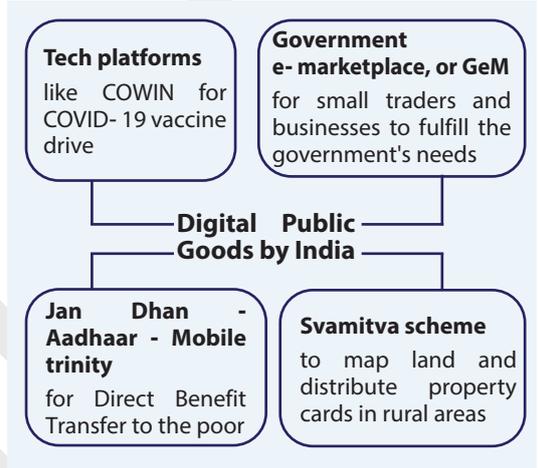# NEWS TODAY

NEED TO LEAD WORLD TOGETHER WITH INDIA IN TECHNOLOGY ECOSYSTEM, SAYS US

- Highlighting **two emerging ecosystems of technology** - one **consistent with democratic values** and the other not - US wants **India to be a partner** in leading the world in former.
- **Democratization of technology** is the process which **makes technology accessible to more people,** leading to rapid developments and innovations within the industry.
  - With key services such as **education and health, relief delivery, government communications etc. being increasingly disseminated digitally** in many countries, democratisation of technology has become inevitable.
- Democratization of technology **promotes robust socio-economic development** and **national security through:**
  - **Universal and equitable access** to technology.
  - **Development of indigenous digital platforms** with reduced costs and friction.
  - **Respect for people's privacy, personal safety and self-determination.**
  - **Rightful recourse to the law** for Democratic Stability etc.
- **India's Initiatives for Democratization of Technology**
  - **Built digital public goods (DPG) or commons at scale** that act as a force of equality and empowerment (see image).
  - **India Stack:** collection of disparate technology products and frameworks. It consists of three different layers:
    - **Unique identity** (Aadhaar);
    - **Complimentary payments systems** (UPI, Aadhaar Enabled Payment Service etc);
    - **Data exchange** (DigiLocker, Account Aggregator).

Tech platforms like COWIN for COVID- 19 vaccine drive

Government e- marketplace, or GeM for small traders and businesses to fulfill the government's needs

Digital Public Goods by India

Jan Dhan - Aadhaar - Mobile trinity for Direct Benefit Transfer to the poor

Svamitva scheme to map land and distribute property cards in rural areas

LITHIUM BEYOND ORIGINAL SITE IN JAMMU & KASHMIR, EXPLORATION SCOPE MAY BE EXPANDED

- Recently, Geological Survey of India established **Lithium inferred resources of 5.9 million tonnes in Salal-Haimana area** of Reasi District **of Jammu & Kashmir.**
  - 'Inferred' mineral resource is **part of a resource for which quantity, grade and mineral content are estimated** only with a **low level of confidence.**
- Reports now suggest that **lithium resources extend well beyond the original location,** and scope of **geological exploration is now being widened**
  - Currently, **India imports all its lithium needs**
- **Other potential sites in India**
  - Igneous rocks of **Marlagalla–Allapatna region of Karnataka's** Mandya district.
  - From brines of **Sambhar and Pachpadra areas,** Rajasthan and Rann of Kutch, Gujarat.
- Lithium is **generally produced from two different deposit types:**
  - **Brines Operations: Pump saline brines** with high lithium content from beneath the surface and lithium is **concentrated by way of evaporation,** before brine is sent to processing facilities for production of lithium hydroxide.
  - **Hard-rock operations:** In this ore is **extracted using conventional mining techniques** before it is concentrated by way of crushing, and separated to produce a concentrate.

Lithium

Properties of Lithium

- Soft, shiny grey metal found in the earth's crust
- Lowest density of all metals
- Reacts vigorously with water
- It does not occur as the metal in nature.
- Spodumene, petalite, lepidoite, and amblygonite are the important minerals containing lithium

Applications of Lithium

- **Primary Uses**
  - Due to its ability to store energy, it is primarily used to build the rechargeable batteries that power modern appliances including mobile phones and Electric Vehicles (EVs).
- **Alloys**
  - Lithium alloys are lighter and strong in nature
  - A magnesium-lithium alloy is used for armour plating.
  - Aluminium-lithium alloys are used in aircraft, bicycle frames and high-speed trains.
- **Other Uses**
  - Lithium Oxide: Special Glasses and Glass Ceramics
  - Lithium Chloride: One of the most hygroscopic materials known, and is used in air conditioning and Industrial drying systems
  - Lithium Carbonate: Drugs to treat manic depression
  - Lithium Stearate: all-purpose and high-temperature lubricant

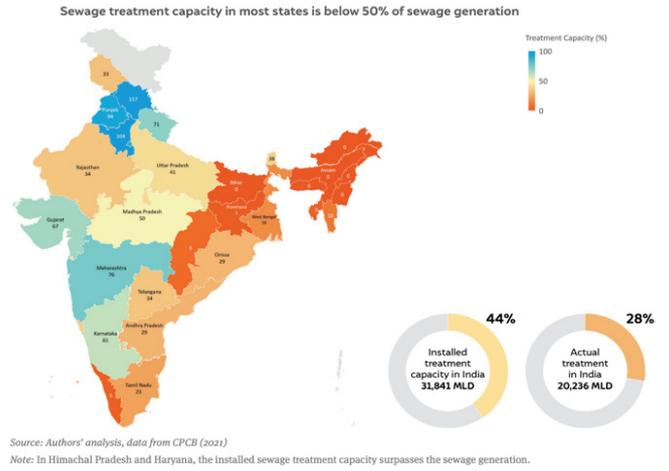# REUSE OF TREATED WASTEWATER (TWW) IN INDIA REPORT RELEASED

- **Report by Council on Energy, Environment and Water (CEEW), a not-for-profit policy research institution, assesses economic and market potential for reuse of TWW** at national scale.
- **Key highlights of report**
  - **Market value of** total available **TWW in 2021 is INR 630 million.**
  - **Nine times the area of New Delhi** could have been **irrigated using available TWW in 2021.**
  - **Reusing TWW in irrigation** could have **reduced greenhouse gas (GHG) emissions by 1.3 million tonnes** in 2021.
  - **Issues in present policies related to TWW:** Only a few states identify and prioritise sectors for reuse, lack of incentives, TWW quality standards are not defined etc.
- **Recommendations**
  - **Wastewater needs to be considered an integral part of water resources** and hence addressed in all water management related policies, plans, and regulations.
  - **Water quality standards for both safe discharge and reuse** need to be well defined.
  - **Urban local bodies should be empowered** to formulate and adopt long-term, city-level wastewater reuse plans.
  - **Need-based and demand-driven technological advancements** for effectiveness of wastewater treatment.

Sewage treatment capacity in most states is below 50% of sewage generation

Treatment Capacity (%)

44% Installed treatment capacity in India 31,841 MLD

28% Actual treatment in India 20,236 MLD

Source: Authors' analysis, data from CPCB (2021)
Note: In Himachal Pradesh and Haryana, the installed sewage treatment capacity surpasses the sewage generation.

IN WORKERS' PROTEST AGAINST BLINKIT, A NEW FLASHPOINT IN GIG WORK'S DISMAL REALITY

- Recently, **delivery partners at Zomato-owned quick commerce firm Blinkit** started **protesting against a new payout structure** which will slash their daily income by **40-50%.**
- Gig worker is **'a person who performs work or participates in a work arrangement** and earns from such activities **outside of traditional employer-employee relationship'** (Code on Social Security, 2020).
  - **NITI Aayog** estimated **77 lakh Gig workers** in 2020-21, expected to hit **2.35 crore by 2029-30.**
- Classified into **platform and non-platform gig workers, number of gig workers has increased** due to factors such as urbanization, digital technologies and smartphones, start-up culture etc.
  - **Platform workers:** work is based on online software apps like swiggy or digital platforms.
  - **Non-platform gig workers:** casual wage workers and own-account workers, working part-time or full time.
- Though **beneficial for businesses,** consumers as well as for workers (e.g. **flexible work hours**), it gives rise to **number of issues for workers** such as:
  - **Lack of job security** and **uncertain employment status.**
  - **Denial of workplace protections** and **entitlements** (e.g. social security).
  - **Irregular wages** with overnight changes in pay structures without any consultation.
  - **High work pressure** with a **faceless management** and absence of a formal union.

NITI AAYOG'S RECOMMENDATION FOR GIG ECONOMY

- **Accelerating access to finance** through products specifically designed **for platform workers.**
- **Linking self-employed individuals** engaged in the business of selling regional products.
- Platform-led transformational and **outcome-based skilling.**
- **Enhancing social inclusion** through gender sensitization.

CHINESE DUAL-USE FACILITIES IN MYANMAR AND SRI LANKA RAISE SECURITY CONCERNS IN INDIA

- **China is looking to expand its ground stations in Indian Ocean region** (IOR) by:
  - Building a **military facility** on **Coco Islands (Myanmar)** which is **close to Andaman and Nicobar island** chain.
  - Proposing a **remote satellite receiving ground station system** in **Sri Lanka.**
- **China,** through its **String of Pearls doctrine,** has been practicing **strategic encirclement around India.**
  - String of pearls refers to China's purported **plan to establish naval bases and intelligence stations throughout IOR.**
- **Concerns for India**
  - Facilities **can be used to spy on Indian assets and intercept sensitive information.**
  - **Strategic clout of India** which it enjoys in IOR **will be reduced.**
  - **Endangers Indian maritime security** because of presence of Chinese submarines, destroyers, vessels, ships in the region.
  - **Threat to energy security** because of **Chinese presence on vital supply-lanes** and chokepoints in the IOR.
- **Initiatives taken by India**
  - **Counter move by signing pacts with countries surrounding China** (including Turkmenistan, Uzbekistan, Mongolia etc.).
  - **Act East Policy** with emphasis on **developing infrastructure in East Asian countries.**
  - **Deepening economic and security cooperation** with countries like Seychelles and Mauritius in IOR.
  - **Promoting role of institutional mechanisms** such as **Indian Ocean Rim Association (IORA), Indian Ocean Naval Symposium** etc.

MAGNETORESISTANCE: ONE MORE THING GRAPHENE DOES DIFFERENTLY

- Recently, **Nobel laureate Andre Geim** discovered that Graphene displays an anomalous **giant magnetoresistance (GMR)** at room temperature.
- GMR is the result of **electrical resistance of a conductor** (sandwiched between two materials) being **affected by magnetic fields in adjacent materials.**
  - ➢ **When** materials are **magnetised in same direction,** electrical **resistance in the conductor is low.**
  - ➢ **When** directions are **opposite** each other, **resistance increases.**
- **Application of GMR:** Hard disk drives and magnetoresistive RAM in computers, biosensors, automotive sensors, microelectromechanical systems, and medical imagers.
- **New study has found** that a **graphene-based device**, unlike conventional counterparts, **wouldn't need to be cooled to a very low temperature to sense magnetic fields.**
- **About Graphene**
  - ➢ Graphene is 'a **two-dimensional single-atom-thick layer of carbon atoms bonded in a hexagonal honeycomb lattice structure.**
  - ➢ It is **extracted** from **graphite** and displays unique **physicochemical properties** like:
    - ■ **High surface area, good biocompatibility, strong mechanical strength, excellent thermal conductivity, and fast electron transportation.**
  - ➢ **Applications include Energy** (Solar cell, Fuel cell, Super computers etc); **Sensor, Bio-sensor; Biomedical** (diagnostic, drug delivery etc); **Environment treatment** etc.

- In 2007, **Albert Fert and Peter Grünberg** received the **Nobel Prize** in Physics for **their discovery of GMR** in **1988**.
- In 2010, **Andre Geim and Konstantin Novoselov** received **Nobel Prize** for Physics **for their work on graphene.**

ALSO IN NEWS

Arab league	• A meeting to debate **Syria's readmission to Arab League has ended without agreement.**
	• It is an **intergovernmental pan-Arab organisation** of Arab states in Middle East and North Africa.
	  ➢ It was **established in Cairo in 1945**, following adoption of Alexandria Protocol in 1944.
	  ➢ **Currently it has 21 Arab countries** as members (Syria suspended since 2011).
	  ➢ **Founding members are** Egypt, Iraq, Lebanon, Saudi Arabia, Syria, Jordan, and Yemen.
	• It was established **in response to** concerns about **post-war colonial divisions of territory** and also **strong opposition to emergence of a Jewish state on Palestinian territory.**

G7 Ministers' Meeting on Climate, Energy and Environment	• It is **held in conjunction with G7 Summit** and it forms the **basis for discussions at Summit.**
	• **Key decisions taken:**
	  ➢ **Accelerate phase-out of unabated fossil fuels by 2050.**
	  ➢ A collective **increase in offshore wind capacity** of **150 gigawatt** and **solar (photovoltaic)** to more than **1 terawatt by 2030.**
	  ➢ Accelerating **phase-out of domestic unabated coal power generation.**
	• G7 is a group of **seven industrialised nations** consisting of **Canada, France, Germany, Italy, Japan, United Kingdom and United States.**
	  ➢ Also, **European Union is a non-enumerated member** (does not assume presidency).

Farmer Distress Index (FDI)	• FDI is an **early warning system to identify stress (and its level) among farmers** at least 3-4 months ahead of its actual occurrence.
	  ➢ **Developed by:** Central Research Institute for Dryland Agriculture of Indian Council of Agricultural Research (ICAR).
	  ➢ It was **developed as part of NABARD-funded project** on 'Farmers Distress and Pradhan Mantri Fasal Bima Yojana (PMFBY).
	• It is built **on questions around seven key pillars** that capture their **financial, emotional, and other parameters.**

Bioluminescence	• Bioluminescence occurred **at a beach near Visakhapatnam, Andhra Pradesh.** • Bioluminescence is **light produced by a chemical reaction,** due to luciferase (oxidative enzymes) protein, **within a living organism.** ➢ **In Visakhapatnam**, Bioluminescence is **most likely result of an algal bloom of dinoflagellate species.** • **Bioluminescence is a cold light.** Cold light means less than 20% of light generates thermal radiation. • **Most bioluminescent organisms** (fish, bacteria, jellies etc.) are **found in ocean. Some**, including fireflies and fungi, **are found on land.**

Trojan asteroids	• Recently, **NASA's Lucy Mission** captured the **images of four Jupiter Trojan asteroids (Eurybates, Polymele, Leucus, and Orus)** for the first time.
	  ➢ Lucy mission is the **first spacecraft launched to explore the Trojan asteroids.**
	• Trojans are **small bodies that are remnants of our early solar** system.
	  ➢ They **orbit the Sun in two loose groups:** one group leading **ahead of Jupiter** in its orbit, **other trailing behind.**
	  ➢ They hold **clues to the formation of our solar system** as they are **gravitationally stable** for over billions of years.

Pralay Ballistic Missile	• **Indian Armed Forces plans to acquire** around 250 more units of **Pralay ballistic missiles.** • Pralay Ballistic Missile is a **Surface-to-Surface missile,** developed by the **Defence Research and Development Organisation (DRDO).** • It has a **range of 150 to 500 kilometres** and is propelled by a **solid-propellant rocket motor.** • Its **missile guidance system** includes **state-of-the-art navigation** and **integrated** avionics.

Sickle cell Anaemia (SCA)	• **University Grants Commission (UGC) to request all higher educational institutions** across India to consider **adding a chapter on SCA.**
	• **About Sickle Cell Anaemia**
	  ➢ Occurs due to **a genetic mutation that causes haemoglobin** (responsible for carrying oxygen) in red blood cells (RBCs) **to clump together.**
	  ➢ **Affects the shape of RBCs.** RBCs are usually round and flexible, so they **move easily through blood vessels.**
	  ➢ In SCA, **some RBCs are shaped like sickles** or crescent moons.
	  ➢ **They become rigid and sticky**, which can **slow or block blood flow.**

Jigyasa	• Recently, **CSIR-IIP** (Council of Scientific and Industrial Research-Indian Institute of Petroleum) held a **Jigyasa program** as part of the **One Week One Lab** campaign. • Jigyasa is a **Student – Scientist connect programme** from CSIR as **Scientific Social Responsibility (SSR).** ➢ SSR is **moral and ethical obligation** of **scientific community** to give back benefits they derive from science to the **less endowed stakeholders and society.** • In **2017, CSIR** signed the **MoU** with **Kendriya Vidyalaya Sangathan (KVS)** on **Jigyasa** with the **objective** of 'teaching the scientific temperament among school children.
Supercritical carbon dioxide	• Researchers at IIT-Madras found that **supercritical carbon dioxide** is a good agent to **flush out oil** from **depleting oil and gas reservoirs.** • Supercritical carbon dioxide is a **fluid state of carbon dioxide** where it is held **at** or **above its critical temperature** and **critical pressure.** • **Having properties midway between a gas and a liquid**, supercritical carbon dioxide helps in simultaneous **carbon dioxide sequestration** and **enhanced oil recovery (EOR)** from depleted reservoirs.

Places in News	**Sudan (Capital: Khartoum)**
	• **Sudan Army and Paramilitary agreed to open a humanitarian corridor** after the death of over 50 civilians.
	• **Political Boundaries**
	  ➢ Situated in **north-eastern Africa**, Sudan shares its border with **Egypt, Libya, Chad, Central African Republic, South Sudan, Ethiopia** and **Eritrea.**
	  ➢ **South Sudan** was **bifurcated** from it in **2011**.
	  ➢ Sudan shares its **maritime border** with **Saudi Arabia** in **Red Sea.**
	• **Geographical Features:**
	  ➢ **Highest Peak:** Deriba Caldera (Jabel marra Mountain).
	  ➢ **Major River:** Nile River (White Nile and Blue Nile merge in Khartoum).