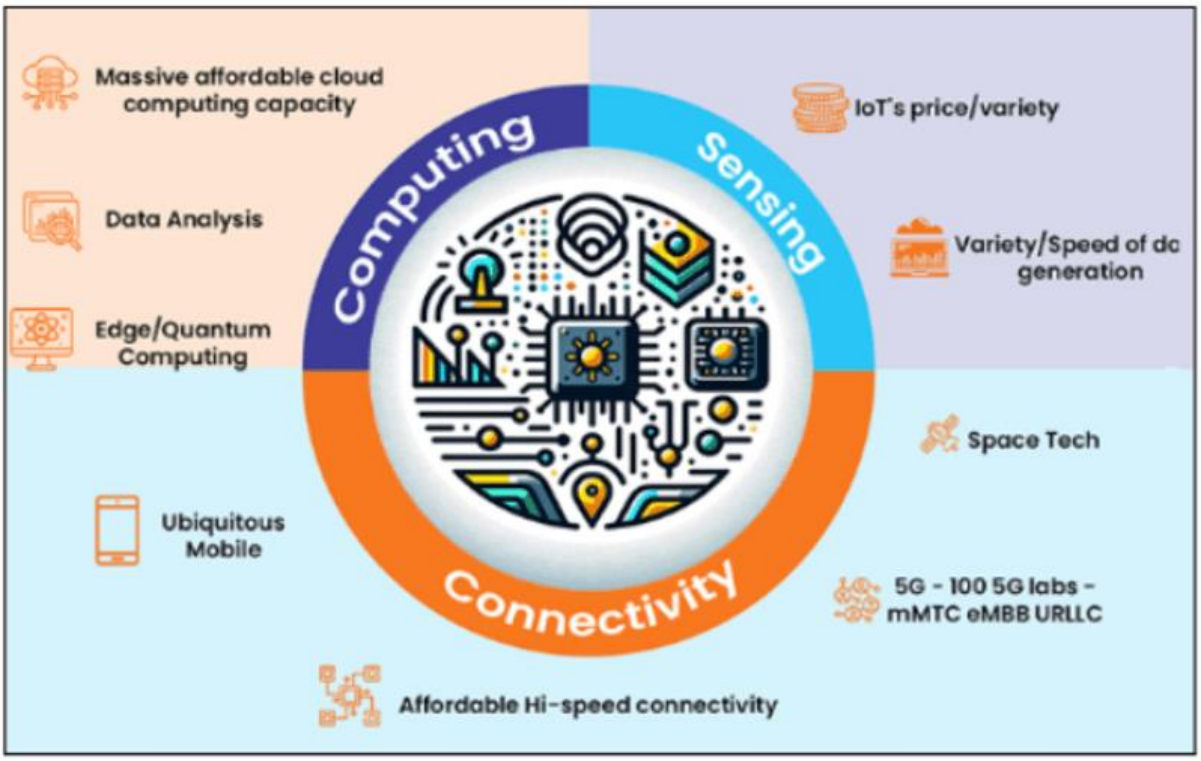
UPSC CURRENT AFFAIRS NOTES 16-02-2024

Sangam: Digital Twin Initiative

Recently, the Department of Telecommunications (DoT) has unveiled the 'Sangam: Digital Twin' initiative.



About 'Sangam: Digital Twin Initiative

It is a Proof of Concept (PoC) distributed in two stages to be conducted in one of the major cities of India.

First stage is exploratory for clarity of horizon and creative exploration to unleash potential.

Second stage is for practical demonstration of specific use cases generating a future blueprint that may serve as a roadmap to scale and replicate successful strategies in future infrastructure projects through collaboration.

Aim:

The initiative aims to demonstrate practical implementation of innovative infrastructure planning solutions, to develop a model framework for facilitating faster and more effective collaboration and to provide a future blueprint that

may serve as a roadmap to scale and replicate successful strategies in future infrastructure projects.

Digital Twin technology offers a solution by creating virtual replicas of physical assets, allowing for real-time monitoring, simulation and analysis for experimental iterations and feedback loop to adapt to the changes for achieving the best outcomes.

The initiative comes in the backdrop of past decade's breakthroughs in communication, computation and sensing in the era of techade striving for the vision 2047.

Sangam: Digital Twin symbolizes a collaborative leap towards reshaping infrastructure planning and design, combining the prowess of 5G, IoT, AI, AR/VR, AI native 6G, Digital Twin and next-gen computational technologies with the collective intelligence of public entities, infrastructure planners, tech giants, startups, and academia to break the silos and engage in a whole-of-nation approach.

Sangam brings all stakeholders on one platform aiming to transform innovative ideas into tangible solutions, bridging the gap between conceptualization and realization, ultimately paving the way for groundbreaking infrastructure advancements.

What is IoT

The Internet of Things (IoT) describes the network of physical objects—“things”—that are embedded with sensors, software, and other technologies for the purpose of connecting and exchanging data with other devices and systems over the internet. These devices range from ordinary household objects to sophisticated industrial tools.

The Gulf Stream

A recent scientific study estimates a timescale for the collapse of the Gulf Stream between 2025 and 2095, with a central estimate of 2050, if global carbon emissions are not reduced.

About Gulf Stream

It is a swift and warm ocean current that flows along the eastern coast of North America and crosses the Atlantic Ocean towards Europe.

This extension towards Europe is known as the North Atlantic drift.

The Gulf Stream transports an amount of water greater than that carried by all of the world's rivers combined.

Key characteristics:

Location: It originates in the Gulf of Mexico. It then travels northward along the eastern coast of the United States. It follows a north-eastward path across the western North Atlantic Ocean.

Sources: The two equatorial sources of the Gulf Stream are the North Equatorial Current (NEC), which flows generally westward along the Tropic of Cancer, and the South Equatorial Current (SEC), which flows westward from southwestern Africa to South America and then northward to the Caribbean Sea. Together, these two warm currents, along with waters from the Gulf of Mexico, form the Gulf Stream.

Warmth: The current carries warm water from the tropics (around 25 to 28°C or 77 to 82°F) to higher latitudes.

Width and Speed: The Gulf Stream is several hundred kilometres wide and can flow at an average speed of about four miles per hour (6.4 kilometers per hour). However, its speed can vary depending on the location and other factors.

Depth: The current is also very deep, extending to depths of up to 1,000 meters.

Importance and Impact:

Climate Regulation: It moderates the temperatures along the eastern coast of North America, keeping the coastal areas warmer in winter and cooler in summer compared to inland regions at the same latitudes. Since the Gulf Stream also extends toward Europe, it warms Western European countries as well.

Weather Patterns: The warm and moist air above the Gulf Stream can lead to the formation of low-pressure systems, which may develop into storms or hurricanes. It can also contribute to the formation of fog in certain areas.

Maritime Navigation: The Gulf Stream has been a crucial factor in maritime navigation for centuries. It provides a fast and efficient route for ships travelling between North America and Europe, as it aids in faster travel times due to its speed.

Ocean Circulation: The Gulf Stream is an essential part of the larger oceanic circulation system known as the Atlantic Meridional Overturning Circulation (AMOC). The AMOC plays a vital role in redistributing heat around the Earth and regulating global climate patterns.

Atlantic Meridional Overturning Circulation (AMOC)

It is a large system of ocean currents operating In the Atlantic, which circulates the waters between the north and the south. It is characterized by a northward flow of warm, salty water in the upper layers of the Atlantic, and a southward flow of colder, deep waters that are part of the thermohaline circulation.

AMOC ensures the oceans are continually mixed, and heat and energy are distributed around Earth.

INTERNATIONAL ENERGY AGENCY

The Prime Minister of India addressed the International Energy Agency's (IEA) Ministerial Meeting, commemorating its 50th anniversary and highlighting India's role in energy security and sustainability.

Prime Minister's Address at IEA Ministerial Meeting

Rapid Economic Growth and Renewable Energy Focus: He highlighted India's impressive economic growth, transitioning from the 11th to the 5th largest economy within a decade. This growth was accompanied by a significant increase in renewable energy capacity, particularly solar (26x) and overall

(doubled). He emphasized exceeding Paris Agreement commitments ahead of schedule.

Low Carbon Emissions Despite Large Population: Despite representing 17% of the global population, India's carbon emissions only account for 4%. This point to India's efforts towards sustainable development.

Commitment to Climate Action: Modi reaffirmed India's commitment to combating climate change through various initiatives like Mission LiFE (pro-planet lifestyles) and traditional values of reduce-reuse-recycle. He mentioned India's leadership in the International Solar Alliance and Global Biofuels Alliance.

Call for Inclusivity and India's Contribution: He stressed the importance of inclusivity for institutions like the IEA and highlighted India's potential to contribute talent, technology, and innovation. He expressed confidence that a larger role for India would benefit the IEA.

Collaboration and Building a Better Future: Modi concluded by wishing for a successful meeting and emphasizing the need to leverage this platform for strengthening existing partnerships and creating new ones, ultimately building a cleaner, greener, and more inclusive world.

International Energy Agency (IEA)

It is an intergovernmental organisation that provides policy recommendations, analysis and data on the global energy sector. It was **established in 1974 by the members of the Organisation for Economic Co-operation and Development (OECD) in response to the 1973 oil crisis** and has since expanded its role to cover the entire spectrum of energy issues, including energy security, clean energy transition, climate change mitigation and energy access.

The IEA has 31 member countries and 13 association countries, representing 75% of global energy demand.

The IEA has been a key player in the development of a number of international agreements on energy, including the Paris Agreement on climate change. **The agency is also a member of the World Bank Group and the United Nations Environment Programme.**

The IEA's main activities include

Data Collection and Publishing: Collects and publishes data and statistics on the global energy system. Releases reports such as the monthly Oil Market Report, the annual World Energy Outlook, and the Net Zero by 2050 report.

Policy Advice and Guidance: Provides policy advice and guidance to member states, associated countries, and other stakeholders. Aims to help achieve energy security and sustainability goals through informed policy recommendations.

Emergency Response Coordination: Coordinates emergency response measures in case of major disruptions in oil or gas supplies. This includes the release of strategic petroleum reserves or the activation of demand restraint measures to address energy supply disruptions.

Promotion of Energy Efficiency and Innovation: Promotes energy efficiency, conservation, and innovation through various programs and initiatives. Includes the Energy Efficiency Network, Technology Collaboration Programmes, and participation in the Clean Energy Ministerial.

Support for Clean Energy Transition: Supports global efforts to accelerate the transition to clean energy and mitigate climate change. Works in line with the Paris Agreement and the Sustainable Development Goals to achieve net-zero emissions and prevent global temperatures from rising above 1.5 °C.

Enhancing Energy Access and Affordability: Works towards improving energy access and affordability, particularly in developing countries and regions. Engages in projects such as the Africa Energy Outlook, and the Energy Access Outlook, and collaborates with organizations like the Clean Cooking Alliance.

The IEA conducts its work through four main bodies

Governing Board

- Comprising senior representatives from each member country.
- Sets the overall policy direction and budget of the IEA.
- This body plays a key role in determining the strategic objectives and priorities of the IEA, ensuring alignment with the energy policy goals of member countries.

Standing Groups

- Composed of experts from member countries.

- Deals with specific aspects of energy policy, including oil markets, gas markets, electricity markets, energy efficiency, renewable energy, and technology cooperation.
- These groups focus on in-depth analysis, research, and recommendations in their respective domains, providing valuable insights to guide energy policies and strategies.

Secretariat

- **Based in Paris**, headed by the executive director.
- Carries out day-to-day operations, including producing reports, organizing events, managing programs, and providing services to members and partners.
- Acts as the operational arm of the IEA, implementing decisions made by the Governing Board and facilitating communication and collaboration among member countries.

Committees on Energy Research and Technology (CERT) and Global Energy Dialogue (CGED)

- Representatives from member countries, association countries, and other stakeholders.
- Provides advice and input to the IEA on energy research and innovation, shaping the agency's approach to technological advancements in the energy sector.
- Offers advice and input on global energy dialogue and cooperation, fostering international collaboration on energy-related issues.

International Energy Agency (IEA)

What is the International Energy Agency (IEA)?

- It is an intergovernmental organization that was founded in 1974. It is headquartered in Paris, France, and has 31 member countries.
- The IEA's mission is to ensure energy security for its member countries through a collective response to major oil supply disruptions.
- It works to promote energy efficiency and the development of clean energy technologies.

The IEA's work is divided into four main areas:

- **Oil security:** The IEA monitors the global oil market and provides its member countries with early warning of potential supply disruptions. It also helps to coordinate the release of strategic oil reserves in times of crisis.
- **Energy efficiency:** The IEA promotes energy efficiency through a variety of programs and initiatives. These include the development of energy efficiency standards, the promotion of best practices, and the provision of technical assistance to member countries.
- **Clean energy technologies:** The IEA works to develop and deploy clean energy technologies, such as renewable energy and carbon capture and storage. It also provides information and analysis on the potential of these technologies.
- **Global energy dialogue:** The IEA provides a forum for dialogue on global energy issues between its member countries and other stakeholders. It also produces a variety of reports and publications on the global energy market.

The IEA plays a crucial role in shaping global energy policies, fostering innovation, and advancing sustainable development goals related to energy security, affordability, and environmental sustainability. Its activities span data collection, policy advice, emergency response coordination, energy efficiency promotion, clean energy transition support, and efforts to enhance energy access worldwide.

Kanha Tiger Reserve

A male tiger from the Kanha Tiger Reserve has been relocated to Mukundpur Safari in Satna.

About Kanha Tiger Reserve

Kanha Tiger Reserve, also called Kanha National Park, is the largest national park of Madhya Pradesh.

Location:

It is located in the Mandla and Balaghat districts of Madhya Pradesh.

It is nestled in the Maikal range of Satpuras, the heart of India, that forms the central Indian highlands.

Kanha National Park was created on June 1, 1955, and in 1973, was made the Kanha Tiger Reserve.

It sprawls over an area of 940 square kilometres.

Habitat: It is characterized mainly by forested shallow undulations, hills with varying degrees of slopes, plateaus, and valleys.

The forest depicted in the famous novel by Rudyard Kipling, The Jungle Book, is thought by some to be based on jungles, including this reserve.

It is also the first tiger reserve in India to officially introduce a mascot, "Bhoorsingh the Barasingha".

Flora: It is primarily a moist Sal and moist mixed deciduous forest where Bamboo, Tendu, Sal, Jamun, Arjun, and Lendia flourish.

Fauna:

The park has a significant population of Royal Bengal Tiger, leopard, sloth bear, and Indian wild dog.

The Park is respected globally for saving the Barasingha (the state animal of Madhya Pradesh) from near extinction, and has the unique distinction of harbouring the last world population of this deer species.

European Free Trade Association (EFTA)

India has rejected the demand of the four-nation European Free Trade Association (EFTA) for 'data exclusivity' provisions in the free trade agreement that both sides are negotiating.

About European Free Trade Association

It is an intergovernmental organisation established in 1960 by the Stockholm Convention.

Objective: Promotes free trade and economic integration between its members within Europe and globally.

Member Countries: Iceland, Liechtenstein, Norway, and Switzerland.

The members of this organization are all open, competitive economies committed to the progressive liberalisation of trade in the multinational arena as well as in free trade agreements.

In contrast to the European Union (EU), it is not a customs union.

Governance

Its highest governing body is the EFTA Council. It generally meets 8 times a year at the ambassadorial level and twice a year at the ministerial level.

EFTA Surveillance Authority (ESA): It monitors compliance with European Economic Area (EEA) rules in Iceland, Liechtenstein and Norway.

EFTA Court: It is based in Luxembourg and has the competence and authority to settle internal and external disputes regarding the implementation, application or interpretation of the EEA agreement.

The headquarters of the EFTA Secretariat is located in Geneva. It assists the EFTA Council in the management of relations between the 4 EFTA States and deals with the negotiation and operation of EFTA's FTAs.

What is India's concern?

Data exclusivity provisions will bar generic drug producers from using data of preclinical tests and clinical trials of former patent holders.

If generic medicine makers wish to introduce their version of an off-patent drug then they will have to either generate their own clinical data or wait for the exclusivity period to end.