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EXERCISE AGNI PARIKSHA



The Indian Army and Indo-Tibetan Border Police recently conducted Agni Pariksha in Arunachal Pradesh to enhance joint combat capabilities.

- It is a **joint training exercise** involving personnel from the **Indian Army** and the **Indo-Tibetan Border Police (ITBP)**.
- **Location: Arunachal Pradesh**
- This first-of-its-kind initiative aimed to **enhance inter-force combat synergy** and operational integration.
- The primary objective of the exercise was to **familiarise non-artillery personnel with artillery procedures**, coordination mechanisms, and the **execution of firing missions**, thereby improving their understanding of firepower integration in dynamic combat scenarios.

WHAT IS CYTOPLASM?



Cytoplasm

- Cytoplasm is a **thick solution** that **fills each cell** and is enclosed by the cell membrane.
- It is mainly **composed of water, salts and proteins**.
- **In eukaryotic cells** (i.e., cells having a nucleus), the cytoplasm **includes all of the material inside the cell but outside the nucleus**, which contains its own watery substance called nucleoplasm.
- **All of the organelles** in eukaryotic cells are **located in the cytoplasm**. The cytoplasm helps to keep them in place.



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- Among such organelles are the **mitochondria**, which are the **sites of energy production through ATP** (adenosine triphosphate) synthesis;
 - the **endoplasmic reticulum**, the **site of lipid and protein synthesis**;
 - the **Golgi apparatus**, the site where **proteins are modified, packaged, and sorted** in preparation for **transport** to their cellular destinations;
 - **lysosomes and peroxisomes**, **sacs of digestive enzymes** that carry out the **intracellular digestion of macromolecules** such as lipids and proteins;
 - The portion of the **cytoplasm surrounding organelles** is called **cytosol**, which is the **liquid part** of the cytoplasm.
 - Cytoplasm is also the **site of most metabolic activities in the cell**, and it allows materials to pass easily throughout the cell.
 - Although cytoplasm may appear to have no form or structure, it is actually **highly organized**.
 - A **framework of protein scaffolds** called the **cytoskeleton** provides the **cytoplasm and the cell with their structure**.
 - Though **prokaryotic cells do not have organelles** (they do have ribosomes), they **still have cytoplasm**.
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LIVING ROOT BRIDGES



Recently, India submitted Meghalaya's living root bridges to UNESCO for World Heritage status.

- The living root bridges are locally known as **Jingkieng Jri** or **Lyu Chrai**.
 - These are nestled across the lush southern slopes of the **Khasi and Jaintia Hills in Meghalaya**.
 - These are masterpieces of bioengineering **created by indigenous Khasi and Jaintia tribes** over a time period of 15 to 30 years.
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COKING COAL



- It is a **naturally occurring sedimentary rock** found within the earth's crust.

- It is also known as **Metallurgical coal**.

Characteristics: It is a type of coal that **softens and swells when heated**, forming lightweight, porous coke particles, and is characterized by a **free swelling index of 1 or greater**.

- It typically **contains more carbon, less ash, and less moisture** than thermal coal, which is used for electricity generation.
- Coke is the main product of the **high-temperature carbonisation of coking coal**.
- **Coking coal is divided into 3 sub-categories** namely,
 - **Primary Coking Coal** (Low ash , low Volatile, High Coking property)
 - **Medium Coking Coal** (low ash, medium volatile, low caking index)
 - **Blendable/ Semi/Weak Coking Coal** (low ash, high volatile, very low caking index).
- **Global Producers:** The largest producers of coking coal were **China, Australia, Russia, USA and Canada**.
 - In India coking coal resources are **largely located in Jharkhand**, with additional reserves in **Madhya Pradesh, West Bengal and Chhattisgarh**.

Uses of Coking Coal:

- It is **essential for metallurgical processes**, as it exhibits caking properties that allow it to fuse into a solid mass during heating.
 - It is an essential **ingredient in the production of steel**, making it one of the most widely used building materials on earth.
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JAL JEEVAN MISSION: COVERAGE VERSUS FUNCTIONALITY IN RURAL WATER SUPPLY

- The Jal Jeevan Mission (JJM), launched in 2019, is a flagship programme of the Government of India aimed at providing Functional Household Tap Connections (FHTCs) to all rural households.
- The scheme seeks to ensure **55 litres of potable water per person per day** on a regular basis, with an emphasis on water quality, sustainability of sources, and community participation.
- Unlike earlier water supply programmes that focused primarily on infrastructure creation, JJM adopts a **service delivery approach**, where functionality, water quality, and regularity are central performance indicators.
- The mission is implemented in partnership with States, with funding shared between the Centre and States.

Functionality and Water Quality Concerns

- The core objective of the Jal Jeevan Mission is not merely tap installation but a **functional and safe water supply**.
- The recent Functionality Assessment of Household Tap Connections highlights significant gaps in this regard.
- Only 83% of surveyed households reported receiving water through taps at least once in the previous seven days.
- Even fewer households consistently received the prescribed 55 litres per capita per day, with just 80% meeting the quantity norm.
- Water quality emerged as a critical concern. Tests for **E.coli, faecal coliform, and pH levels** showed that only 76% of households received water meeting basic safety standards. When availability, regularity, and quality were assessed together, only **three-fourths of households** were found to be benefiting from the scheme as intended.



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Regional Variations in Performance

- The survey revealed sharp inter-State variations. While coastal and better-performing States recorded high functionality, States such as **Bihar, Uttar Pradesh, Nagaland, and Sikkim** lagged behind on water availability and quantity benchmarks.
- For instance, Bihar reported water flow in only about **61% of households**, while Sikkim showed particularly low compliance with per capita water supply norms.
- These disparities underline differences in source sustainability, groundwater availability, terrain, and institutional capacity at the State and district levels.

Financial and Implementation Challenges

- The Jal Jeevan Mission is among the most resource-intensive welfare programmes undertaken by India.
- Since 2019, over **3.6 lakh crore** has been spent on rural water infrastructure.
- However, recent budgetary trends indicate underutilisation of allocated funds, with actual expenditure falling significantly short of provisions in some years.
- The original target of achieving **100% functional coverage by 2024** has now been extended to **2028**, acknowledging the complexity of last-mile delivery, operation and maintenance, and source sustainability challenges.
- Estimates suggest that the remaining uncovered and non-functional households may require nearly Rs. **4 lakh crore** in additional investment.

Institutional and Monitoring Framework

- To address implementation gaps, the Jal Jeevan Mission relies on multiple monitoring tools, including third-party surveys, village-level water committees, and real-time dashboards.
 - The functionality assessment survey conducted in 2024 covered over **2.3 lakh households** across certified Har Ghar Jal villages, offering a more nuanced picture beyond official coverage figures.
 - However, the Ministry has cautioned that results are not directly comparable with earlier assessments due to changes in methodology and survey scope.
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WHAT'S DRIVING THE ECONOMIC SURVEY'S UPGRADE OF INDIA'S GROWTH POTENTIAL

- A country's potential growth rate differs from its annual GDP growth.
- While GDP growth measures how fast the economy expands in a given year, potential growth shows the pace at which it can grow without causing high inflation.
- If growth exceeds this level, demand outstrips supply and prices rise; if it falls below, resources remain underused.
- Therefore, to achieve sustainably higher growth, governments must focus on raising the economy's potential growth rate, not just boosting short-term demand.

What Determines a Country's Potential Growth Rate

- **Capital Stock** - Potential growth depends on the size and quality of physical assets—such as roads, bridges, ports, factories, and machinery—that support production and expansion in the economy.
- **Labour Input** - This includes not just the number of workers, but also their skills, productivity, and capacity, which directly influence how much an economy can produce.
- **Total Factor Productivity (TFP)** - TFP reflects how efficiently labour and capital are used together. Higher efficiency allows faster growth without inflationary pressure.

India's Declining Potential Growth: The Trend

- Research by the Reserve Bank of India shows that India's potential growth rate has declined over time:
 - 2003–2008: around 8%, India's highest growth phase
 - 2009–2015: fell to 7%
 - Around the Covid-19 period: declined further to 6.5%, as acknowledged by the Chief Economic Adviser.
- This decline underscores the need for sustained reforms to rebuild long-term growth capacity.

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Why the Economic Survey Sees Higher Potential Growth?

- **Reforms Lifting Medium-Term Growth** - The Chief Economic Adviser notes that the cumulative impact of recent policy reforms has raised India's medium-term potential growth to around 7%, reversing earlier declines.
- **Manufacturing and Supply-Side Push** - Key reforms over the past three years—**PLI schemes, FDI liberalisation, and logistics improvements**—have strengthened manufacturing capacity and boosted the economy's ability to expand supply.
- **Labour Market Improvements** - Measures such as labour law consolidation, lower regulatory compliance, and state-level reforms, along with investments in education, skilling, and apprenticeships, have reduced labour market frictions and improved employability.
- **Conditions for Sustained Gains** - The Survey stresses that credible increases in potential growth require persistent reforms and macroeconomic stability—conditions it says India currently meets.
- **The Caveat: External Risks** - Despite domestic strengths, the Survey cautions that geopolitical conflicts and global disruptions could still constrain India's ability to fully realise its growth potential.

HANLE DARK SKY RESERVE

- **Location:** It is located in the remote **Changthang region of Ladakh**.
- It is part of the **Changthang Wildlife Sanctuary**, offering **Bortle-1 dark skies** (the darkest category).



- It is **India's first International Dark Sky Reserve**, centred around the Indian Astronomical Observatory (IAO) at Hanle.
- It is managed by the **Indian Institute of Astrophysics (IIA)** under the Department of Science and Technology (DST), Ministry of Science & Technology
- The reserve aims to **curb light pollution** and promote astro-tourism benefiting local communities.



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- The reserve is a science-driven socio-economic development project, built on two pillars:
 - Curtailing light pollution in the region
 - **Promoting astro-tourism** for local livelihood generation
 - **Significance of Hanle:** Hanle's **pristine dark skies** and **transparent atmosphere** allow observing and photographing faint celestial objects that are often impossible from other locations in India.
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INDIA'S MANUFACTURING REVIVAL IN A RECONFIGURED GLOBAL ECONOMY

- Amid growing geopolitical uncertainties and the reconfiguration of global production networks, India's manufacturing sector has **regained momentum**.
- As supply chains diversify away from single-country dependence and industrial policy regains global prominence, India's manufacturing revival provides a strong base for the next phase of **industrialisation**.
- The Economic Survey underscores that sustaining this momentum hinges on improving competitiveness and deeper integration into Global Value Chains (GVCs).

Challenges and Way Forward:

- **Fragmented** industrial clusters and scale constraints. Deepen GVC integration; build large, integrated industrial ecosystems in Tier-2/3 cities.
- **Limited** R&D intensity and weak innovation ecosystems. Prioritise technology-intensive and strategic sectors.
- **MSME** credit and technology gaps. Strengthen MSME participation in strategic value chains by filling credit and tech gaps.
- **Overdependence** on road transport for freight. Promote multimodal logistics and freight rebalancing.
- **Regulatory** delays and implementation inconsistencies. Ensure predictable, time-bound regulatory governance.



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Conclusion:

- India's next manufacturing leap will be defined not just by the scale of production, but by technological depth, strategic relevance, and global competitiveness.
 - The proposed **National Manufacturing Mission** offers a platform to align reforms, infrastructure, skilling, and innovation under a coherent industrial strategy.
 - Ultimately, India's success will rest on building globally competitive firms embedded in strategically indispensable sectors—positioning manufacturing as a **durable engine** of growth and resilience.
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PAATHARA PRACTICE



Paathara Practice

- It is an **ancestral practice of underground grain storage**
 - In the storage pit freshly **harvested grains, mostly paddy, are stored.**
 - It is observed by farmers along the banks of the **Mahendratanaya River** in the Uddanam region of **Srikakulam district**, near the **Andhra Pradesh–Odisha border**.
 - This tradition thrived in the **inland, hilly terrain**, where underground grain storage was effective.
 - **Key Features of Paathara Practice:**
 - **Structure:** The pit is **dug in a rectangular shape**, plastered with straw and clay, and sealed with a layer of cow dung on top.
 - The Paathara was **built in front of thatched houses** and was an integral part of rural architecture, symbolising a thriving joint family system.
 - Every paddy-growing family stored enough grain for its annual needs.
 - **Advantage:** The Paathara protects grain from rodents, contamination, and theft.
 - **Decline:** Lack of **space and awareness**, as well as **changes in rural architecture**—have contributed to its decline.
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