

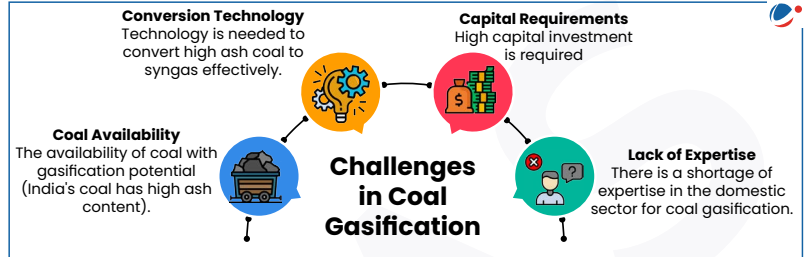
NEWS TODAY

Ministry of Coal announced applicants under Category-II of the Financial Incentive Scheme (FIS)

The scheme aims to **accelerate coal gasification** and advance the **National Coal Gasification Mission**.

About FIS

- ▶ **Launched:** 2024.
- ▶ **Outlay:** ₹8,500 crore.
- ▶ **Implementation:** Ministry of Coal.
- ▶ **Aim:** Encourage both private and public sector to undertake coal gasification projects.
- ▶ **Three Categories:** Selected applicants under Category I and III were announced earlier.



About Coal Gasification

- ▶ **Meaning:** It is a **technological process** that converts any carbonaceous (carbon-based) raw material like coal into **fuel gas or synthesis gas (syngas)**.
 - ⊕ Syngas is an **intermediate** in the production of synthetic natural gas, composed mainly of **carbon monoxide (CO) and hydrogen (H₂)**.
- ▶ **Process:** Occurs in a **gasifier** (a high temperature/pressure vessel) where oxygen and steam come in direct contact with the coal to produce syngas.

Significance of Coal Gasification

- ▶ **Cleaner Form of Energy:** Coal is converted into a gaseous fuel which is easy to handle and is clean.
- ▶ **Use in Chemical and Petrochemical Industry:** Can be used to make methanol, ethanol, olefins, etc.
- ▶ **Use of Syngas:** It has variety of uses namely, manufacturing of ammonia, hydrogen, substitute to natural gas, reduction gas in steel industry, production of electric power, etc.
- ▶ **Significance for India:** Utilize India's **abundant coal reserves** (378.21 billion tonnes, National Coal Inventory, 2023), **reduce import dependence** for oil and gas needs), etc.

About National Coal Gasification Mission

- ▶ **Aim:** Achieving 100 MT coal gasification by 2030.
- ▶ **Implementation:** Three phases (I- setting up pilot projects, II- Upscaling gasification efforts through Coal India Limited, III- Gasification of 90MT coal after technology advancement in phase II).

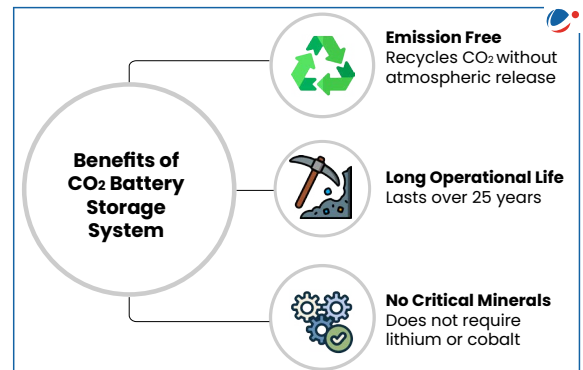
NTPC rolls out state-of-the-art CO₂ (Carbon Dioxide) Battery at Kudgi, Karnataka

The **160MWh (megawatt hours)** plant, installed in collaboration with Triveni Turbine Ltd and Energy Dome, Italy marks a landmark development in the domain of **Long Duration Energy Storage (LDES)**.

- ▶ LDES store energy for **extended periods of time** ranging from 8 hours, to days, weeks, or seasons.

CO₂ Battery Storage System

- ▶ **About:** It works by **compressing and liquefying CO₂** when energy is plentiful (charging phase) and expanding it back into gas to drive a turbine when energy is needed (discharging phase).
- ▶ **Functioning:** It functions on a '**Closed Brayton Thermodynamic Cycle**', where the charging and discharging of electricity occur by manipulating the physical parameters of CO₂ from vapor to liquid state.
- ▶ **Comparison with other Battery Energy Storage Systems (BESS):** Unlike BESS based on electrochemistry, it operates on specialized **electro-mechanical turbomachinery**.
 - ⊕ Hence having **minimal performance degradation**.



Energy Storage Systems

- ▶ **About:** They are used for **storing excess energy** during periods of **low demand** and **releasing it when demand peaks**.
- ▶ **Significance:** Provide a greener and sustainable energy environment, uphold the stability and reliability of grid.
- ▶ **Major types of Energy Storage Systems**
 - ⊕ **Chemical Energy Storage Systems:** Store chemical energy and convert it to electrical energy using **electrochemical reactions**. E.g., Lithium- Ion Batteries, Sodium- Ion Batteries, etc.
 - ⊕ **Advanced Chemical Energy Storage System:** New generation of chemical batteries that are more efficient, durable, and environmentally friendly than traditional batteries. E.g., Co₂ Batteries, etc.
 - ⊕ **Thermal Energy Storage System:** They store thermal energy by **heating or cooling** a storage medium to be used at a later time. E.g., Electric Thermal Energy Storage, etc.

Bhopal administration prohibits begging across all public places

Bhopal administration, exercising powers under **Section 163** of the **Bharatiya Nagarik Suraksha Sanhita (BNSS), 2023**, prohibits all types of begging, giving alms to beggars and buying any goods from beggars.

- **Section 163** of BNSS empowers District Magistrate to **direct any person to abstain from a certain act** to prevent danger to human life or disturbance of public tranquillity.
- According to Census 2011, there are **4.13 lakh beggars and vagrants** in India.

Provisions concerning Begging

- **Article 23 of Constitution:** Prohibits traffic in human beings and begar and other forms of forced labour.
- **Central Sector Scheme for Comprehensive Rehabilitation of persons engaged in the act of Begging:** A sub-scheme under **SMILE (Support for Marginalized Individuals for Livelihood and Enterprise) Scheme** by Ministry of Social Justice & Empowerment.
- **State Legislations and Projects:** Bombay Prohibition of Begging Act (BPBA), 1959; Rajasthan Rehabilitation of Beggars or Indigents Act, 2012.
- **Court Judgement: In Harsh Mander Case (2018),** Delhi High Court held some provisions of BPBA 1959 that criminalised begging as unconstitutional.

Way Forward (Advisory by National Human Rights Commission)

- **Drafting National Policy** for protection and rehabilitation of beggars.
- **Legislate an anti-human trafficking law** to curb forced begging.
- **Build national database** of beggars with their physical, mental, and social status.
- **Others: Essential services** under shelter homes, dismantling organized syndicates, promote targeted **skill development and employment** etc.



Director General, Bureau of Indian Standards emphasizes on Academia-Industry collaboration

Director General emphasized that there is a **necessity of Academia-Industry Collaboration (AIC)** in shaping standards that drive innovation and economic growth.

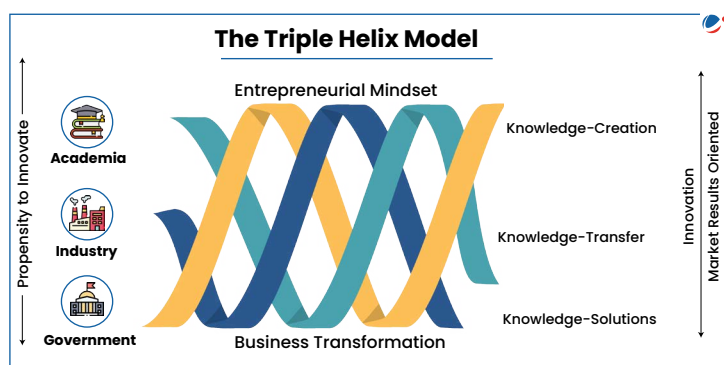
- AIC is significant component of **Triple Helix Model of Innovation** to drive technological advancement and economic development.

Significance of AIC

- **Economic Growth: IIT Madras Research Park** has incubated over 200 startups, attracting investments exceeding Rs. 1,000 crore, driving economic development.
- **Social Benefits: Pusa Basmati rice** varieties contributing immensely to sustainable basmati rice cultivation and exports.
- **High Return:** According to Germany's Fraunhofer Institutes' research, targeted research collaboration has yielded **18 times return on investments** through improved regional economies, enhanced workforce capabilities, and higher firm and government revenues.

Challenges in AIC

- **Lack of funding:** In FY2020-21, India invested **0.64% of its GDP** in R&D, in stark contrast to 3.46% by US, 2.43% by China.
- **High commercialisation costs** of academic research and lack of demonstration of tangible outcomes.
- **Lack of motivation** for research among academic students due to limited financial incentives, involvement in administrative work, inferior infrastructure etc.
- **Issues with monetisation of shared intellectual property** and differing project management approaches.



Way Forward

- Prioritise building **talent pipeline**, address **regulatory bottlenecks**, focus on **supply chains** and invest in **skilling the workforce**.
- Foster collaborative environment through promoting **multidisciplinary research hubs**, facilitating creation of **translational research offices** and developing **incentives for industry engagement** in academic projects.
- **Long-term investment** in both fundamental research and advanced technological pursuits.

Parliamentary Committee flags over-centralization in the Draft HECI Bill

Department-related Parliamentary Standing Committee on Education raised concerns of over-centralization with the proposed **Higher Education Commission of India (HECI) Bill**, which seeks to replace University Grants Commission (UGC) as a single regulator.

About the proposed HECI

- **National Education Policy 2020** recommended to constitute an umbrella institution, HECI, with 4 independent verticals:
 - ⊕ **National Higher Education Regulatory Council:** To function as common, single point regulator for higher education sector including teacher education and **excluding medical and legal education.**
 - ⊕ **National Accreditation Council:** To **supervise and oversee accreditation** of Higher Educational Institution.
 - ⊕ **Higher Education Grants Council:** To carry out **funding and financing of higher education** based on transparent criteria.
 - ⊕ **General Education Council:** To **frame expected learning outcomes** for higher education programmes, including formulation of National Higher Education Qualification Framework.

Concerns raised

- **Overcentralization:** Central Government-heavy composition and insufficient State representation.
- **Impact on Educational institutions in rural areas:** Removes State control and could lead to **closure of institutions in rural areas** that suffer from infrastructure or faculty shortages and **could indirectly fuel privatization**, especially in rural areas.

Need for HECI

- **Fragmented regulatory structure:** Currently, Higher Education in India is regulated by multiple bodies including UGC, AICTE, National Council for Teacher Education, etc.
- **Mechanistic and disempowering nature of regulation:** Heavy concentrations of power within a few bodies, conflicts of interest among these bodies, and a resulting lack of accountability.

Government warns employees against using AI tools on Official Devices

Recently, **Union Ministry of Finance** issued warnings to government employees against **using AI tools like DeepSeek, ChatGPT, etc., on official devices**, citing **data security risks**.

- **Applications of AI in governance** include data-driven insights for informed policy-making, public service delivery through AI-powered bots in areas like tax filing, grievance redressal, etc.

Concerns with AI in Governance

- **Data Security and privacy risks:** AI models process user inputs on **external servers**, exposing sensitive government data entered into these tools to be stored, accessed, or even misused.
 - ⊕ **E.g.,** WannaCry ransomware attack in 2017 caused widespread disruption in the UK's National Health Service.
- **Bias and manipulation risks:** AI models can inherit **biases from training data**, leading to unfair policies or systemic discrimination.
 - ⊕ AI-generated policy recommendations may also be **manipulated by adversaries** through **data poisoning attacks**.
 - ⊕ **e.g.,** concerns of **racist biases raised against predictive policing algorithms in the US.**
- **Loss of accountability:** Over-reliance on AI can lead to a lack of human accountability in decision-making, making it difficult to assign responsibility for errors.
- **National security threats:** External adversaries could exploit AI vulnerabilities to influence policy-making or conduct espionage.
 - ⊕ This concern is particularly acute in case of India as **majority of the AI-tools are foreign-based.**

Way Forward

- **Sovereign AI:** It underscores a nation's ability to develop AI using its own infrastructure, training and research.
 - ⊕ Government of India has announced plans for an **Artificial Intelligence (AI) computing mission** with a budget of ₹ 10,000 crore.
- **Strengthen AI Governance Frameworks:** In line with NITI Aayog "**Responsible AI for All**" framework and the legal provisions under the Digital Personal Data Protection Act, 2023.
- **Human oversight and accountability:** Implementing "**Human-in-the-loop**" (HITL) models in AI ensure human supervision in critical decisions.

Also In News



Electronics Manufacturing

After China, India has become the **World's 2nd largest mobile manufacturing country** and is followed by Vietnam.

- Presently, **99.2%** of all mobile phones sold in India are **made in India**.
- Mobile phones constitute **43%** of India's total electronics production.

Electronic manufacturing sector status

- **Total valuation:** India's electronics sector has experienced rapid growth, reaching **USD 155 billion** in FY23.
- **Production:** Production **nearly doubled** from USD 48 billion in FY17 to USD 101 billion in FY23.
- **Exports:** Electronics has become the **country's fifth largest export commodity**, but India represents **less than 1%** of global share.



Makhana

Union Budget 2025-26 announced **establishment of dedicated Makhana Board** to boost production, streamline processing, and enhance value addition.

About Makhana (Euryale ferox)

- It is a **flowering plant classified in the water lily family (Nymphaeaceae)** and **only extant species in the genus Euryale**.
- **Climatic condition:** Requires a **temperature range of 20-35°C**, **relative humidity of 50-90%**, and **annual rainfall between 100-250 cm**.
- It is a **fully organic non-cereal food found principally in India** but also in Korea, Japan, as well as parts of eastern Russia.
 - ⊕ **Bihar** accounts for **~90%** of India's makhana production.
- **GI Tag:** In 2022, '**Mithila Makhana**' was conferred a GI tag.



Rheumatoid Arthritis

Researchers have developed an innovative **self-actuating drug delivery system** that could revolutionize the treatment of Rheumatoid Arthritis (RA) by targeting inflammation directly within the joints.

- System uses **specially designed microspheres** loaded with **methotrexate**, a commonly used anti-rheumatic drug.
- These microspheres are engineered to **sense inflammation in joints** and release the drug only when needed.

About Rheumatoid Arthritis (RA)

- RA is a **chronic autoimmune disease** that mostly affects joints.
- It can **affect the joints** in the wrists, hands, elbows, shoulders, feet, spine, knees, and jaw.



Brucellosis

Recently, an eight-year-old girl from Kottakkal in Malappuram district of Kerala died of Brucellosis.

About Brucellosis

- **Type:** Brucellosis is a **bacterial disease** caused by various Brucella species, which mainly infect cattle, swine, goats, sheep and dogs.
 - ⊕ Worldwide, **Brucella melitensis** is the **most prevalent species causing human brucellosis**.
- **Transmission:** Humans generally acquire the disease through direct contact with infected animals, by eating or drinking contaminated animal products or by inhaling airborne agents
 - ⊕ **Human-to-human transmission** is very rare.
- **Risks:** Expansion of animal industries and urbanization, and the lack of hygienic measures in animal husbandry and in food handling, etc.



Sahitya Akademi Award

Recently, Chaman Arora was awarded **Sahitya Akademi Award 2024 in Dogri** for his book "Ik Hor Ashwthama".

About Sahitya Akademi Awards

- **Genesis:** Inaugurated in **1954** and given by the Sahitya Akademi (an autonomous body under **Union Ministry of Culture**).
 - ⊕ First Awards were given in **1955**.
- Awarded to the most **outstanding books of literary merit** published in **any of the major Indian languages recognised by the Akademi**.
 - ⊕ Languages recognized by the Akademi include **22 Languages listed under the Schedule VIII of the Constitution** and **English** and **Rajasthani**
- Award is in the form of a casket containing **an engraved copper-plaque** and a **payment of ₹ 1,00,000/-**.



Dhimsa Dance

Tribals in Andhra Pradesh performed Dhimsa dance.

About Dhimsa Dance

- This dance form is believed to have originated in the **Koraput area of Odisha**.
- It is exceptional dance performed by the hill tribes of **Araku Valley** in Visakhapatnam Area, Andhra Pradesh.
- About **15 to 20 women** attired in emblematic ethnic dresses and stuff perform the dance.
 - ⊕ The leading women carry a **peacock feather** in her hand.
- **Instruments used:** Mori, Thudum and Dappu.



Ebola

Uganda, in collaboration with the World Health Organization (WHO) and other global partners, has launched the first-ever clinical efficacy trial for a vaccine targeting **Sudan species of the Ebola virus**.

- Ebolavirus genus has **6 species:** Zaire, Bundibugyo, Sudan, Tai Forest, Reston and Bombali.

About Ebola Virus

- Ebola virus disease (EVD) is a rare but severe illness in humans.
- **Transmission:** It is transmitted to people from wild animals (such as fruit bats, porcupines and non-human primates) and then spreads in the human population.
- **Transmission Medium:** Contact with the blood, secretions, organs or other bodily fluids of infected person.



GREAT Scheme

Union Government has approved 04 Start-Ups in the field of Technical Textiles under **Grant for Research & Entrepreneurship across Aspiring Innovators in Technical Textiles (GREAT) Scheme**.

About GREAT Scheme

- **Introduced:** Under Research, Development, and Innovation Component of the **National Technical Textiles Mission**.
- **Aim:** To accelerate development of new **technologies, products, and processes**, significantly contributing to the growth and sustainability of the technical textiles industry.
- It provides financial support and resources to **researchers, startups, and entrepreneurs** working on groundbreaking projects in technical textiles.
- **Union Ministry of Textiles** provides grant-in-aid of upto **₹ 50 lakhs** for a period of **18 months**.

Place in News



Belgium (Capital: Brussels)

Bart De Wever sworn in as the Prime Minister of Belgium.

Political Features

- It is located in **northwestern Europe**.
- **Bordering Countries:** Netherlands (North), Germany (East), Luxembourg (Southeast), and France (South).
- **Bordering Water Bodies:** North Sea.

Geographical features

- **Highest Peak:** Signal de Botrange.
- **Plateau:** Ardennes, High Fens
- **Major Rivers:** Meuse, Scheldt, Oise



AHMEDABAD



BENGALURU



BHOPAL



CHANDIGARH



DELHI



GUWAHATI



HYDERABAD



JAIPUR



JODHPUR



LUCKNOW



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PUNE



RANCHI