➤ A quantum chip contains quantum bits (qubits) and serves as the **processor for quantum computers.About**

➤ **quantum computers:**

- ➲ A quantum computer **harnesses quantum mechanics** to deliver **huge leaps forward in processing power.**
- ➲ In contrast to traditional computers, quantum computers **utilise qubits** instead of bits for information storage.
  - ♦ **Qubits** can encode information as **0, 1, or both simultaneously,** unlike the binary representation of bits (represented by 0's or 1's) in traditional computers.
- ➲ They function according to **two key principles of quantum physics:**
  - ♦ **Superposition (i.e., simultaneous 1 and 0):** Each qubit can represent both 1 and 0 at the sametime.
  - ♦ **Entanglement (i.e., correlation of qubits):** Qubits in a superposition can be correlated with each other; i.e., the state of one (whether it is a 1 or a 0) can depend on the state of another.
- ➲ However, **qubits exhibit high sensitivity** and may cause **calculation errors,** and the problem worsens as quantum computer size increases.
  - ♦ **Quantum error correction** is believed to be the only way to produce a large-scale quantum computer with **error rates low enough for useful calculations.**

> **Initiatives in India to promote quantum computing**
>
> **National Mission on Quantum Technologies & Applications** for which Budget 2020-21, proposed Rs 8000 cr
>
> **Quantum Computer Simulator (QSim) Toolkit** by Meity to provide support to researcher and students
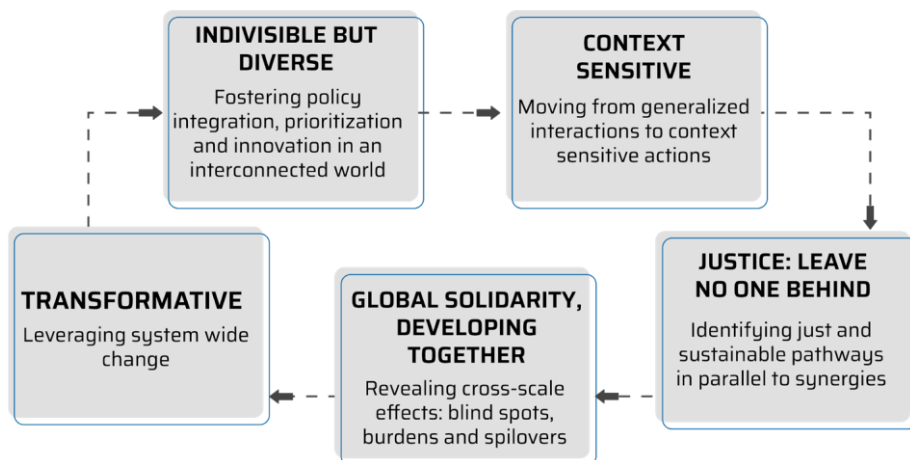>
> **QuEST programme at IIIT-Hyderabad**
>
> **Quantum computing application lab** by Meity in collaboration with amazon web

The Global Climate 2011-2020 Report released by World Meteorological Organization (WMO)

➤ **WMO** is a specialized agency of the **United Nations**, established in 1950.

➤ **Key Findings:**

- ➲ 2011-2020 is the **warmest decade** on record for both land and ocean.
- ➲ **Northwest India**, Pakistan, China and the southern coast of the Arabian Peninsula experienced wet decade.
- ➲ **Marine heat waves (MHW)** was experienced over 60% of the surface of oceans.
  - ♦ **MHW** occurs when the **surface temperature** of a particular region of the sea rises to 3 or 4 degree Celsius above the average temperature for at least five days.
- ➲ **Glaciers** globally **thinned by 1 meter per year.**
  - ♦ Antarctic ice sheet lost nearly 75% more ice (in comparison to 2001-2010).
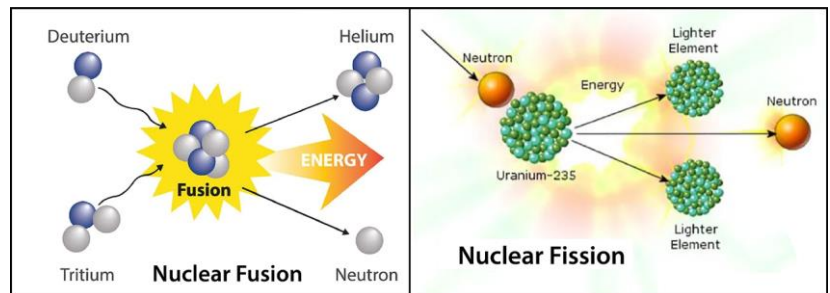- ➲ **Sea level** rose at an annual rate of 4.5mm/yr.

➤ **Key impacts on Human System:**

- ➲ **94%** of all **disaster displacements** recorded over the last decade was due to weather related event.
- ➲ Four pillars of **food security (access, availability, utilization, stability)** are facing threat, posing challenges in achieving **SDG 2** targets by **2030**.

➤ **Key Recommendations:**

- ➲ Strengthening **science-policy-society interaction** to advance synergistic action.
- ➲ Develop a **framework for action** (refer to image).
- ➲ It will help **decision-makers** to identify synergistic action for **just transition.**

INDIVISIBLE BUT DIVERSE — Fostering policy integration, prioritization and innovation in an interconnected world

CONTEXT SENSITIVE — Moving from generalized interactions to context sensitive actions

JUSTICE: LEAVE NO ONE BEHIND — Identifying just and sustainable pathways in parallel to synergies

GLOBAL SOLIDARITY, DEVELOPING TOGETHER — Revealing cross-scale effects: blind spots, burdens and spilovers

TRANSFORMATIVE — Leveraging system wide change

JT-60SA: World's biggest experimental nuclear fusion reactor inaugurated in Japan

- JT-60SA is a joint initiative between **European Union and Japan** and is a forerunner for under-construction **International Thermonuclear Experimental Reactor (ITER).**
- **About ITER**
  - ITER aims to **demonstrate nuclear fusion** as a clean green source of energy.
    - It is **located in France** and is a collaboration of **China, EU, India, Japan, Korea, Russia and US.**
  - It aims to build the **world's largest tokamak**, a magnetic fusion device designed to **tap** into the potential of **fusion energy.**
  - The tokamak **operates based on same principles** that power the **Sun and stars.**
  - Using a robust magnetic field, it **fuses hot plasma, and can reach temperatures of over 150 million degrees Celsius** (tentimes hotter than Sun's core).
- **Nuclear fusion** is a process in which **two or more light atomic nuclei fuse to produce a heavier nucleus** and release a **tremendous amount of energy.**
  - In **nuclear fission**, atoms are split apart into lighter elements releasing energy. **All nuclear power plants** use **nuclear fission**.
- **Advantages of fusion:**
  - Release of **abundant energy** and **fuel** is nearly **inexhaustible**.
  - Neither produces CO_2 and other greenhouse gases nor radioactive waste.

Rajya Sabha passes Post Office Bill, 2023 to revitalise Post Offices

- Post Office Bill, 2023 will replace **Indian Post Office Act (IPOA), 1898.**
  - **IPOA, 1898** was enacted during the tenure of Viceroy **Lord Elgin-II (1894-1899).**
- There is a **need** of new Act as **IPOA, 1898** addresses mainly **mail services** provided through the Post Office.
  - Also to **ensure better governance** for Post offices as their services have **diversified** beyond mails such as **India Post Payments Bank**, insurance schemes etc.
    - With time, they have emerged as a vehicle for **delivery** of a variety of **citizen centric services.**
- **Key Highlights of the Bill:**
  - **Powers to intercept postal articles:** Bill empowers officers to **intercept, open** or **detain** an article which is being transmitted through **post** on **certain grounds.**
    - **Grounds** include **security of the State, friendly relations with foreign states, public order, emergency,** public safety etc.
  - **Exemptions from liability:** PO will not **incur any liability** with regard to its **services**, except any liability prescribed through Rules.
  - **Other: Director General** of **Postal Services** will be appointed to head India Post.
- **Key Concerns: Violation of right to privacy** (does not specify **procedural safeguards** for interception), exemption from liability may compromise consumer's interest, etc.

Online gaming industry signs a voluntary 'Code of Ethics for Online Gaming Industries'

- **Key highlights of code**
  - Commitment to building **a safe, trusted, and accountable digital gaming industry** with a focus on **user protection.**
  - Asks online gaming companies to:
    - Undertake a **know-your-customer (KYC) as per applicable laws.**
    - Specify on their sites the **manner of determination of winners, and the platform fee charged.**
    - Ensure that **deposits** for online gaming services are **utilised only for playing games** on the platform.
- **Need for Code:**
  - **Preventing negative Impact:** India's gaming market is expected to grow **from $2.8 billion in 2022 to $5 billion by 2025.**
    - There is a need to **control unwarranted negative impact of online gaming** activities like **addiction** and **suicides** due to the loss of huge money.
  - **Promoting Digital Economy:** Ensuring transparency and accountability is necessary since Online gaming an important part of vision of **IndiaTechade** and the **US$ 1 trillion Digital Economy.**
- **About Online Gaming**
  - It refers to games that are **played over some form of computer network,** most often the Internet.
  - **Ministry of Electronics and Information Technology (MeitY)** is the nodal ministry to regulate gaming.
  - Governed under **Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Amendment Rules, 2023.**

President of Kenya paid state visit to India to boost bilateral relationship

- **Key highlights:**
  - **Signed five pacts** providing for **cooperation** in a range of areas.
    - It includes Sports, education, digital solution, energy, digital public infrastructure and healthcare.
  - **Joint vision document** was unveiled to scale up **maritime engagement** in the **Indian Ocean region (IOR).**
    - It will help in combating piracy, drug trafficking and terrorism.
  - India also announced a USD 250 million **line of credit** (LoC) to Kenya for **modernisation** of the **agricultural sector.**
    - LoC is a **soft loan** (not a grant) provided at concessional interest rates to developing countries.

- **Key Aspects of Bilateral Relation:**
  - **Diplomatic:** Kenya is a strong **partner** in the **East African Community (EAC).**
    - Also, it is part of India's approach to emerge as the **'Voice of global south'.**
  - **Trade: India-Kenya Trade Agreement** was signed in 1981.
    - Under it, both countries accorded **Most Favoured Nation** (MFN) status to each other.
    - Under the **WTO** agreements, MFN principle emphasises that **countries cannot normally discriminate** between **their trading partners.**
    - **The Bilateral trade currently stands at** 3.39 billion USD.
  - **Maritime cooperation:** Both are members of **Indian Ocean Rim Association** (IORA).
  - **Diaspora:** Approximately **80,000 people** of Indian origin are present in Kenya.

Also in News

Privilege Committee

Rajya Sabha passed a motion to end suspension of an Member of Parliament (MP) following a recommendation by **privileges committee**.

- **About Privileges Committee:**
  - It is a **parliamentary standing committee present in both Houses** of Parliament.
    - Consists of **15 members** in **Lok Sabha (10 in case of Rajya Sabha)** nominated by **the Speaker (Chairman** in case of Rajya Sabha).
- **Key Function: Investigate questions involving the breach of privileges** of House or members, as referred to it by presiding officer of Houses.

Chandrayaan-3 Propulsion Module

- ISRO has successfully returned the Chandrayaan-3's Propulsion Module **from lunar orbit to Earth's orbit.**
  - It is a milestone in **ISRO's goal to bring back manned missions in the future.**
- It marks the **first instance of bringing an object back from lunar orbit.** It is also **ISRO's first demonstration of a gravity assist flyby** around another celestial body.
  - It is a technique of using a **planet's or celestial body's gravity** to **redirect and accelerate a spacecraft toward Earth.**
- **Payload SHAPE onboard the module** will continue to conduct a **spectroscopic study of Earth's atmosphere** from Earth's orbit.

Open Source Software (OSS)

- Meta and IBM formed the **AI Alliance**, supporting an **open-source approach to AI development.**
- **OSS**, like Linux and Mozilla, are **developed via open collaboration,** and their source code is available for anyone to use, examine, alter and redistribute.
- OSS differs from **closed-source software** like Microsoft Word, which are **sold to end users by the creator or copyright holder.**
  - Closed-source softwars **cannot be edited, enhanced or redistributed** except as specified by the copyright holder.
- India has adopted a **policy on adoption of OSS** and established **National Resource Centre for Free & Open-Source Software** to support OSS ecosystem.

Gram Manchitra

- **Ministry of Panchayati Raj (MoPR)** is promoting **Gram Manchitra** to facilitate **Spatial Planning** by the Gram Panchayat
- **About Gram Manchitra:**
  - It is a **Geographic Information System (GIS) Application,** launched by **MoPR** in 2019.
    - It has been developed by **National Informatics Centre (NIC).**
  - It helps to perform **spatial planning at Gram Panchayat level with use of geo-spatial technology.**
  - It provides single **Geo Spatial platform to better visualize various developmental works** and provide a decision support system for **Gram Panchayat Development Plan.**

Oil and Gas Decarbonization Charter (OGDC)

- OGDC has been officially launched at COP28 by UAE and Saudi Arabia.
- **About OGDC:**
  - It is a **global industry Charter** dedicated to speeding up **climate action** and achieving high-scale impact across oil and gas sectors.
    - Currently, 50 companies, **collectively responsible for over 40% of global oil production**, have committed to OGDC.
  - It is a key initiative under **Global Decarbonization Accelerator (GDA),** launched at World Climate Action Summit recently.
    - GDA is focused on **three key pillars.**
    - It includes scaling energy system of tomorrow; decarbonizing energy system of today; and targeting methane and other non-CO2 greenhouse gases.

Environmental DNA (eDNA)

- Scientists found elusive **De Winton's Golden Mole** (Cryptochloris wintoni) for the 1st time in last 87 years with the help of **Environmental DNA (eDNA)** technique.
- **About eDNA Technique:**
  - It is method for studying biodiversity and monitoring ecosystem changes.
    - In it, **collected DNA** is compared and matched with **reference DNA.**
  - **eDNA** is nuclear or mitochondrial DNA that is released from an organism into the environment.
    - **Sources** include **secreted feces, mucous, etc.**
- **De Winton's Golden Mole** (IUCN status - Critically endangered) is endemic to South Africa.
- **Key features:** Completely blind and dwells entirely underground.

Arsenic contamination

- Twenty-five states, including **Bihar, Uttar Pradesh, Jharkhand, and Assam** have arsenic-contaminated **groundwater** according to data by Central Ground Water Board.
  - Arsenic is a **naturally occurring, semimetallic element** widely distributed in the Earth's crust. It is **highly toxic in its inorganic form.**
  - **Primarily geogenic**, these contaminations result from minerals in rocks or soil entering groundwater through chemical processes.
- **Early childhood exposure** is associated with **cognitive development issues** and **elevated mortality in young adults.**
- Long-term exposure can lead to **cancer, skin lesions, cardiovascular disease, diabetes, and arsenicosis.**

Bhide Wada

Pune Municipal Corporation demolished Bhide Wada's dilapidated structures (in Maharashtra) to create a **national memorial for Mahatma Mahatma Jyotiba Phule and Savitribai Phule.**

- Bhide Wada is the place where they **established the first girls' school in 1848.**
- Hailing from the Dalit community, they **defied societal norms,** advocating for **women's education, equality, and justice.**
  - **Savitribai Phule** is renowned as **India's first woman teacher.**
  - Together they initiated the **Balhatya Pratibandhak Griha for pregnant widows** facing discrimination.
  - In 1873, they founded the **Satyashodhak Samaj,** a society dedicated to truth-seeking.

Places in News — Philippines (Capital: Manila)

- A Strong earthquake of magnitude 7.6 sparked a tsunami warning in the Philippines.
- **Political Features:**
  - It is an **archipelago** in **South-eastern Asia** between the **South China Sea** and **the Pacific Ocean.**
    - It is divided into **three island groups: Luzon** (largest island of country), **Visayas**, and **Mindanao.**
  - It is bounded by **Philippine Sea, Celebes Sea, Sulu Sea and South China Sea.**
- **Geographical Features:**
  - **Islands** are composed primarily of **volcanic rock** and **coral.**
  - **Highest point:** Mount Apo (active volcano)
  - **Largest Lake:** Laguna de Bay
  - **Major Rivers:** Cagayan and Rio Grande de Mindanao.