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प्रौद्योगिकी मंत्रालय
MINISTRY OF
SCIENCE AND
TECHNOLOGY



MK Yadav Sir

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China's curbs on critical metals a hurdle in India's chip road map

Controls on gallium, germanium exports may impact telecom, EV industries too

NITIN KUMAR

New Delhi, 4 July

In a move that may have far-reaching consequences, China, one of the world's leading producers of critical minerals, on Monday announced export controls on two technology-critical elements, gallium (Ga) and germanium (Ge), sending shockwaves through the global market.

Though the decision comes as a retaliation against moves of Western countries, it may impact not just India's ambition of becoming a semiconductor hub but also its burgeoning telecommunications and electric vehicle industries.

Gallium and germanium are usually extracted as by-products from refineries of other metals. Gallium is a by-product of processing bauxite and zinc ores and is used in information and communications industries for semiconductors, integrated circuits, and LEDs. It is also used in electronic circuits, specialised thermometers, barometric sensors, solar panels, blu-ray

technology, and pharmaceuticals.

Germanium is formed as a by-product of zinc and sulfide ores. Significant amounts of germanium are contained also in ash and flue dust generated in the combustion of certain coals for power generation. Germanium is used in the value chain of information and communications, clear technology, and advanced manufacturing. It is also used in optical fibres, satellites, solar cells along with cameras, microscope lens, infrared night vision systems, and as polymerisation catalyst.

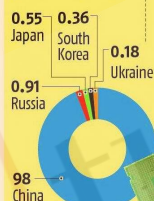
Though demand for these minerals is limited in the country, it will surge if India becomes semiconductor hub. The global semiconductor industry is anticipated to grow to \$1 trillion in revenues by 2030, according to Deloitte's 2023 semiconductor industry outlook.

Over six global semiconductor giants have evinced an interest in the ₹76,000 crore "Semicon India Programme" and are likely to invest in the near future.

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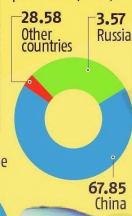
CHINA HOLDS ALL THE ACES

GALLIUM OUTPUT
World: 550,000 kg
(Share in production; in %)



Note: Gallium data is for 2022 and germanium is for 2021. Source: USGS

GERMANIUM OUTPUT
World: 140,000 kg
(Share in production; in %)



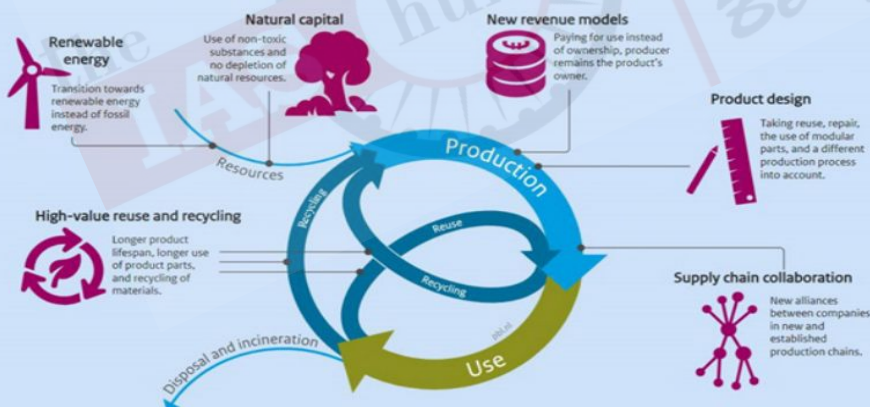
Context: China, one of the world's leading producers of critical minerals, announced export controls on two **technology-critical elements**, gallium (Ga) and germanium (Ge), sending shockwaves through the global market.

- It may impact not just India's ambition of becoming a **semiconductor hub** but also its burgeoning telecommunications and electric vehicle industries.

Key Points

- Gallium and germanium** are usually extracted as by-products from refineries of other metals.
- Gallium is a by-product of processing bauxite and zinc ores** and is used in information and communications industries for semiconductors, integrated circuits, and LEDs.
- It is also used in **electronic circuits, specialised thermometers, barometric sensors, solar panels, blu-ray technology, and pharmaceuticals.**
- Germanium** is formed as a by-product of zinc and sulfide ores.
- Significant amounts of germanium are **contained also in ash and flue dust generated** in the combustion of certain coals for power generation.
- Germanium is **used in the value chain of information and communications**, clear technology, and advanced manufacturing.
- It is **also used in optical fibres, satellites, solar cells** along with cameras, microscope lens, infrared night vision systems, and as polymerisation catalyst.
- Though demand for these minerals is limited in the country, it will **surge if India becomes a semiconductor hub.**
- The **global semiconductor industry** is anticipated to grow to \$1 trillion in revenues by 2030.
- Over six global semiconductor giants have evinced an interest in the ₹ 76,000 crore "**Semicon India Programme**" and are likely to invest in the near future.

Elements of a circular economy



Shri Dharmendra Pradhan participates in the Social Enterprise Conclave, launches Social Trailblazer Program for entrepreneurs

Context: Union Minister for **Education and Skill Development & Entrepreneurship** addressed a **Social Enterprise Conclave** organized by Institute of Rural Management, Anand in partnership with LIC Housing Finance Limited.

- He launched the second edition of the **Social Trailblazer Program** by Incubator for Social Enterprises and Entrepreneurs Development, IRMA.

Social Trailblazer Program

- The program aims to further **boost the social entrepreneurship ecosystem** at the grassroots and nurture early stage entrepreneurs.
- **LIC HFL - IRMA Social Trailblazer Program** is catalyzing India's change and innovation ecosystem while solving a social issue through sustainable business models on the themes of Livability and Livelihood.
- This initiative will **support innovative startups** with scalable social business models and dignified job-creating models by providing them with financial capacity building and go-to-market support.
- **Eligibility criteria:**
 - A start-up having an **intention to solve India's social challenges**, working on the themes of livability and livelihood can apply for Social Trailblazer Program:
 - The startup should be **demonstrating the existence of a legal structure**: the challenge is open to startups registered in India.
 - The startup **demonstrating the existence of a sustainable and autonomous economic model** with a Minimum Viable Product or service ready stage and onwards are eligible for the program
 - **Social impact & Innovation** are the heart of the solution.
 - For-profit startups with **more than 3 months of operations** can also apply.

JOWAR (SORGHUM)

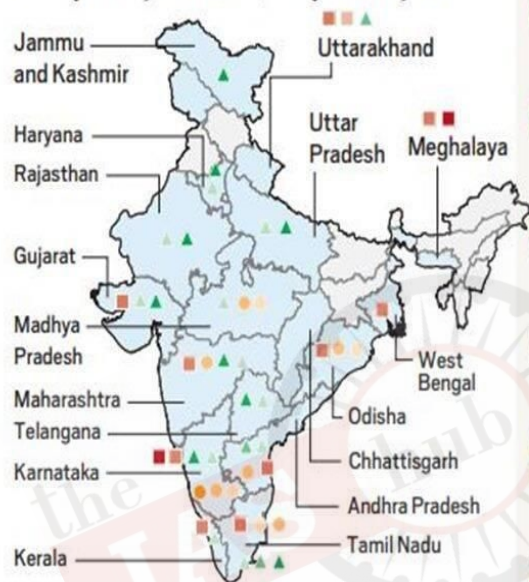
(Syllabus: GS Paper 2 - Agriculture)

Jowar an ideal alternative to wheat in times of increasing temperatures

Without pragmatic changes in managing how wheat is cultivated in India, the yields are likely to decrease by 5 per cent, the research notes

INDIA'S MILLETS MAP

Jowar is grown mainly in Maharashtra, Karnataka, Rajasthan, and Tamil Nadu; bajra mainly in Rajasthan, UP, Haryana, Gujarat



JOWAR

4.24 mn ha area
4.78 mn tonnes production

BAJRA

7.75 mn ha area
10.86 mn tonnes production
(In 2020-21)

MILLETS GROWN IN

130 countries, traditional food for more than 500 million people

'NUTRI-CEREALS'

Govt has declared millets 'powerhouses of nutrition'.



Foxtail Millet



Finger Millet



Barnyard Millet



Browntop Millet



Little Millet



Kodo Millet



Pearl Millet



Proso Millet



Sorghum

Context: A new research paper has established that traditionally grown **jowar (sorghum)** can be an ideal alternative to wheat due to its resilience to climate change.

Key Points

- Jowar is not only far more resilient to projected climate changes but also **requires much less water**.
- Jowar is India's best bet with its **meagre 4 per cent increase in water footprint** with the same climatic projections.
- **Wheat is highly sensitive to increases in maximum daily temperature** in its multiple stages of growth during the post-monsoon, dry winter season.
- In comparison, **jowar can handle temperature increases** with far less impact on yields.
- In addition, **wheat requires 1.4 times more water** than jowar owing to the extension of its growth cycle into summer.
- **India is the second largest producer of wheat** globally after China and exports its surplus yield to neighbouring countries of Bangladesh, Nepal, Afghanistan, Somalia and Sri Lanka.
- The total wheat production in the country has gone up since the turn of the century (average of 1998–2002 relative to average of 2012–2017) due to both increases in yield (26 per cent) and area (17 per cent).
- The **production of jowar declined by 5 per cent** in the same period.
- This **decline was despite a 37 per cent increase** in yields and was attributed to a 21 percent loss in the area under production.

SC notice to Centre on PIL about vacant slots in NHRC

New Delhi: The Supreme Court on Tuesday sought the Centre's response to a PIL alleging that no steps had been taken to fill three of the six vacant posts of judicial and woman members in NHRC.

A bench of Chief Justice D Y Chandrachud and Justice P S Narasimha in its order issuing notice to the home ministry, recorded petitioner-advocate Radhakanta Tripathy's contention that the post of a judicial member, who has to be a retired SC judge, another judicial member who must be a former HC chief justice and a woman member are lying vacant. **TNN**

• **Limitations of NHRC:**

- The Recommendations made by the NHRC are **not binding**.
- Violation of Human rights by private parties **cannot be considered under NHRC Jurisdiction**.
- NHRC **doesn't have the power to penalise** the authorities that don't implement its recommended orders.
- The NHRC **does not consider the following cases:**
 - Cases that are older than one year.
 - Cases that are anonymous, pseudonymous or vague.
 - Frivolous cases.
 - Cases pertaining to service matters.

Context: The Supreme Court sought the Centre's response to a PIL alleging that no steps had been taken to fill three of the six vacant posts of judicial and **woman members in NHRC**.

National Human Rights Commission (NHRC)

- **About:** Entity of the Government of India with the **mission of promoting and protecting human rights**.
- **Statutory body:** It was established in 1993, is an independent statutory body as per the provisions of the **Protection of Human Rights Act of 1993** which was amended in 2006.
- **Functions:** The functions of the NHRC as stated in Section 12 of the Protection of Human Rights Act, 1993 includes **enquiry into complaints of violation of human rights or negligence in the prevention of such violation by a public servant**.
- **Institutional Framework:** Composed of a **Chairperson and eight other members:**
 - **Chairman of NHRC:** Retired Chief Justice of India
 - **Member 1:** One who is/has been a Judge of Supreme Court of India
 - **Member 2:** One who is/has been a Chief Justice of a High Court
 - **Two Members:** Candidates with the knowledge or practical experience in the matters of Human Rights
 - **Deemed Members (Ex-officio Members):** Deemed members are chairpersons of the national commissions: National Commission for Minorities, National Commission for Scheduled Castes, National Commission for Scheduled Tribes and National Commission for Women.
- **Appointment of NHRC Members:** A **Selection Committee** will recommend the candidates to the President.
 - **The Selection Committee includes:** Prime Minister (Chairman), Speaker of Lok Sabha, Union Home Minister, Deputy Chairman of Rajya Sabha and Leaders of the Opposition in both Houses of the Parliament.
- **Tenure of members:** The Chairperson or the Members of the National Human Rights Commission holds office for a **term of three years** or until they attain the age of 70 years, whichever is earlier.
 - Earlier the tenure of office was **5 years or 70 years** whichever is earlier but the Protection of Human Rights (Amendment) Bill 2019 brought in certain changes.

G20 member countries discuss Research Ministerial Declaration at the RIIG Summit today

Context: The Secretary, Department of Science and Technology welcomed delegates at the **G-20 Research and Innovation Initiative (RIIG) Summit** which started off in Mumbai.

Key Points

- India has taken forward the **Research and Innovation Initiative (RIIG)** during its Presidency in 2023 under the theme “Research and Innovation for Equitable Society”.
- A total of 5 RIIG meetings/conferences were hosted by India during 2023 under the theme “**Research and Innovation for Equitable Society**”.
- The RIIG Inception Meeting was held in Kolkata, followed by **4 thematic conferences in Ranchi (Theme: Materials for Sustainable Energy), Dibrugarh (Theme: Circular bioeconomy), Dharamshala (Theme: Eco-Innovations for Energy Transition), and Diu (Theme: Sustainable Blue-economy).**

GROUP OF 20 (G20):

- **About:** It is a **group of developed and emerging economies** around the world.
- **Origin:** 1999 against the backdrop of the financial crisis of the late 1990s.
- **Aim:** To secure global financial stability by involving middle-income countries.
- **Members:** It consists of 19 member nations and the European Union.
 - **Those member nations are:** Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, the Republic of Korea, Mexico, Russia, Saudi Arabia, South Africa, Turkey, the United Kingdom, the United States, and the European Union.
- **First G20 Summit:** Its first summit was held in 2008.
- **Presidency of the G20:** It rotates every year among member countries.
 - The **country holding the presidency**, together with the previous and next presidency-holder, forms the ‘**Troika**’ to ensure the **continuity of the G20 agenda**.
 - **Current Trioka Formation:** Formed by Italy, Indonesia, and India right now. **India** will be hosting the 2023 Presidency of G20.
- **Headquarters:** It does not have any permanent secretariat or headquarters.

Iran joins SCO as India hosts summit

Shashank Mattoo

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NEW DELHI

Iran joined the Shanghai Cooperation Organisation at its 23rd leaders' summit, hosted virtually by India as chairman of the grouping.

Iran's inclusion is set to give the West Asian nation more breathing room as it looks to break out of its diplomatic isolation after the collapse of its nuclear agreement with the US. China and Russia, two other SCO members, have also been keen to build closer ties with countries that are not aligned with Western powers.

Belarus, a close ally of Russia, also moved closer to securing membership. India's Foreign Secretary Vinay Mohan Kwatra stated that the country will be admitted to the body during next year's summit.

China, for its part, proposed the creation of an SCO development bank during the summit.

"China proposes that the SCO scale up local currency settlement between member states, expand cooperation on sovereign digital currency, and promote the establishment of an SCO development bank," said Chinese President Xi Jinping. China's push for settling



Prime Minister Narendra Modi addressing the SCO summit. PTI

trade in national currencies was backed by Russian President Vladimir Putin.

The SCO began as a grouping of the Russian Federation, Central Asian republics and China in the late 1990s. It was originally intended to function as a multilateral body that would build trust and reduce tensions between these erstwhile rivals in the aftermath of the Cold War. The SCO as it stands today was founded in 2001, and India joined the grouping in 2017 along with Pakistan.

The summit saw participation from Prime Minister Narendra Modi, Russia's Putin, Pakistan Prime Minister Shehbaz Sharif and China's Xi.

The SCO was founded in 2001 and India joined the grouping in 2017 along with Pakistan

The SCO's focus has traditionally been on functional issues like economic development, security and counter-terrorism. "India has established five new pillars of cooperation within the SCO:

Startups and Innovation, Traditional Medicine, Youth Empowerment, Digital Inclusion, and Shared Buddhist Her-

itage," said Modi in his remarks at the summit. New Delhi also took aim at Islamabad and Beijing during the summit.

"Strong connectivity is crucial for the progress of any region. Better connectivity not only enhances mutual trade but also fosters mutual trust. However, in these efforts, it is essential to uphold the basic principles of the SCO charter, particularly respecting the sovereignty and regional integrity of the Member States," Modi said. His words were an allusion to the China-Pakistan Economic Corridor, which India has opposed since its runs through Pakistan Occupied Kashmir (POK).

India also restated its concerns over the continuation of cross-border terrorism. "Some countries use cross-border terrorism as an instrument of their policies, provide shelter to terrorists. SCO should not hesitate to criticize such nations. There should be no place for double standards on such serious matters," the Prime Minister added. However, the SCO's connectivity agenda may also get a boost from Iran's entry. Modi called for the use of Chabahar Port in Iran to boost trade and connectivity between India and Central Asia.

Context: Iran joined the Shanghai Cooperation Organisation at its 23rd leaders' summit, hosted virtually by India as chairman of the grouping.

- **India chaired the SCO for the first time** since it became a full member of the grouping, along with Pakistan, in 2017.

Shanghai Cooperation Organisation (SCO)

- **About:** The SCO is an **economic and security grouping** and has emerged as one of the largest transregional international organisations. The SCO is a **multilateral organization**, established on 15 June 2001.
- **SCO Member States:** The SCO currently comprises eight Member States: China, **India**, Kazakhstan, Kyrgyzstan, Russia, Pakistan, Tajikistan and Uzbekistan.
- **SCO Observer States:** SCO has three Observer States: **Belarus, Iran, and Mongolia**.
- **SCO Dialogue Partners:** SCO has fourteen Dialogue Partners: Armenia, Azerbaijan, Cambodia, Nepal, Sri Lanka, Egypt, Saudi Arabia, Qatar, Bahrain, Kuwait, Maldives, Myanmar, UAE and Turkey.

Stoltenberg to remain at NATO helm for another year

Associated Press

BRUSSELS

NATO Secretary-General Jens Stoltenberg will stay in office for another year, the 31-nation military alliance decided on Tuesday.

Mr. Stoltenberg said in a tweet that he is "honoured by NATO Allies' decision to extend my term as Secretary General until 1 October 2024."

"The transatlantic bond between Europe and North America has ensured our freedom and security for nearly 75 years, and in a more dangerous world, our Alliance is more important than ever," he said.

Mr. Stoltenberg, a former Norwegian Prime Minister, has been NATO's top civilian official since 2014. His term had been due to expire last year but was ex-



Jens Stoltenberg

"With his steady leadership, experience, and judgement, Secretary General Stoltenberg has brought our Alliance through the most significant challenges in European security since World War II," Mr. Biden said in a statement.

Mr. Stoltenberg's fellow countryman, Norwegian Prime Minister Jonas Gahr Støre, welcomed the announcement saying that it was "good, important and reassuring."

Most NATO countries had been keen to name a woman to the top post, and Danish Prime Minister Mette Frederiksen was thought to be a favorite after a meeting with Mr. Biden last month.

It's the fourth time Mr. Stoltenberg has had his mandate extended. He's the second-longest serving NATO Secretary-General.

tended then to keep a steady hand at the helm after Russia's invasion of Ukraine in February 2022.

U.S. President Joe Biden and his NATO counterparts had been due to name a successor when they meet in Vilnius, Lithuania, on July 11-12. But the world's biggest security organisation makes decisions by consensus, and no agreement could be found on a new candidate.

Context: The head of NATO, Jens Stoltenberg, is to stay on for another year after his contract was extended again.

- His time as secretary general was due to end in October, but the 31 NATO states decided to keep him on rather than opting for someone new.

North Atlantic Treaty Organization (NATO)

- **About:** It is a **military alliance** established by the North Atlantic Treaty (also called the Washington Treaty) of April, 1949, **by the United States, Canada, and several Western European nations** to provide collective security against the Soviet Union.
- **Members:** currently 31 member states.
 - **12 founding members:** Belgium, Canada, Denmark, France, Iceland, Italy, Luxembourg, the Netherlands, Norway, Portugal, the United Kingdom and the United States.
 - **Latest member:** North Macedonia (2020), Finland (2023).
 - **India is not a member of NATO** because it is a firmly non-aligned country and stakes its international reputation on remaining non-aligned.
- **Headquarters:** Brussels, Belgium.
- **Objectives:**
 - **Political objectives:** NATO **promotes democratic values** and enables members to consult and cooperate on defense and security-related issues to solve problems, build trust and, in the long run, prevent conflict.
 - **Military Objectives:** NATO is **committed to the peaceful resolution of disputes**. If diplomatic efforts fail, it has the military power to undertake crisis-management operations.
- **Funding:** NATO is **funded by its members**.
 - The **U.S. contributes roughly three-fourths** of NATO's budget.
- **Functions:** NATO has an integrated military command structure but very few forces or assets are exclusively its own.
 - **Most forces remain under full national command and control until member countries agree** to undertake NATO-related tasks.
 - NATO's **protection does not extend to members' civil wars or internal coups**.

Water Levels at Less Than Half in 75% of Reservoirs

May hit irrigation in rabi season, drinking water availability

Shambhavi.Anand
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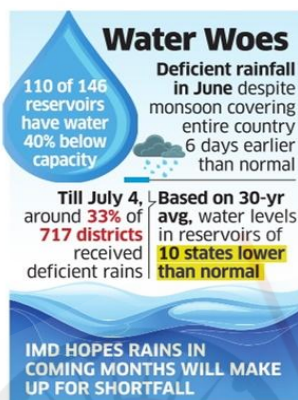
New Delhi: Water levels in 110 out of the 146 reservoirs that are monitored by the Central Water Commission (CWC) are 40% or below their capacities, according to latest CWC data, raising concerns about irrigation activities during the rabi season and the availability of drinking water until May 2024.

Several parts of India received deficient rainfall in June, despite the monsoon covering the entire country six days earlier than normal, said experts.

Insufficient rainfall in the first month of the rainy season has affected sowing of main kharif crops such as paddy. Till July 4, around 33% of 717 districts for which data are available received deficient rains, while for another 10%, it was even worse, according to India Meteorological Department (IMD).

"If the situation remains the same, it can impact agriculture in the rabi season when we grow wheat, gram, barley and some oilseeds," said Nitin Bassi, senior programme lead at the Council on Energy, Environment and Water. Supply of drinking water can also be affected, he added.

As on June 30, water levels in the reservoirs of 10 states are lower than the normal levels based on their 30-year average, according to latest data from the Cen-



tral Water Commission. The deficiency ranges from 11% to 80% in Bihar, West Bengal, Odisha, Jharkhand, Uttar Pradesh, Uttarakhand, Kerala, Karnataka, Tripura and Nagaland.

However, the water level was better than the last 10-year average, the CWC said in an email to ET.

Based on inputs from the CWC and other departments, the Crop Weather Watch Group under the Ministry of Agriculture & Farmers' Welfare reviews the crop condition and agricultural activities on a weekly basis to take further actions.

India's hydrological year starts in June and continues till May of next year. Filling of reservoirs happens during the June-September monsoon season.

The gross irrigated area in the country was 112 million hectares out of which about 41 million hectares were irrigated by surface water in 2019-20.

Context: Water levels in 110 out of the 146 reservoirs that are monitored by the **Central Water Commission (CWC)** are 40% or below their capacities, according to latest CWC data.

- It raised **concerns about irrigation activities** during the rabi season and the availability of drinking water until May 2024.

Key Points

- Till July 4, around 33% of 717 districts for which data are available received **deficient rains**, while for another 10%, it was even worse, according to India Meteorological Department (IMD).
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- However, the water level was **better than the last 10-year average**.

Central Water Commission (CWC)

- About:** It is a **premier Technical Organization** of India in the field of Water Resources.
- Nodal Ministry:** It is presently functioning as an attached office of the **Department of Water Resources, River Development and Ganga Rejuvenation, Ministry of Jal Shakti, Government of India**.
- Objectives & Functions:** The Commission is entrusted with the general responsibilities of initiating, coordinating and furthering in consultation of the **State Governments concerned**, schemes for control, conservation and utilization of water resources throughout the country, for purpose of Flood Control, Irrigation, Navigation, Drinking Water Supply and Hydro Power Development.
 - It also undertakes the investigations, construction and execution of any such schemes as required.

India tops global charts for childhood diabetes and deaths: Study

Almost 40% increase in cases to 2019 from 1990 globally; largest increase in cases recorded in children aged 10 to 14 years



NEXT NEWS >

By Rohini Krishnamurthy
Published: Tuesday 04 July 2023



- **Diabetes Insipidus:** When the body is unable to respond or produce the Antidiuretic hormone (ADH), which is secreted by the hypothalamus, Diabetes Insipidus occurs.

- This hormone helps the kidneys manage the amount of water in the human body.
- Without this essential hormone, the kidneys pass an abnormally large volume of urine that is odourless and dilute.

- **Gestational Diabetes:** This condition occurs in pregnant women who develop high blood sugar levels without a previous history.

- It does not occur in all women and usually resolves after giving birth.

- **Treatments:** Glucose monitoring and Artificial pancreas.

Context: India saw the **highest number of childhood diabetes** cases and deaths in 2019 in the world, according to a new study published in the journal JAMA Network.

- The country also has the **highest disability-adjusted life-years (DALY)**.
- One DALY represents the loss of the equivalent of one year of full health, according to the World Health Organization.

Diabetes

- **About:** A metabolic disease or a condition in which the glucose levels in the blood will be high over a prolonged period of time.
 - It is a **Non-Communicable Disease (NCD)**.
- **Cause:** Occurs either **when the pancreas does not produce enough insulin** (a hormone that regulates blood sugar, or glucose), or when the body cannot effectively use the insulin, it produces.
- **Impacts of Diabetes:** It affects the **five major organs** namely, Kidney, Heart, Blood vessels, Nervous System, and Eyes (retina).
- **Types of Diabetes:**
 - **Diabetes Mellitus:** inability of the body to effectively use or respond to the insulin produced by the body, and as a result, blood sugar levels cannot be regulated effectively. It is further classified into two types:
 - **Type 1 Diabetes:** occurs when the **pancreas fails to produce sufficient insulin**.
 - The consequent lack of insulin causes an increase in glucose levels in urine and blood.
 - It is also **known as juvenile diabetes** (as it mostly affects children of age 14-16 years)
 - **Type 2 Diabetes:** While the **body still makes insulin** but it affects the way the body uses insulin.

President of India Graces the Closing Ceremony of 125th Birth Anniversary of Alluri Sitarama Raju

Context: The President of India graced and addressed the closing ceremony of the **125th Birth Anniversary of Alluri Sitarama Raju at Hyderabad.**

Alluri Sitarama Raju (1897 - 1924)

- He was an **Indian revolutionary** who waged an armed campaign against British colonial rule in India. He was nicknamed "**Manyam Veerudu**" (Hero of the Jungle) by local villagers for his heroic exploits.
- **Born in present-day Andhra Pradesh**, he became involved in anti-British activities in response to the 1882 Madras Forest Act
- The act restricted the **free movement of Adivasis (tribal communities)** in their forest habitats and prevented them from practising a traditional form of agriculture known as podu (shifting cultivation).
- Initially, Sitarama Raju, under the **influence of Gandhi's Non-cooperation movement**, inspired the tribals to seek justice in the local panchayat courts and boycott the colonial courts.
- Led the **Rampa Rebellion/Manyam Rebellion** of 1922.
 - The **Rampa Rebellion of 1922** was a tribal uprising in Godavari Agency of Madras Presidency, British India.
 - The Rampa administrative area was home to about **28,000 tribes**.
 - To get the forests cleared, '**The Madras Forest Act, 1882**' was passed, thereby restricting the free movement of the tribal communities and prohibiting them from engaging in their traditional Podu agricultural system.
- In 1924, Raju was taken into **police custody**, tied to a tree, and shot by public execution, effectively ending the armed rebellion.

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