

● POLITY

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● ECOLOGY

SCIENCE AND TECHNOLOGY

ORBIT REDUCTION MANOEUVRE OF CHANDRAYAAN-3

CONTEXT: ISRO narrows Chandrayaan-3's orbit to 174x1437 km, nearing moon's surface, with final manoeuvre on August 16.

HIGHLIGHTS: ISRO trims Chandrayaan-3's orbit to 174 km x 1437 km, nearing moon's surface; next manoeuvre on August 14, final one on August 16 for India's moon mission.

BACKGROUND: ISRO conducts orbit reduction for Chandrayaan-3, nearing moon. Series of manoeuvres planned to achieve soft landing on lunar South Pole by August 23, 2023. Indo-Japanese Lunar Polar Exploration aims to confirm water presence on moon's dark side. Cooperation discussed with Japan. Mission launch expected in coming years.



LUPEX mission

ISRO and JAXA are discussing the Lunar Polar Exploration (LUPEX) mission, fostering joint efforts to explore the Moon's Polar Regions, combining India and Japan's expertise.

- Future Launch Projection: LUPEX is planned for launch later this decade, aiming to leverage both nations' resources for in-depth lunar surface exploration.

- Scientific Significance: LUPEX targets the Moon's Polar Regions, holding vital scientific insights and potential resources that could advance understanding of geology, composition, and future human exploration possibilities.

- Expertise Fusion: Collaboration between ISRO and JAXA on LUPEX enables pooling knowledge, advancing lunar research, and enhancing exploration capabilities for both countries.

- Geological and Resource Study: LUPEX's focus on the Moon's Polar Regions intends to unravel geological mysteries and assess available resources, contributing to humanity's broader lunar exploration goals.

Excerpts from "The Hindu - Orbit reduction manoeuvre of Chandrayaan-3 performed", 10th August 2023"



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ECONOMICS AND DEVELOPMENT

CENTRE TO COMMENCE OPEN MARKET SALE

CONTEXT: The Centre would auction 7-8 lakh tonne of wheat under the Open Market Sales Scheme. The price of wheat has gone up by 6.77 % in retail market and 7.37 % in wholesale market in the past one year and in the case of rice, the increase is 10.63 % and 11.12 %, respectively.

The Centre decided to additionally sell 50 lakh tonnes of wheat and 25 lakh tonnes of rice through the Open Market Sales Scheme for Food Corporation of India stocks to ensure adequate domestic availability of rice, wheat and atta; it plans to bring down reserve price of rice by ₹200 a quintal, which will now be ₹2,900 a quintal.

The weighted average selling price of wheat on June 28 was ₹2,136.36 a quintal, which had now gone up to ₹2,254.71 a quintal. The FCI had additional 87 lakh tonnes of wheat and 217 lakh tonnes of rice available above buffer norms.

ECONOMICS AND DEVELOPMENT

HOUSE PANEL ON FERTILISERS

CONTEXT: The Standing Committee of Parliament on Chemicals and Fertilizers posed questions on the availability of fertilizers and a subsidy policy.

Recommendations:

1. End the import dependence on fertilizers such as urea, diammonium phosphate (DAP), muriate of potash (MOP), and nitrogen, phosphorus, and potassium (NPK). The production of these fertilizers up to November 2022 was 281.83 lakh tonnes but the consumption was 401.46 lt.
2. Ascertain the reasons for a shortage of fertilizers being reported in some of the States and ensure availability of fertilizers in every State by taking corrective steps.
3. Review of a nutrient-based subsidy (NBS) that covers fertilizers such as P&K fertilisers to remove the disincentives for farmers to use other fertilizers.
4. Review the Inverse tax structure with GST for fertilizers at 5 % and GST on raw materials such as sulphuric acid and ammonia are at 18 %.

ECONOMICS AND DEVELOPMENT**CHINA'S ECONOMY SLIPS INTO DEFLATION**

CONTEXT: The China's National Bureau of Statistics (NBS) recorded a drop in Consumer Price Index (CPI) by 0.3 % year-on-year in July against a consumer inflation target of about 3% this year. The Consumer Price Index (CPI) has declined for the first time since February 2021. Producer Price Index (PPI) declines for a 10th consecutive month, shrinking 4.4 %.

China's slower-than-expected economic rebound is not strong enough to offset the weaker global demand and lift commodity prices. China has announced a stimulus programme China's consumer sector fell into deflation and factory-gate prices declined in July. Recent economic indicators show the divergence between manufacturing and services, with services expanding at a higher pace than manufacturing in the rest of 2023.

ECONOMICS AND DEVELOPMENT**NOTIFICATIONS ON IMPORTS**

CONTEXT: The Union Ministry for Commerce and Industries on August 3 notified restrictions on imports of laptops, personal computers (PCs), tablets and servers, making it compulsory for importers to secure a licence.

The Government deferred the application of the notification till November 1 and promised an expeditious approval to licence requests. The complex PC component value chains cannot be set up overnight, and concerns also flared up about adverse impact of such a move on India's software and IT-enabled services export prowess. The notifications were meant to kick start the supply chain network in India for promoting local assembly of PC and tablets in India.

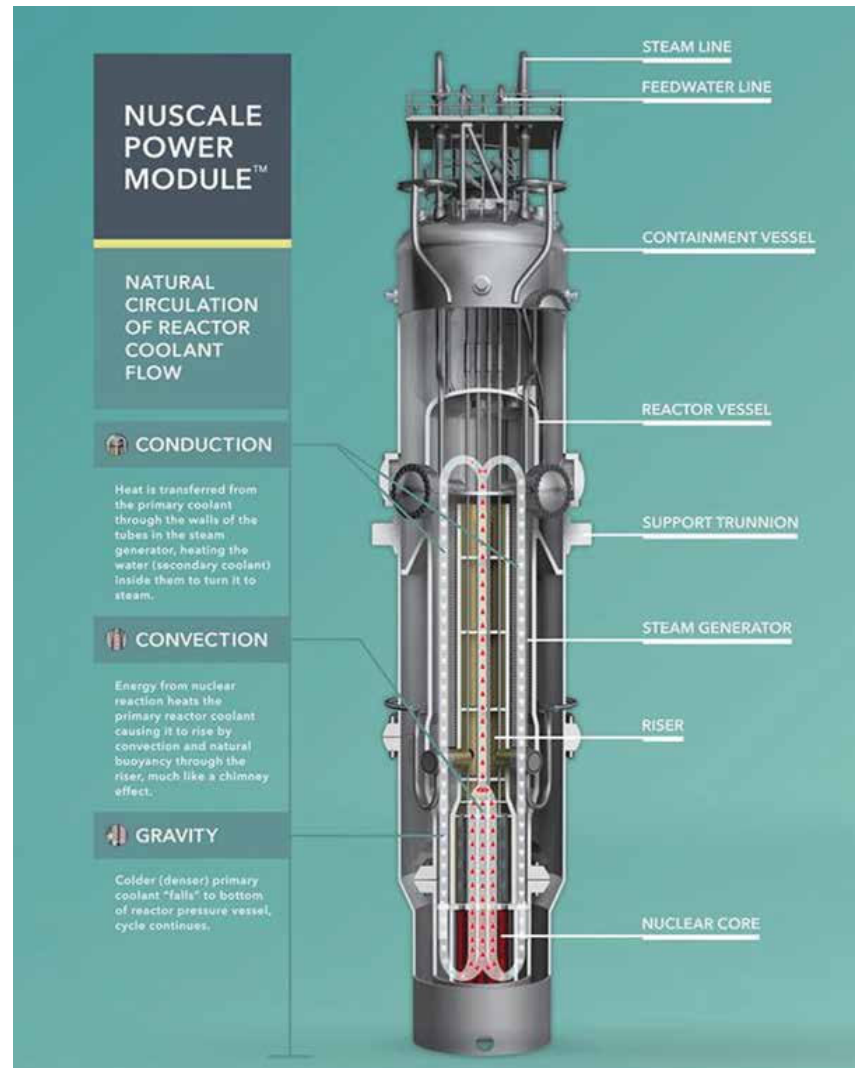
The imports of PC and tablets, which fell almost 28 % in 2022-23 to \$5.3 billion. Any increase in costs or limitations on device options would also imply collateral damage for India's consumers. For many households and small enterprises, this is not just about crossing the digital divide but also access to government services increasingly going online in a Digital India. Unpredictable policies, excessive taxation and a return to maximum government, can derail India's reform story.

SCIENCE AND TECHNOLOGY**SMALL NUCLEAR MODULAR REACTORS**

CONTEXT: UN's Sustainable Development Goal 7 aims for affordable, sustainable energy; small modular reactors could aid decarbonisation.

STORY SO FAR: UN Goal 7 aims for sustainable energy, but fossil fuels dominate. Power sector's decarbonisation urgent; rising coal use despite renewables underlines need for 24/7 low-carbon sources. India could benefit from small modular reactors for stable, green power.

CHALLENGES OF DECARBONISATION: Transitioning from coal to clean energy needs more than solar and wind. In renewable-heavy grids, adding reliable power sources is crucial. Demands for minerals like lithium, nickel, etc., for clean tech will surge by 2030, leading to global challenges and environmental concerns. Few nations dominate extraction and processing, raising geopolitical risks.



ISSUES WITH NUCLEAR POWER: Nuclear power plants contribute 10% of global electricity, curbing gas demand and CO2 emissions. Vital for net-zero goals, efficient land use, stable supply in all weather. Small modular reactors (SMRs) emerging to supplement conventional plants, utilizing existing infrastructure, easing land acquisition and displacement concerns.

SMALL NUCLEAR MODULAR REACTORS

Small Nuclear Modular Reactors (SMRs) are compact, self-contained nuclear power units that generate electricity on a smaller scale compared to traditional reactors. They emphasize enhanced safety features, modular construction, and reduced environmental impact.

- **Safety and Design:** Small modular reactors (SMRs) offer enhanced safety with lower core damage frequency, reduced radioactive contamination, passive safety features, and seismic isolation.
- **Simplified Deployment:** SMRs' simpler design and factory-based assembly decrease potential for uncontrolled radioactive material release and cost overruns.

- **Flexible Site Placement:** SMRs can be safely installed on brownfield sites, easing zoning constraints faced by conventional nuclear power plants.
- **Energy Security:** SMRs' use of widely available low-enriched uranium improves energy security and diversification.
- **Cost and Future Prospects:** Initial costs range \$60-90 per MWh; expected cost reduction post-2035 with increasing adoption, particularly in India, after U.S.-India joint statement.

259,000 MW by 2032 alongside expanding VRE sources to 486,000 MW. Energy storage, 47,000 MW from batteries and 27,000 MW hydro, is crucial for VRE integration. TPPs contribute over 50% electricity; private sector investments essential for NPP expansion towards net-zero commitment.

LEGAL AND REGULATORY CHANGES: Amending Atomic Energy Act for private SMRs; safety and waste control with government; independent regulatory board needed. Government retains SMR security, hand-holding with Nuclear Power Corp. Enhance nuclear power's image via transparent environmental and health data dissemination for reactors under safeguards.

INTEGRATION WITH THE NATIONAL GRID: India's Central Electricity Authority plans to increase coal-based thermal power to

INTERNAL SECURITY

STATUS REPORT ON JAMMU & KASHMIR

CONTEXT: The Centre filed an affidavit in the Supreme Court quoting data to claim "unprecedented era of peace, progress and prosperity" after the dilution of Article 370. A table showed the number of "terrorist-initiated instances" had come down, from 228 in 2018 to 125 in 2022. Neither the source of data nor the definition of "terrorist-initiated instances" was mentioned in the affidavit. There was no mention of the number of civilian or militant deaths in the affidavit. Rather, data of "organised stone-throwing incidents connected with terrorism-separatist agenda", were cited. The affidavit also quoted the number of bandh/hartals in support of the claim.

Poonch and Rajouri districts accounted for 50 % of the terror-related deaths in 2023. Relatively peaceful districts such as Poonch and Rajouri in the Jammu region have seen sharp spikes in terrorism-related deaths post- dilution of Special Status of Jammu and Kashmir. The first half of 2023 has seen a dramatic shift, with these two districts recording around 50% of all such deaths, similar to the levels seen back in 2000 to 2003.

Chart 1: Terrorism-related incidents of killing, and deaths of civilians, militants and security forces between 2009 and 2022

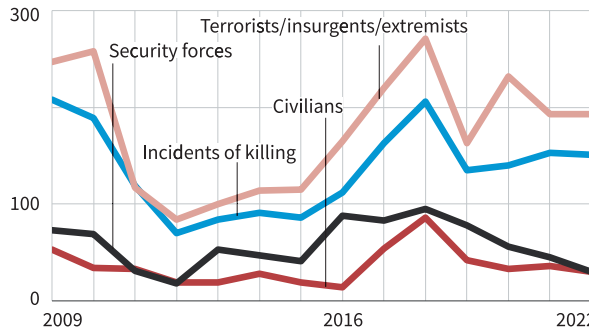


Chart 2: Number of forced Internet shutdowns between 2012 and 2022

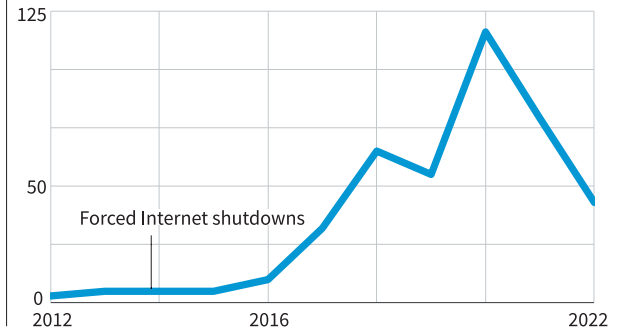


Chart 3: The chart depicts each district's share in terrorism-related fatalities in the 2009-2023 period. For instance, in the first half of 2023, 23% of all fatalities in J&K occurred in Poonch, while 25% were in Rajouri

Region	District	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023*
Jammu	Doda															
	Jammu															
	Kathua															
	Kishtwar															
	Poonch	10%							3%							23%
	Rajouri		11%					0%								25%
	Ramban															
	Reasi															
	Samba															
North Kashmir	Udhampur															
	Bandipore															
North Kashmir	Baramulla		23%		26%											
	Kupwara	28%		27%		37%	32%		32%		13%					28%
Central Kashmir	Budgam															
	Ganderbal															
	Srinagar															
South Kashmir	Anantnag															
	Kulgam															
	Pulwama						21%			21%		39%			18%	8%
	Shopian															
Ladakh	Kargil															
	Leh															

* Data till July 2023
Krithika Ganapathy and Hashika Sharma are interns with the Hindu Data Team



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