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ECONOMICS AND DEVELOPMENT

NEW INVESTMENTS SLOWED AGAIN IN Q2 OF 2023-24: SURVEY

CONTEXT: Fresh investment announcements in the second quarter (July-September) of 2023-24, have dropped to ₹ 6.9 lakh Cr., 13 % lower than in the first quarter, and 21.5 % down from a year ago.

The reason has been attributed to the sharp dip in proposed outlays by the Union government and foreign investors, and a broad-based contraction across the manufacturing, mining, infrastructure, and electricity sectors. A total of 2,238 new projects with an aggregate investment intention of ₹ 6.88 lakh crore were announced in Q2, including the ₹3.93 lakh crore of private investment projects. Almost 2,745 new projects worth ₹7.91 lakh crore in Q1, with the projects' tally contracting 18.5 %. Foreign investments shrank 66.5 % from Q1 levels to ₹28,000 crore. Though domestic private players announced 17.8 % larger outlays in Q2, the number of new projects fell to 844 from 1,180 in Q1.

Public capital expenditures driving the investment cycle in recent times sequentially declined 25.6% in Q2 to about ₹2.96 lakh crore from ₹3.97 lakh crore in Q1, which marked a 3.2% fall from the previous quarter. New projects from Union government agencies dropped 47.4% in Q2 following a 20.6% contraction in Q1, bringing proposed outlays between July and September to ₹1.02 lakh crore from over ₹2.44 lakh crore in the January-to-March 2023 period.

States' investment plans recorded a milder 4.7% shrinkage in Q2 vis-à-vis Q1, when they had crossed ₹2.03 lakh crore. The irrigation sector, which is usually driven by smaller-ticket investments initiated by States, was the only segment to clock a sequential uptick in Q2, with project outlays more than doubling to ₹12,000 crore from under ₹5,000 crore in Q1.

Among the States, Odisha and Telangana emerged as the top two States, accounting for over a third of proposed investments in the last quarter. Maharashtra, which saw the highest number of new projects (436) worth ₹78,550 crore, was ranked third, followed by Karnataka, with projects worth ₹53,565 crore. Gujarat had the second-highest number of projects (222), but was ranked eighth in terms of outlays involved, followed by Madhya Pradesh, which pipped Tamil Nadu that was ranked 10th with 98 projects worth ₹22,347 crore.

SCIENCE AND TECHNOLOGY

RAILWAYS DEVELOPS ANTI-FREEZE FLUSHES AND FUEL TANKS FOR JOURNEYS IN J&K

CONTEXT: Udhampur-Srinagar-Baramulla Rail Link (USBRL) project faces sub-zero temperature challenges, RCF engineers innovate against freezing.

BACKGROUND: The Udhampur-Srinagar-Baramulla Rail Link (USBRL) project faces challenges in maintaining water and fuel in sub-zero temperatures. Engineers at the Rail Coach Factory (RCF) in Kapurthala have devised solutions to prevent freezing in toilets and fuel tanks. Extreme winter temperatures in J&K require innovative temperature control for LHB coaches.



NEWS HIGHLIGHTS

- LHB Coaches and Temperature Control: LHB coaches lacked temperature control systems, posing issues in cold regions like Jammu and Kashmir.
- Freezing Water Challenge: Low temperatures could freeze water, disrupting toilets and causing tank damage.
- Double-Walled Insulated Tanks: RCF designed double-walled composite insulated water tanks to keep water liquid for 16-20 hours.
- Heated Pipes: Heated, insulated pipes prevent freezing in supply pipelines, maintaining water at 5-8°C in liquid form.
- Energy-Efficient Geysers: Geysers at toilet points heat only needed water, reducing energy consumption.
- Railway Stretch Timeline: The railway from Katra to Banihal aims to be operational before national elections in March.

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ECOLOGY AND ENVIRONMENT

THE WORLD NEEDS TO STOP TAKING WATER FOR GRANTED

CONTEXT: World Food Day: Urgent water management needed due to climate extremes, droughts, floods, and dry spells.

BACKGROUND: As the UN approaches the 7-year deadline for the Sustainable Development Goals, the FAO, IFAD, and WFP emphasize the urgent need for innovative and collaborative efforts to address water-related challenges like droughts, floods, and unseasonal rains. Improved water resource management is crucial for achieving the SDGs.

HIGHLIGHTS

Water availability directly impacts food production, particularly in rain fed areas like India. Climate change adaptation, sustainable practices, and improved water management are crucial to ensure food security while safeguarding ecosystems.

Water and Crop Production

- Climate change is reducing crop yields in India. Rainfed rice yields are projected to reduce by 20% in 2050 and 47% in 2080, while irrigated rice yields are projected to decline by 3.5% in 2050 and 5% in 2080 scenarios. Wheat and maize yields are also projected to decrease.
- Small-scale farmers are especially vulnerable to climate change. They often lack access to finance, technology, and irrigation to maintain a level of production that can sustain their livelihoods.
- Extreme weather events and variability in water availability are severely affecting agricultural production. Changes in rainfall and higher temperatures also affect crop productivity, reducing food availability.
- Irrigation can be an effective measure to make agriculture more resilient. The WFP supports soil and water conservation, the building or fixing of irrigation canals, dams, ponds, and dykes, as well as flood barriers through food assistance in exchange for labour. In 2021 alone, 8.7 million people across 49 countries benefited directly from such support.
- IFAD supports Indian States in leveraging the Mahatma Gandhi National Rural Employment Guarantee Act scheme to build micro-irrigation infrastructure. Through safeguards

during design and planning and encouraging participatory institutional development, IFAD ensures that micro-irrigation infrastructure is environmentally and socially sustainable and financially viable.

Climate Change Adaptation

- FAO supports the sustainable transformation of agrifood systems and climate-smart agriculture practices to improve water-use efficiency. It supported the farmer water school programme in Uttar Pradesh, which helped smallholder farmers.
- The Andhra Pradesh Farmer Managed Groundwater Systems project reached out to 638 habitations in seven drought-prone districts. This project included a hydrological monitoring programme.
- IFAD has enshrined climate change adaptation in its core strategies. It set ambitious targets in terms of leveraging climate financing to mitigate climate change and help farmers to adapt to the increasing volatility of weather conditions.
- IFAD-supported projects in Maharashtra, Odisha, Uttarakhand, Nagaland and Mizoram incorporate climate-resilient seed varieties and crops, including millets, and train farmers in climate-sensitive agricultural practices and soil management.
- The WFP is collaborating with the Government of Odisha to develop solutions for smallholder farmers, focusing on women. The goal is to enhance resilience through solar technologies, establish community-based climate advisory services and promote a millet-value chain that reduces water usage and improves nutrition.

To achieve global food and nutrition security, political commitment and investment are crucial. Priorities include innovative farming technologies, sustainable water management, reduced environmental impact, improved sanitation, and strengthened institutional capacity. Collaboration between UN food agencies and the Indian government is essential in pursuing these objectives.

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SOCIAL JUSTICE

CLOSING THE GENDER PAY GAP IN THE WORKFORCE

CONTEXT: A few feminist economists and sociologists protested, but their voices were drowned out until Claudia Goldin stood on the podium as the President of the American Economic Association in 2013-14 and argued that the answer to the solution of missing and underpaid women did not lie at home but rather, in the market.

The economic orthodoxy, including theories popularised by the 1992 Nobel Prize winner Gary Becker attributed reasons for women missing from the labour force to home caring for children; when they were paid less than men, that was because they had lower education than men.

Claudia Goldin, the 2023 Economics Nobel Prize winner, who spent half a century giving a name and voice to their problems chronicled the evolution of the American economy from agriculture to manufacturing to services and noted that as economic production moved from home to factories, women were excluded from market activities. It was not until offices, schools, and hospitals began to offer more jobs than factories that women found jobs. However, even when they entered the workforce in droves, overtook men in educational attainment, did not congregate in "female jobs," and did not drop out from the labour force to have children, women continued to earn less than men.

Professor Goldin argued that poor female labour participation is due to their inability to take on jobs that involve all-consuming responsibilities. Parental responsibilities make it difficult for women to take on jobs requiring long hours and irregular work schedules. While women need not be the ones choosing this slow track, gender ideologies often prompt couples to assign women to take over extra family duties while men remain free to concentrate on their careers.

Professor Goldin blamed this inequality on "greedy work" that demands extraordinary efforts from workers rewarded with high salaries, big bonuses, stock options, and fast promotions. Rising income inequality leads couples to forgo gender equity within the household and concentrate on increasing family income via specialisation. Her solution to this dilemma is restructuring a workplace that does not rely on heroic efforts, has moderate work hours, and predictable schedules. Professor Goldin's work dovetails with that of Juliet Schor, who argued in her book *The Overworked American* that it was far more beneficial to companies to hire two workers who worked long hours than three workers who worked regular hours since it reduced costs such as health insurance, office space, and personnel services.

Although women's employment rates in India remain low, secular changes suggest that there is no reason why this must continue. Building on Professor Goldin's observations, the growth of the service sector should offer jobs for women that are not offered by the manufacturing sector; rising education should increase their employability; and declining fertility should free up women's time. But how can we take advantage of these fortuitous circumstances?

SCIENCE AND TECHNOLOGY

MISTRAL'S AI MODEL SPLITS DEVELOPER OPINIONS

CONTEXT: Mistral AI raised 105 million euros despite no product, surprising investors with its potential.

BACKGROUND: Mistral AI, a French startup founded by ex-DeepMind and Meta employees, secured an impressive 105 million euros in seed funding shortly after its launch, even without a product. This initially raised doubts about VC generosity for generative AI, but it ultimately attracted support from prominent investors.



HIGHLIGHTS

- **Mistral AI's Funding:** French startup Mistral AI secured €105 million in seed funding a month after its launch, raising eyebrows without a working product.
- **Competing with Meta:** Mistral released a 7.3 billion parameter language model, challenging Meta's LLaMA 2, positioning itself as a key player in Europe's AI landscape.
- **Open-Source Approach:** Unlike competitors, Mistral released its model on GitHub under Apache 2.0 license, promoting open community involvement.
- **Performance Claims:** Mistral's AI outperformed LLaMA 2 in accuracy benchmarks, except in coding, showcasing its capabilities.
- **Lack of Safety Measures:** Users criticized Mistral for lacking safety guardrails, allowing harmful instructions, prompting the company to address concerns.
- **Community Feedback:** Mistral aims to engage the community to implement necessary safety measures and fine-tune the model for responsible use.
- **AI Researcher Perspectives:** Some experts appreciate Mistral's unlobotomised model, emphasizing its versatility, while others stress the need for safety precautions.
- **Comparisons with ChatGPT:** Mistral's safety concerns parallel early issues faced by ChatGPT, highlighting the challenges in managing user interactions.
- **Long-Term Solutions:** Experts suggest continual feedback loops and public engagement to refine AI models, balancing openness with safety protocols.
- **Ethical Dilemmas:** The debate revolves around balancing AI's potential with ethical considerations, requiring ongoing efforts to navigate responsible AI development.

INTERNAL SECURITY

STUDY ESTIMATES COUNT OF UAVS REQUIRED FOR THE THREE SERVICES

CONTEXT: General Anil Chauhan, Chief of Defence Staff ordered two studies to be conducted on major military platforms used by the three Services.

According to defence sources, these platforms are unmanned aerial vehicles (UAV) and armoured helicopters. The studies, undertaken by tri-Service teams, are meant to optimise the number of platforms required as well as the resources and avoid duplication. The first study was conducted in August-September has since been completed with a recommendation to acquire 31 MQ-9B high-altitude long-endurance (HALE) UAVs and 155 medium-altitude long-endurance (MALE) UAVs. In June, the Defence Ministry cleared the procurement of 31 MQ-9B UAVs from General Atomics — 15 Sea Guardians for the Navy and eight Sky Guardians each for the Army and the Air Force — at an estimated cost of \$3,072 million through the U.S. foreign military sales route. Ahead of talks between Prime Minister Narendra Modi and U.S. President Joe Biden on the sidelines of the G-20 Summit, the Defence Ministry issued the Letter of Request (LoR) to the U.S. government. Based on LoR, the U.S. government and the Ministry will finalise the Letter of Offer and Acceptance (LOA) where details of equipment and the terms of the procurement would be negotiated and finalised.

For the second study, the terms of reference are currently being finalised and the study is expected to begin in a month or two. While the deal for MQ-9Bs is in progress, the division of the 155 MALE UAVs among the three Services is yet to be decided.

The three Services operate a large number of Israeli Heron MALE UAVs. A major upgrade to weaponise and incorporate satellite communication on these UAVs, estimated to cost ₹21,000 crore, has been pending for several years.

The Air Force has traditionally been responsible for operating attack helicopters. Over the past decade, the Army has sought to operate attack helicopters on its own in support of its strike formations. The Army Aviation Corps recently inducted the first batch of light combat helicopter (LCH). Both the Army and the Air Force are inducting the initial batch of 15 LCH. A bigger deal for 156 LCH, 90 for the Army and 66 for the Air Force, estimated to cost ₹45,000 crore, is awaiting government approval.

The Cabinet Committee on Security has already given in-principle sanction for the procurement of 39 AH-64 Apache attack helicopters from the U.S. The Air Force has since inducted 22 AH-64E Apaches under a deal signed in September 2015. At this point the government decided that any further Apache procurements would go to the Army. India signed a deal for six more Apaches, for the Army, at a cost of around \$800 million in February 2020. The Army will start receiving them from February 2024. The Army has been pushing a case for 11 more Apaches and preliminary discussions are on with Boeing.



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