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THE HINDU

Beyond Kudankulam's fence, a cybersecurity challenge

Prelims: General Studies Paper - 1

Current events of national and international importance

Mains: General Studies - 3

Security challenges and their management in the context of critical infrastructure.

Why in Focus?

- In July 2026, the **World Leaks** group claimed to have leaked nearly **19,000 files (14.3 GB)** related to the Kudankulam Nuclear Power Project.
- The breach **highlights the inadequacy of India's cybersecurity policy for critical infrastructure**, extending beyond physical facilities.

Critical Infrastructure: Essential physical and digital systems whose disruption or destruction could seriously affect national security, the economy, public health or safety.

Key Highlights:

- Reliance Infrastructure**, the **Engineering, Procurement and Construction contractor for Units 3 and 4**, confirmed that the breach involved data stored at **Yotta**, a third-party

data centre.

Units 3 and 4 of Kudankulam Nuclear Power Plant: Located in Tamil Nadu, Units 3 and 4 are being developed with Russian cooperation and use pressurised water reactors (PWRs) with each unit of capacity of 1,000 MW.

- NPCIL stated that the leaked documents included **engineering drawings, supplier details and inspection reports**.
- No public evidence indicated access to reactor** or nuclear control systems.

Nuclear Power Corporation of India Limited (NPCIL): Established in 1987 under the Department of Atomic Energy (DAE), NPCIL is responsible for the design, construction, commissioning and operation of nuclear power plants for electricity generation in India.

- The incident recalls the **2019 Dtrack malware incident**, which affected an **internet-facing administrative network**
- Contractors, subcontractors, cloud providers and data centres** may handle sensitive credentials, expanding the **cyberattack surface of critical infrastructure**.
- In India, **CERT-In** responds to cybersecurity incidents, while **NCIIPC**, established under **Section 70A of the IT Act, 2000**, protects critical information infrastructure.
- However, **accountability across supply chains** remains a challenge.

CERT-In (Indian Computer Emergency Response Team): Established in 2004 under the Ministry of Electronics and Information Technology; CERT-



It is the national nodal agency for responding to cybersecurity incidents, including hacking, phishing and malware attacks.

NCIIPC (National Critical Information Infrastructure Protection Centre): Established in 2014 under the National Technical Research Organisation; NCIIPC is India's nodal agency for protecting critical information infrastructure against cyber threats and attacks

Implications:

- Sensitive information can be exposed without breaching a facility's **core operational systems**.
- Weak contractor security creates vulnerabilities across **critical infrastructure supply chains**.
- Fragmented accountability can **delay responsibility** and **effective remediation**.
- **Expanding private-sector participation** and commercial cloud use increases **exposure to cyber risks**.

Way Forward:

- Extend **security obligations** to contractors, subcontractors and cloud providers.
- **Classify sensitive data and restrict access** and retention to what is necessary.
- Conduct **independent vendor assessments and red-team exercises**.
- Establish a **unified framework** involving CERT-In, NCIIPC, sectoral regulators and infrastructure operators.

Mains Question:

"Cybersecurity of critical infrastructure must extend beyond physical facilities to the entire supply chain." Discuss with reference to India's cybersecurity governance framework. (150 words, 10 marks)

A ready solution to tackle anaemia

Prelims: General Studies Paper - 1

Current events of national and international importance

Mains: General Studies - 2

Government policies and interventions for development in various sectors and issues

arising out of their design and implementation.

Why in Focus?

- Anaemia occurs when the **body has insufficient healthy red blood cells or haemoglobin** to carry enough oxygen to its tissues.
- It affects **over half of Indian women and nearly three-fourths of children**, contributing to **maternal mortality and impaired cognitive development**.

Key Highlights:

- The revised **Anaemia Mukt Bharat (AMB) strategy**, based on the **7x7x7 approach**, strengthens India's efforts to address anaemia through **prevention, screening and treatment**.

Anaemia Mukt Bharat (AMB): Launched in 2018, AMB is a Government of India initiative aimed at reducing anaemia among children, adolescents and women.

- The **7x7x7 strategy** includes **7 beneficiary groups** targeted for anaemia prevention, **7 interventions** for prevention, screening and treatment, and **7 institutional mechanisms** for effective implementation.
- **Double Fortified Salt (DFS)** contains both **iron and iodine**: iron supports **haemoglobin production**, while iodine prevents iodine deficiency disorders.
- DFS can reach millions of people through daily salt consumption, as around **95% of Indian households consume iodised salt**.
- Studies suggest it can reduce anaemia by up to **21%**, at an estimated additional cost of **₹14-₹20 per person annually**.
- DFS is recommended under **PM POSHAN** and **Integrated Child Development Services (ICDS)**, with an established **FSSAI standard**.

PM POSHAN (Pradhan Mantri Poshan Shakti Nirman): A Centrally Sponsored Scheme launched in 2021 to provide hot cooked meals to children in Classes I–VIII in government and government-aided schools, improving nutrition and school attendance.

Integrated Child Development Services (ICDS): Launched on 2 October 1975, ICDS provides supplementary nutrition, preschool education, immunisation, health check-ups and health education to children below six years,



pregnant women and lactating mothers through Anganwadi centres.

Implications:

- **Uneven integration into the Public Distribution System (PDS)** restricts access across States.
- **Inadequate consumer awareness and limited availability** may reduce adoption.
- Nationwide expansion requires **dedicated funding and consistent quality assurance**.
- **Sodium-reduction goals** must complement anaemia prevention efforts.

Way Forward:

- Expand **DFS** distribution through the PDS across States.
- Ensure **dedicated funding** and strengthen **quality monitoring and food safety standards**.
- Improve **consumer awareness** and **commercial availability**.

Mains Question:

“Double Fortified Salt can strengthen India’s efforts to address anaemia through an affordable, population-wide preventive approach.” Discuss. (150 words, 10 marks)

What are the powers of Special Executive Magistrates?

Prelims: General Studies Paper - 1

Indian Polity and Governance-Constitution, Political System, Panchayati Raj, Public Policy, Rights Issues, etc.

Mains: General Studies - 2

Government policies and interventions for development in various sectors and issues arising out of their design and implementation.

Why in Focus?

- The **Special Executive Magistrate (SEM) court** in Delhi granted bail to CJP activists, highlighting the role of SEMs.
- The **case has brought attention to the differences** between SEMs and Judicial

Magistrates.

Key Highlights:

- **Section 15 of the BNSS, 2023** empowers State governments to appoint **Special Executive Magistrates (SEMs)** for specific areas, periods or functions.

Bharatiya Nagarik Suraksha Sanhita (BNSS), 2023: An Indian law that replaced the Code of Criminal Procedure (CrPC), 1973, and governs criminal procedure, including arrest, investigation, bail and trial.

- SEMs perform **preventive and administrative functions** to maintain public order and prevent breaches of peace.
- **Section 126** allows an **Executive Magistrate to require a person likely to disturb public peace to execute a bond** for keeping the peace for up to **one year**.
- **Section 135** provides for an inquiry into information received in security proceedings, while **Section 141(1)(b)** deals with detention for the remaining period in certain cases involving breach of a bond.
- **Section 170** empowers police officers to **make preventive arrests when necessary to prevent a cognisable offence** that cannot otherwise be prevented.

Cognisable Offence: An offence in which the police can arrest a person without a warrant and initiate an investigation without prior permission from a Magistrate.

- **Judicial Magistrates** handle criminal proceedings, including trials, bail and remand, whereas **SEMs** perform preventive and administrative functions and cannot conduct criminal trials or convict individuals.
- SEMs must exercise their powers within the law, respect **procedural safeguards and constitutional rights**, and remain subject to judicial review.

Implications:

- Arbitrary use of these powers can threaten **personal liberty and the right to peaceful protest**.
- A clear distinction between executive and judicial functions helps prevent **overreach of legal powers**.



- Inadequate reasons for detention or weak procedural safeguards can undermine **public trust**.
- **Effective oversight can help ensure preventive powers** are not misused to suppress **lawful dissent**.

Way Forward:

- Ensure preventive proceedings and detention comply with **statutory requirements and constitutional safeguards**.
- Use preventive measures only when **necessary and proportionate** to the threat to public order.
- Record reasons for preventive action and maintain **transparent documentation**.
- **Strengthen access** to legal remedies and ensure **timely judicial scrutiny**

Mains Question:

“Preventive powers of Executive Magistrates are necessary for maintaining public order but must be exercised within constitutional limits.” Discuss with reference to the BNSS, 2023.(250 words, 15 marks)

From climate targets to energy justice

Prelims: General Studies Paper - 1

Current events of national and international importance

Mains: General Studies - 3

Conservation, environmental pollution and degradation, environmental impact assessment.

Why in Focus?

- Global climate policies are criticised for focusing heavily on **carbon emission reduction** while giving insufficient attention to **energy consumption, development needs and people's living standards**.
- Developing countries face the challenge of balancing **climate commitments with economic growth and affordable energy access**.

Key Highlights:

- Climate policies should consider **how energy is consumed and how it improves people's well-being**, rather than focusing exclusively on carbon emissions.
- Developed countries have historically consumed large amounts of energy, while developing countries such as India still require **affordable energy for economic development**.
- **Electrification** involves replacing technologies that directly burn fossil fuels with electricity-powered alternatives, such as **petrol cars with electric vehicles and gas stoves with electric stoves**.
- **China's investments in solar energy, wind power and electric vehicles** demonstrate how government policies can accelerate electrification.
- Global climate policy should follow **country-specific pathways** based on different development needs.
- **Climate justice** requires greater responsibility from developed countries alongside **increased financial and technological support** for developing countries

Implications:

- Developing countries face difficulties balancing **economic development, energy access and climate commitments**.
- Inadequate climate finance and technology transfer can widen **global climate inequalities**.
- Electrification and renewable energy can reduce **fossil-fuel dependence and pollution**.
- Country-specific climate policies can better accommodate **different development priorities and energy needs**.

Way Forward:

- Expand **solar, wind and hydropower generation** while ensuring reliable and affordable electricity.
- Promote **electric vehicles, electric public transport and energy-efficient technologies**.
- Develop climate policies that reflect **national development needs, energy consumption and living standards**.
- Strengthen demands for **predictable climate**



finance and technology transfer from developed countries.

- Improve **energy efficiency and avoid unnecessary energy consumption.**

Mains Question:

“Climate justice requires balancing climate action with the development needs of the Global South.”
Discuss.(250 words, 15 marks)

KEYWORDS

Kashmir Rice (Oryza sativa)

- Kashmir rice **comprises traditional rice varieties cultivated in the Kashmir Valley**, known for their genetic diversity and adaptation to local climatic conditions.
- These varieties possess valuable genetic traits, including **cold tolerance**, making them potentially **useful for developing climate-resilient varieties.**
- A study by **Sher-e-Kashmir University of Agricultural Sciences and Technology (SKUAST-Kashmir)** identified unique genetic traits in traditional Kashmir rice varieties.
- Genetic analysis revealed that Kashmir's rice varieties are closely related to those from the **Korean Peninsula and Northeast China**, suggesting historical movement of rice germplasm.
- The genes **HAN1 and CTB4a** were identified as significant for cold adaptation, highlighting the potential of traditional Kashmir rice varieties for **climate-resilient agriculture.**

Asian Para Games 2026

- The 5th Asian Para Games were held from **18 to 24 October 2026** in **Aichi Prefecture and Nagoya, Japan**, under the motto “**Imagine One Heart**”.
- The Asian Para Games are **held every four years for Asian athletes** with physical, visual and intellectual disabilities.
- The Games are governed by the **Asian Paralympic Committee (APC)**

and recognised by the International Paralympic Committee (IPC).

- The 2026 edition featured **18 para-sports** and brought together athletes from **45 National Paralympic Committees** across Asia.
- India won a record **114 medals** (30 gold, 35 silver and 49 bronze), marking its best-ever performance at the Asian Para Games.

Cyclone Arnab (2026)

- Cyclone Arnab is expected to intensify into a **very severe cyclonic storm** before reaching the Andhra Pradesh coast.
- It developed from a depression over the **east-central and adjoining southeast Bay of Bengal**, which intensified into a deep depression and subsequently a cyclonic storm.
- The cyclone is likely to cross the **Andhra Pradesh and Yanam coasts between Bapatla and Visakhapatnam by the forenoon of 28 October 2026.**
- The name “**Arnab**”, meaning **sea or ocean** in Bengali, was proposed by **Bangladesh** and is part of the official tropical cyclone naming list adopted in April 2020.

VSHORADS (Very Short-Range Air Defence System)

- VSHORADS is an **indigenously developed, man-portable air defence system** designed to counter aerial threats at short ranges.
- It has been developed by the **Research Centre Imarat (RCI)**, a DRDO laboratory, in collaboration with other DRDO laboratories
- It is a **Man-Portable Air Defence System (MANPADS)** designed to **neutralise low-altitude aerial threats**, including aircraft, helicopters and unmanned aerial vehicles.
- The system uses a **miniaturised reaction control system and integrated avionics** to improve its effectiveness against aerial targets.



- VSHORADS supports the country's goal of defence self-reliance under **Atmanirbhar Bharat**.



Places in News

Subansiri Upper Hydroelectric Project

- The **Subansiri Upper Hydroelectric Project** was recently in the news following protests by local communities over concerns about forest loss and environmental impacts.
- The project is planned on the **Subansiri River**, also known as the **Gold River**, near Menga in Upper Subansiri district, Arunachal Pradesh, and is being developed by NHPC Limited.
- It has a proposed installed capacity of **1,605 MW** and aims to generate hydroelectric power.
- The project involves a **237-metre-high dam** and requires the **diversion of approximately 2,733 hectares of forest land**, raising concerns about deforestation and biodiversity loss.
- The **Subansiri River** is a major right-bank tributary of the **Brahmaputra River**, flowing through Arunachal Pradesh and Assam.



Serbia

- Serbia was recently in the news following a **major political development involving a student-led opposition movement**.
- Serbia is a **landlocked country in Southeast Europe**, located in the **Balkan Peninsula**.
- Its **capital and largest city is Belgrade**, situated at the confluence of the Danube and Sava rivers.
- Serbia shares **borders with Hungary, Romania, Bulgaria, North Macedonia, Croatia, Bosnia and Herzegovina, Montenegro and Kosovo**.
- The **Danube River**, one of Europe's major international waterways, flows through Serbia.



Species In News

Water Hyacinth

- **Water hyacinth** was recently in the news due to concerns about its spread and impact on aquatic ecosystems.
- **Water hyacinth (Eichhornia crassipes)** is a **free-floating aquatic plant** native to South America.
- It is an **invasive alien species that spreads rapidly in freshwater bodies** such as lakes, ponds and rivers.
- Its **dense growth blocks sunlight, reduces dissolved oxygen levels** and threatens aquatic biodiversity.
- Water hyacinth can **obstruct waterways, affect fishing and navigation**, and be controlled through mechanical removal, biological control and other management methods.

