
Prelims Exam Topics

QADR-F MISSILE

Context

The **Qadr-F missile** has reportedly been used by **Iran in conflicts with Israel**, highlighting Iran's capability to employ **long-range ballistic missiles** in active combat.

About Qadr-F Missile

- **Nature:** The **Qadr-F** is an **Iranian ballistic missile** developed under the country's national missile programme.
- **Development:** It is derived from the **Shahab-3 missile** and was publicly unveiled by the **Iranian Armed Forces during a military parade in 2007**.
- **Role:** It is designed for **long-range strike missions** and follows a **ballistic flight trajectory**.
- **Propulsion:** Uses a **two-stage propulsion system** combining **liquid and solid fuel**.
- **Range & Warhead:** Has an estimated maximum range of **2,000–2,500 km** and can carry either a **single blast-fragmentation warhead** or **multiple re-entry vehicles**, depending on the mission.
- **Penetration Capability:** Its **radar-evading warhead** is designed to improve its ability to penetrate areas protected by **missile-defence systems**.

CENTRALISED PUBLIC GRIEVANCE REDRESS AND MONITORING SYSTEM (CPGRAMS)

Context

The **Centralised Public Grievance Redress and Monitoring System (CPGRAMS)** has emerged over the past decade as one of the world's largest **digital public grievance redressal platforms**.

About Centralised Public Grievance Redress and Monitoring System (CPGRAMS)

- **Nature:** CPGRAMS is the **flagship digital grievance redressal platform of the Government of India**, providing a common digital interface for citizens to lodge and monitor grievances.
- **Nodal Agency:** It is developed and monitored by the **Department of Administrative Reforms and Public Grievances (DARPG)** under the **Ministry of Personnel, Public Grievances and Pensions**.

- **Objective:** To provide **accessible, transparent and accountable grievance redressal** by integrating technology, administrative responsibility and citizen participation.
- **24×7 Access:** Provides round-the-clock access through a **single portal** connected with **Central Ministries, Departments, State Governments and Union Territories**.
- **One Nation–One Portal:** Integrates State grievance portals and other government platforms to create a **unified national grievance redressal ecosystem**.
- **Language Inclusivity:** Allows citizens to submit grievances in **22 Scheduled Languages**, in addition to English.
- **Time-Bound Redressal:** Grievances are to be resolved promptly and ordinarily within a **maximum period of 21 days**.
- **Tracking & Appeals:** Every grievance receives a **unique registration ID** through which its status can be tracked; citizens can also file an **appeal** if dissatisfied with the resolution.
- **Feedback Mechanism:** After closure, complainants can rate the resolution; if the rating is **“Poor”**, the option to file an appeal is enabled, and the appeal can also be tracked using the grievance registration number.

NYISHI TRIBE

Context

Discovery of *Begonia neelamorum* in Arunachal Pradesh, named after the **Neelam clan of the Nyishi tribe**, has taken the recorded begonia species in Northeast India to **54**.

About Nyishi Tribe

- **Identity & Distribution:** Largest ethnic group of Arunachal Pradesh; “Nyi” = man, “Shi” = being.
- **Livelihood & Crafts:** Traditionally practises **slash-and-burn agriculture, hunting and fishing**; known for **weaving, cane-bamboo work, pottery, blacksmithing and woodcraft**.
- **Society & Festivals:** **Patrilineal, clan-based society** with traditionally prevalent **polygyny**; major festivals include **Boori-Boot, Nyokum and Longte**.
- **Social Features:** Traditionally lacks a **caste system or rigid class hierarchy**; women are regarded as symbols of **peace, progress and prosperity**.

ROSELLE CROP

Context

In **Malkangiri district of Odisha**, the indigenous crop **Roselle** is helping tribal communities strengthen **climate-resilient agriculture** under changing climatic conditions.

About Roselle Crop

- **Local Name:** In Odisha's Malkangiri district, it is locally known as **Bhenda Dal** and has traditionally been cultivated by tribal communities.
- **Climate Resilience:** It grows well on **rainfed uplands and marginal land**, requiring relatively **low inputs and limited water**, making it suitable for climate-stressed agricultural conditions.
- **Geographical Distribution:** It is cultivated mainly in **warm regions**, including **India, Philippines, Malaysia, Indonesia, Cuba, Central America, California, Florida and Egypt**.
- **Uses:** Roselle has both **food and medicinal value** and forms part of traditional diets in regions where it is cultivated.

Key Features

- **Food, Nutritional & Health Value:** The **tender leaves** are consumed as *saag* or with pulses and vegetables, while the crop provides **vitamin C, anthocyanins, flavonoids, polyphenols, iron, calcium and dietary fibre**; its red flower calyces derive their colour from **anthocyanins**, which have antioxidant properties.
- **Climate-Resilient Livelihood:** Its ability to grow on **marginal, rainfed land with limited water and inputs** makes Roselle suitable for strengthening **tribal livelihoods and climate-resilient agriculture**.

E-SAMUDRA PLATFORM

Context

The **Ministry of Ports, Shipping and Waterways (MoPSW)** has launched **E-Samudra**, an integrated digital portal aimed at accelerating the **digital transformation of India's maritime administration**.

About E-Samudra Platform

- **Nature:** E-Samudra is a **single-window, Digital-First and Faceless platform** that digitises and integrates administrative services across India's maritime sector.

- **Coverage:** The platform brings together services for **seafarers, shipping companies, Recruitment and Placement Service (RPS) agencies, maritime training institutes and port authorities.**
- **Nodal Ministry:** Ministry of Ports, Shipping and Waterways (MoPSW).
- **Implementing Agency:** Directorate General of Maritime Administration (DGMA).
- **Single-Window Governance:** Integrates administrative workflows, **online fee payments, real-time application tracking and digital certificate issuance** through a paperless platform.
- **Digital Seafarers Employment Agreement (d-SEA):** Enables **verifiable digital employment agreements** aimed at protecting seafarers' contractual rights, wages and labour standards.
- **Seafarer Tracking:** Provides a **real-time dashboard** to monitor the deployment, safety, location and welfare of Indian seafarers globally, irrespective of their vessel's flag.
- **Integrated Grievance Redressal:** Through **e-NAVIK**, connects seafarers with **emergency assistance, medical support and grievance-resolution mechanisms** both onboard and ashore.

EXPLOSIVE ORDNANCE DISPOSAL EXERCISE 2026

Context

The **8th edition of the India–US Navy Explosive Ordnance Disposal (EOD) Exercise 2026** is scheduled to be conducted at the **Southern Naval Command, Kochi, Kerala.**

About Explosive Ordnance Disposal Exercise 2026

- **Nature:** It is a **bilateral specialist military exercise** focused on **underwater salvage, bomb disposal and explosive ordnance neutralisation.**
- **Participating Forces:** Specialist diving and EOD teams of the Indian Navy and US Navy participate in the exercise.

Mains Exam Topics

INDIA'S IRON AND STEEL INDUSTRY

Context:

Recent expansion of coastal steelmaking, slurry-pipeline infrastructure and multimodal mineral logistics is reshaping the geography of India's iron and steel industry, reducing the traditional dependence of steel plants on immediate proximity to mineral belts.

How can improved logistics transform the mineral-based geography of India's iron and steel industry?

- **Reduced Dependence on Immediate Mineral Proximity:** Lower transport costs can reduce, though not eliminate, the locational advantage of being close to iron ore and coal, allowing steel plants to weigh ports, energy availability, infrastructure and market access alongside raw-material proximity.
 - e.g., Hazira illustrates this broader locational logic, combining coastal connectivity with access to the industrial and consumption markets of western India.
- **Coastalisation of Domestic Raw-Material Flows:** Efficient coastal shipping can make long-distance movement of bulky domestic iron ore economically viable, allowing mineral-rich eastern India to supply steel plants located closer to western and southern markets.
 - e.g., JSW Steel's integrated network links iron-ore sourcing in Odisha with steelmaking at **Dolvi in Maharashtra** and **Vijayanagar in Karnataka**, demonstrating how logistics can separate the location of raw-material extraction from steelmaking.
- **Import-Terminal Geography of Coking Coal:** High dependence on imported coking coal makes access to ports and efficient inland evacuation an independent locational consideration for integrated steel plants, alongside domestic iron-ore availability.
 - e.g., Around **90% of India's coking-coal requirement** is met through imports because much of India's domestic coking coal has high ash content, strengthening the importance of coastal import and distribution infrastructure.
- **Multimodal Mineral Corridors:** Integration of railways, roads, ports and cargo terminals can reduce first- and last-mile bottlenecks and expand the economically viable hinterland of steel plants.

- e.g., **PM Gati Shakti** seeks integrated multimodal planning and addresses first- and last-mile connectivity gaps affecting sectors such as coal and steel.
- **Pipeline-Based Mineral Mobility:** Slurry pipelines can create a dedicated, lower-cost mode for transporting large volumes of iron ore over long distances, particularly where sustained bulk flows justify the infrastructure.
 - e.g., JSW Infrastructure is developing a **302-km slurry pipeline from Nuagaon to Jagatsinghpur in Odisha**, connecting to the upcoming **Jatadhar Port**; commercial operations are expected around **April 2027**, with the project intended to substantially reduce iron-ore logistics costs.
- **Policy-Mediated Delinking of Resource and Industrial Geography:** The **Freight Equalisation Policy (1952–1993)** historically weakened the locational advantage of mineral-rich eastern India by subsidising freight on key industrial raw materials, demonstrating how pricing policy can reshape industrial geography even without physical infrastructure expansion.
 - e.g., By equalising the effective freight burden on key minerals across regions, the policy reduced the incentive to locate industries close to mineral deposits and contributed to the relative shift of industrial investment towards market- and coast-oriented regions.
- **From Resource Geography towards Network Geography:** Improved logistics can progressively reduce the relative importance of geological proximity, with steel locations increasingly shaped by the combined cost of accessing raw materials, energy, ports, transport networks and markets.
 - e.g., The Freight Equalisation Policy achieved geographical delinking through a **price subsidy**, whereas modern logistics can achieve similar flexibility through **physical connectivity and supply-chain efficiency**, making network quality increasingly important to industrial location.

Why does the expansion of the iron and steel industry not necessarily translate into broad-based regional development in India?

- **Weak Direct Employment Multiplier:** Steel is highly capital-intensive, so large increases in production and investment do not necessarily generate proportionately large volumes of direct employment.
 - e.g., A modern integrated steel plant can generate substantial output and capital investment while creating fewer direct jobs per unit of investment than labour-intensive sectors such as textiles or food processing.

- **Weak Downstream Production Linkages:** Primary steel production generates limited regional transformation unless it is connected with downstream industries such as engineering, machinery, fabricated metal products and automotive components.
 - e.g., **Kalinganagar in Odisha and Bokaro in Jharkhand** were identified as pilot locations for steel clusters around integrated steel plants, reflecting the objective of developing downstream industrial ecosystems rather than concentrating only on primary steel production.
- **Human-Capital Mismatch:** Industrial investment may fail to generate broad local employment when surrounding regions lack the technical skills, vocational institutions and urban infrastructure required by modern steel and downstream manufacturing.
 - e.g., Where local training systems do not match specialised industrial requirements, firms may depend more heavily on skilled workers recruited from outside the immediate region, limiting the local employment multiplier.
- **Tribal Displacement and Weak Land-Rights Implementation:** Mineral-rich belts frequently overlap with Scheduled Areas and tribal habitats, making land acquisition, displacement, forest rights and community participation central determinants of whether mineral-led growth becomes inclusive regional development.
 - e.g., **Bastar in Chhattisgarh and Singhbhum in Jharkhand** lie within mineral-rich tribal regions, where effective implementation of **PESA** and the **Forest Rights Act (FRA)** is critical to protecting community rights and ensuring legitimate participation in resource-led development.
- **Unequal Distribution of Benefits and Environmental Costs:** Mineral-producing regions can bear land, livelihood and environmental costs while a significant share of profits, specialised services and higher-value economic functions accrue elsewhere, weakening the local development multiplier.
 - e.g., **District Mineral Foundations (DMFs)** seek to direct mining-related contributions towards people and areas affected by mining, while the **Pradhan Mantri Khanij Kshetra Kalyan Yojana (PMKKKY)** provides a framework for using these funds for development and welfare.
- **Commodity Dependence and Limited Economic Diversification:** Regions that remain dependent on mining and primary steel can remain vulnerable to commodity cycles because steel capacity alone does not create a diversified productive economy.

- e.g., A mineral-rich district gains greater resilience when steel is accompanied by engineering, manufacturing, logistics, services, innovation and MSME networks rather than remaining centred on extraction and primary processing.
- **Limited Fiscal Capture of Mineral Wealth:** Mineral-producing states require adequate fiscal capacity to convert resource extraction into long-term public investment in infrastructure, human capital and local development rather than relying predominantly on centrally routed schemes.
 - e.g., In *Mineral Area Development Authority v. Steel Authority of India Ltd.* (2024), a nine-judge Supreme Court Bench held that **royalty is not a tax**, clarifying that states can exercise their constitutional taxing powers over mineral rights and mineral-bearing land, subject to constitutional limits.

Way Forward

- **Build Integrated Multimodal Mineral Corridors:** India should synchronise mines, beneficiation facilities, railways, roads, slurry pipelines, logistics terminals and ports to reduce bulk-transport costs and improve reliability across the mineral supply chain.
 - e.g., PM Gati Shakti can provide an institutional framework for integrating transport planning across mineral-producing regions, steel plants and ports.
- **Build Port-Linked Raw-Material Security:** Steel clusters should combine coastal logistics with diversified coking-coal sourcing, efficient import terminals, dedicated rail connectivity and domestic coal beneficiation to reduce vulnerability to imported feedstock and freight disruptions.
 - e.g., With around 90% of India's coking-coal requirement met through imports, efficient port-to-plant connectivity is increasingly important for the resilience of India's blast-furnace-based steel industry.
- **Convert Steel Capacity into Downstream Manufacturing Clusters:** Mineral-rich states should use steel as an anchor for engineering, machinery, automotive components, fabricated metals and specialised manufacturing rather than treating primary steel capacity as the final objective.
 - e.g., The identification of **Kalinganagar and Bokaro** as pilot steel-cluster locations demonstrates the policy direction towards deeper downstream industrial linkages.
- **Enforce Tribal Land and Forest Rights:** Mining-led industrialisation should ensure effective implementation of **PESA, the Forest Rights Act and land-acquisition safeguards**, with legally mandated Gram Sabha processes treated as substantive institutions rather than procedural formalities.

- e.g., In Scheduled Areas affected by mining, the revised PMKKKY guidelines require **Gram Sabha approval for plans, programmes and projects** undertaken under PMKKKY, reinforcing community participation in the utilisation of mineral revenues.
- **Convert Mineral Revenues into Local Human Development:** DMF and PMKKKY resources should be directed towards durable improvements in health, education, skills, livelihoods, drinking water and environmental restoration in mining-affected regions rather than fragmented expenditure.
 - e.g., The revised PMKKKY guidelines require **at least 70% of PMKKKY funds to be utilised in High Priority Sectors**, including drinking water, environment, healthcare, education, skill development and livelihoods. Separately, they require **a minimum of 70% of DMF funds to be spent in Directly Affected Areas**.
- **Use the MADA Judgment to Strengthen Fiscal Federalism:** Mineral-rich states should responsibly use the fiscal space created by the *Mineral Area Development Authority* judgment to finance region-specific infrastructure, human capital and environmental restoration rather than relying solely on central transfers and mineral-development schemes.
 - e.g., The 2024 judgment clarified that royalty is not a tax, creating a distinct constitutional space for state taxation of mineral rights and mineral-bearing land.
- **Align Human Capital with Industrial Geography:** Skill development should be designed around the occupational requirements of steel and downstream manufacturing, while industrial regions need adequate housing, healthcare, education and urban services to retain workers locally.
 - e.g., Linking industrial training institutions with steel plants and downstream MSME clusters can increase local recruitment and strengthen the employment multiplier of industrial investment.
- **Shift from Resource Advantage to Capability Advantage:** India should use mineral abundance as an initial locational advantage while building diversified productive capabilities that remain competitive even when physical proximity to raw materials becomes less decisive.
 - e.g., Logistics can allow steel plants to source iron ore from distant mineral belts and imported coking coal through ports, but downstream firms, skilled labour, technology, innovation and supplier networks determine whether this flexibility translates into durable regional development.