1. **Panchayat Advancement Index (PAI) :** Recently, the Ministry of Panchayati Raj (MoPR) organized a two-day National Writeshop on the **Panchayat Advancement Index (PAI) 2.0.**
    - The event marked the nationwide rollout of PAI 2.0 for the financial year 2023–24, reaffirming India's commitment to data-driven rural governance.
    - **About PAI :** A multidimensional assessment tool designed to evaluate the performance of Gram Panchayats across nine **Localized Sustainable Development Goals (LSDG)-aligned themes**, including: Poverty alleviation , Health , Education , Water sufficiency, Clean environment, Infrastructure, Governance, Social justice and Women's empowerment.
    - **Key Enhancements in PAI 2.0:**
        - **Streamlined Indicators**: Reduced from 516 in PAI 1.0 to **147 indicators**, enhancing usability and lowering the reporting burden.
        - **Outcome-Oriented Metrics**: Emphasis on quality, measurability, and actionable insights.
        - **Portal Upgrades**: Mobile-friendly interface with improved dashboards for real-time tracking and visualization.
        - **Integrated Data Systems**: Auto-integration from national ministry portals ensures authenticity and reduces duplication.
        - **Built-in Validation**: Mechanisms to flag data anomalies and enhance accuracy.
        - **Decision Support System**: Assists Panchayats in identifying development gaps and prioritizing resource allocation.

2. **India Rises to Fourth Largest Economy** : Recently, **India officially became** the **world's fourth-largest economy,** surpassing Japan, according to the latest data from the International Monetary Fund (IMF).
    - **As per IMF's World Economic Outlook, India :**
        - Recently reaffirmed as the **fastest-growing major economy** globally.
        - The only major economy projected to sustain **growth above 6%** over the next two years.
        - India's GDP has more than doubled from **$2.1 trillion in 2015** to **$4.3 trillion in 2025**.
        - Projected to reach **$5.5 trillion by 2028**, surpassing Germany to become the **world's third-largest economy**.

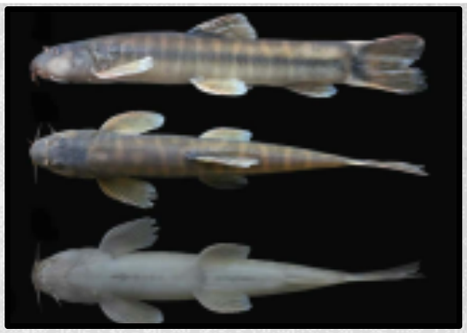
3. **Siang River :** The Arunachal Pradesh government has intensified efforts to conduct a **Pre-Feasibility Report (PFR)** for the **12.5 GW Siang Upper Multipurpose Project (SUMP)**—envisioned as India's largest hydropower project.
   - **About the Siang River:** The river originates in Tibet, where it is called **Tsangpo** or **Yarlung Zangbo**.
     - Upon entering **Arunachal Pradesh**, it is known as the **Siang** or **Dihang** River.
     - Flows eastward for over **1,000 km** in Tibet before curving around the **Namcha Barwa peak**.
     - Enters India through Arunachal Pradesh and flows south into **Assam**.
     - In Assam, Siang is joined by the **Lohit** and **Dibang** rivers. After their confluence, it is called the **Brahmaputra**.
     - The river flows through regions inhabited by indigenous communities like the **Adis** of Arunachal Pradesh, shaping their culture and livelihoods.
4. **India's coastline :** Recently, India officially revised its coastline length **from 7,516.6 km to 11,098.8 km,** according to the Union Ministry of Home Affairs.
     - This change reflects improved measurement techniques rather than the addition of any new land.
   - **Major Highlights:**
   - **The Coastline Paradox:** First identified by **Lewis Fry Richardson** and later explored by **Benoît Mandelbrot**.
     - Mandelbrot showed that coastlines act like **fractals**—irregular, self-similar shapes that become longer as measurement scale gets finer.
     - A coastline's length increases when smaller "rulers" are used to capture every inlet, curve, and feature.
   - **Old Tools vs. New Technology:**
     - **Earlier Estimate** (7,516.6 km): Based on 1970s maps at a coarse **1:4,500,000 scale**, which ignored smaller features.
     - **Revised Estimate** (11,098.8 km): Based on a finer **1:250,000 scale** using advanced tools such as: Satellite altimetry, LIDAR and GPS mapping, Drone imaging and Geographic Information Systems (GIS).

- **Survey of India** and **National Hydrographic Office** now use **high-water line data** and electronic navigation charts for accuracy.

- **Why the New Coastline Length Matters**
  - **Maritime Security**: Expanded coastline increases the area needing surveillance and protection.
  - **Exclusive Economic Zones (EEZs)**: Redefined maritime boundaries impact trade, marine exploration, and fishing rights.
  - **Disaster Management**: Improves planning for cyclones, tsunamis, and other coastal disasters.
  - **Climate Research**: Enhances modelling for sea-level rise, coastal erosion, and ecosystem vulnerability.
  - **Policy Impact**: Influences governance in **11 coastal states** and **2 island territories**, especially in adapting to oceanic changes.

5. **AI Matryoshka:** Recently, at its 2025 I/O developer conference, **Google unveiled a unified AI-centric vision**, moving beyond isolated product updates.
   - Like a Matryoshka doll, the strategy places advanced foundational AI models at the core, powering all connected products and platforms.
- **Core AI Models:**
  - **Gemini 2.5 Pro:** Enhanced reasoning via new **"Deep Think"** mode.
    - ✓ Achieved top-tier performance on **USAMO 2025 benchmark**.
    - ✓ Initially accessible through the **Gemini API**.
  - **Gemini 2.5 Flash:** Offers **20–30% better token efficiency**.
    - ✓ Supports **multilingual, multi-speaker text-to-speech** in 24+ languages.
    - ✓ Expected to become the **default model** in the Gemini app.
  - **Hardware & Infrastructure : TPU v7 "Ironwood":** Delivers 42.5 exaFLOPS per pod – a 10x performance improvement.
    - ✓ Powers training of cutting-edge models like **Imagen 4**, **Veo 3**, and **Lyria 2**.

6. **Worldwide Threat Assessment 2025 Report:** Recently, the U.S. Defence Intelligence Agency's (DIA) Worldwide Threat Assessment 2025 report outlined India's strategic threat perceptions and defence priorities amid ongoing regional tensions.
   - **India's Threat Perception:**
     - India views **China as its primary security threat**, focusing efforts on countering Chinese influence and military power.
     - Pakistan is regarded as a more **"ancillary" or secondary security challenge**, to be carefully managed despite recent cross-border skirmishes involving both Indian and Pakistani forces in mid-May.
     - In contrast, Pakistan considers India an **"existential" threat**, underscoring the asymmetry in threat perception between the two neighbours.
   - **According to the DIA report:**
     - **Global Leadership:** Prime Minister of India aims to position India as a global leader.
     - **Countering China:** Central to India's defence strategy is countering China's growing regional influence.
     - **Military Modernisation:** India is committed to enhancing its military capabilities to meet these challenges.
7. **Perovskite Solar Cell (PSC):** Recently, researchers at IIT Bombay's National Centre for Photovoltaic Research & Education (NCPRE) developed a semi-transparent perovskite solar cell (PSC) stacked over a conventional silicon solar cell, forming an efficient 4-terminal (4T) tandem structure.
   - **About PSC:** Type of photovoltaic (PV) technology that use perovskite-structured compounds to convert sunlight into electricity.
     - These compounds share the crystal structure of the mineral calcium titanium oxide ($CaTiO_3$). The general formula is **ABX_3**, where: **A** and **B** are cations and **X** is an anion
     - **Advantages:** High power conversion efficiency and lower manufacturing cost compared to traditional silicon-based PVs.
     - Applications :Rooftop installations , Vehicle-integrated photovoltaics (VIPV) and Building-integrated photovoltaics (BIPV)



8. **Schistura densiclava :** A newly discovered species of cave-dwelling loach, Schistura densiclava, has been found in the Krem Mawjymbuin cave located in Meghalaya's East Khasi Hills district.
   - **About Schistura densiclava**: Belonging to the **Nemacheilidae** family—freshwater, bottom-dwelling fishes adapted to benthic stream habitats.
     - It is identified as a **troglophile species**, capable of surviving in both cave (subterranean) and surface (epigean) water environments.
     - Named densiclava due to the presence of a **distinct dark stripe near the dorsal fin** (Latin: "thick stripe").
     - Unlike many cave-dwelling species that lose pigmentation and eyesight, they retains functional eyes and body pigment, making it adaptable across diverse environments.
     - Inhabits a **cool, fast-flowing stream** with a temperature of **18°C** and low oxygen levels—typical of underground aquatic ecosystems.
     - Exhibits a **pale yellow-green body** with **14–20 vertical greyish-black or faint black bars.**
     - **Sexual dimorphism**: Males are slimmer with irregular body markings and puffier cheeks. Females appear sturdier with more uniform patterns.
9. **Bharat Forecast System (BFS):** Recently, the India Meteorological Department (IMD) received the Bharat Forecast System (BFS), developed by IITM Pune.
   - **About BFS:** Under the Ministry of Earth Sciences, the Bharat Forecast System (BFS) is a deterministic, **high-resolution weather model** designed to provide more accurate forecasts for localized weather events.
     - While existing models like the Coupled Forecasting System (CFS) and Global Forecasting System (GFS) operate at a 12 km by 12 km resolution, **BFS offers a much finer spatial resolution of 6 km by 6 km.**
     - This allows weather predictions to be made for smaller 36 sq. km grids instead of the previous 144 sq. km units.
     - IMD plans to operationalize BFS starting with the upcoming monsoon season, significantly enhancing its ability to forecast extreme weather events.