **Reduction of Post-Harvest Losses**: The technology addresses issues such as chilling injury and moisture loss, significantly lowering post-harvest losses in the supply chain.
- **Informed Decision-Making**: Transporters can make timely and informed decisions based on the quality data received. If spoilage is detected, they can potentially reroute the produce to closer markets, minimizing waste.
- **Energy Efficiency and Sustainability**: By optimizing transport routes and conditions, the system contributes to energy conservation and reduces the carbon footprint associated with food transportation.

Conclusion: The SARTHI system represents a significant advancement in the field of perishable food transportation, leveraging modern technology to enhance efficiency and sustainability. By integrating IoT and solar power, it not only aims to reduce food waste but also supports the broader goal of creating a more resilient and efficient food supply chain.

GS Paper 3 – Defense and Security

8 INS Samarthak

Context: INS Samarthak is a newly launched multi-purpose vessel for the Indian Navy, developed by **Larsen and Toubro (L&T)**.

About INS Samarthak

- **Type**: First of two multi-purpose vessels (MPVs) for the Indian Navy.
- **Design and Construction**:
  - Designed and built in-house at L&T Shipyard, Kattupalli.
  - Aligns with the Indian government's **'Make in India'** initiative and **'Atmanirbhar Vision'** (self-reliant vision).

Specifications:

- **Dimensions**:
  - Length: 107 meters
  - Width: 18.6 meters
  - Displacement: Over 3,750 tonnes
- **Speed**: Maximum speed of 15 knots.

Functions and Capabilities:

- **Development and Testing**: Supports the development and testing of next-generation weapons and sensors for the Indian Navy.
- **Other Roles**:
  - Maritime surveillance
  - Patrolling
  - Launching and recovering surface and aerial targets
  - Providing humanitarian assistance
  - Combating sea pollution

Key Points

- **Location of Shipyard**:
  - L&T's Kattupalli Shipyard is located in Ennore, approximately 45 km north of Chennai, Tamil Nadu.
  - It is one of India's most advanced shipbuilding and repair facilities, equipped with shiplift, dry berths, and wet berths to facilitate concurrent construction and repairs.

- **Current Projects**: In addition to the two MPVs, Kattupalli Shipyard is constructing three Cadet Training Ships and six other defence vessels for the Indian Navy under a Public-Private Partnership model.
- **International Collaboration**: The yard is also engaged in the repair of the US Naval Ship **Charles Drew** under a Master Ship Repair Agreement with the US Navy.

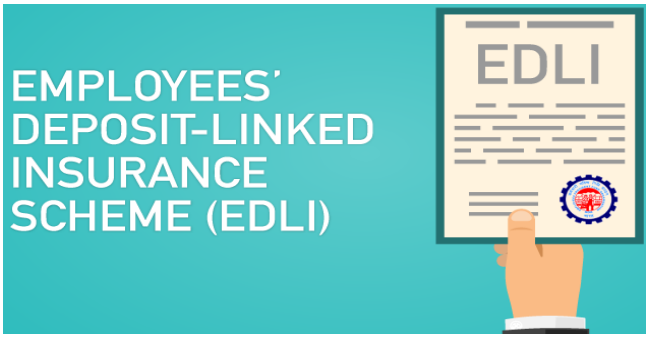
What is Larsen and Toubro (L&T)?

- **Profile**: L&T is an Indian multinational company involved in technology, engineering, construction, manufacturing, and financial services.
- **Sectors Served**: It operates in critical sectors including Hydrocarbon, Infrastructure, Power, Process Industries, and Defence.
- **Global Presence**: L&T serves customers in over 50 countries worldwide.
- **Sustainability**: It was the first engineering and construction company in India to publicly disclose its sustainability performance.

Conclusion: The launch of **INS Samarthak** underscores India's commitment to enhancing its naval capabilities through indigenous development, aligning with the broader goals of self-reliance and modernization in defence. The vessel's multifunctional roles are expected to significantly contribute to the Indian Navy's operational readiness and versatility.

GS Paper 2 – Welfare Schemes

9 Employees Deposit Linked Insurance (EDLI) Scheme



Context: The **Employees Deposit Linked Insurance (EDLI) Scheme** is a social security initiative launched by the Indian government in **1976**. Its primary goal is to provide life insurance benefits to employees in the private sector, ensuring financial support for their families in case of untimely demise.

Key Features of the EDLI Scheme

- **Insurance Coverage**: The scheme offers a term life insurance cover linked to the employee's provident fund (EPF) membership.
- **Eligibility**: It covers all organizations registered under the **Employees Provident Fund and Miscellaneous Provisions Act, 1952**.
- **Integration with EPF**: The EDLI scheme works in conjunction with the **Employees Provident Fund (EPF)** and the **Employees' Pension Scheme (EPS)**.
- **Benefit Calculation**: The benefit amount is determined by the employee's last drawn salary:
    - **Maximum Assured Benefit**: Up to **₹7 lakh** payable to the nominee or legal heir upon the death of the EPF member while in service.
    - **Minimum Assurance Benefit**: A minimum of **₹2.5 lakh** if the deceased member had continuous employment for at least **12 months** prior to death.
- **Cost-Free Insurance**: The life insurance coverage provided under the EDLI scheme is **free of cost** for EPF members.
- **Employer Contribution**: Employers contribute **0.5%** of the employee's monthly wages (up to a wage ceiling of ₹15,000). Employees do not make any contribution to this scheme.
- **Auto-Enrolment**: All EPF members are automatically enrolled in the EDLI scheme.
- **Claim Process**: The insurance benefit is directly credited to the bank account of the legal heir or nominee.

What is the Employees Provident Fund Organisation (EPFO)?

- **Definition**: The EPFO is a statutory body established under the **Employees' Provident Funds and Miscellaneous Act, 1952**.
- **Administrative Control**: It operates under the **Union Ministry of Labor and Employment**.
- **Governing Body**: The EPFO is managed by a tri-partite Board known as the **Central Board of Trustees**, which includes representatives from the Government (both Central and State), Employers, and Employees.
- **Functions**: The EPFO administers:
    - A **contributory provident fund**.
    - A **pension scheme**.
    - An **insurance scheme** for employees in the organized sector in India.

Conclusion: The **EDLI Scheme** serves as an essential safety net for employees in the private sector, providing their families with financial security in the event of their untimely death. The scheme's integration with the EPF and the minimal contribution requirement from employers further supports its accessibility and efficacy in enhancing social security for the workforce.

GS Paper 2 – Health and Nutrition

10 Why organic food can lead to a risk of gut disease

Context: A recent review published in the **European Journal of Clinical Nutrition** highlights that consuming organic food—produced without harmful pesticides, artificial fertilizers, or genetically engineered organisms—can reduce the risk of health conditions like obesity, diabetes, and high blood pressure. People opting for organic foods often lead healthier lifestyles overall, reflecting a broader trend towards health-conscious living.

What is Organic Food?

Organic food refers to food items that are cultivated without the use of chemical fertilizers, pesticides, and biotechnology. Natural methods are employed for cultivation, such as using natural fertilizers, organic pesticides, and processes that maintain soil health.

Key Aspects of Organic Food:

1. **Chemical-Free:** Organic farming does not use chemical fertilizers, pesticides, or herbicides.
2. **Natural Fertilizers:** Natural manures such as cow dung, compost, and green manures are used.
3. **Soil Health:** Organic farming practices include crop rotation and mixed cropping to maintain the natural nutrients in the soil.
4. **GMO-Free:** Organic food is grown without the use of genetically modified organisms (GMOs).

Health Benefits:

1. **Reduced Risk of Diseases:** Consuming organic food lowers the risk of diseases such as obesity, diabetes, and hypertension due to the absence of harmful chemicals and processing.
2. **Increased Nutrition:** Studies show that organic fruits and vegetables contain higher levels of antioxidants compared to conventional foods.
3. **Taste and Quality:** According to consumer opinions, organically grown food is considered to have better taste and quality than conventionally grown products.

Growth and Challenges:

- In 2022, the organic food market in India was valued at $1.278 million, and it is projected to grow to $4.6 million by 2028.
- Consumers have become more aware and are shifting toward healthier and safer food, free from chemical residues and pesticides.
- However, the increasing prevalence of organic farming has raised some concerns related to food security.

Food Security Challenges:

1. **Intestinal Bacteria and Pathogens:** The risk of infections from intestinal bacteria that cause diseases such as salmonellosis, cholera, and dysentery is increasing in organic products. This issue arises from the use of natural manures and animal waste in organic farming practices.
2. **Microbial Contamination:** Bacteria often cling to the surfaces of organic fruits and vegetables and can reside internally, making them difficult to remove.
3. **Contaminated Irrigation Water:** The contamination of irrigation water used in organic farming is also a major concern, as pathogens can spread to crops through contaminated water.

Safety Measures:

1. **Good Agricultural Practices:** Organic fertilizers should be produced through safe thermal and aerobic processes to eliminate harmful bacteria. Additionally, attention must be paid to clean irrigation water and environmental management.
2. **Sanitizing Techniques:** Sanitizing techniques should be adopted for processing and washing fresh produce to reduce bacterial impact.
3. **Real-Time Monitoring:** The use of real-time microbial monitoring techniques is essential to maintain food safety.

Conclusion: Despite the numerous health benefits of organic food, strong food safety measures are necessary to reduce contamination risks during production and distribution. Protecting plant health and preventing the spread of intestinal pathogens is crucial for preventing gastrointestinal diseases, ensuring that consumers can safely enjoy organic food.