

1. CHABAHAR PORT

Overview:

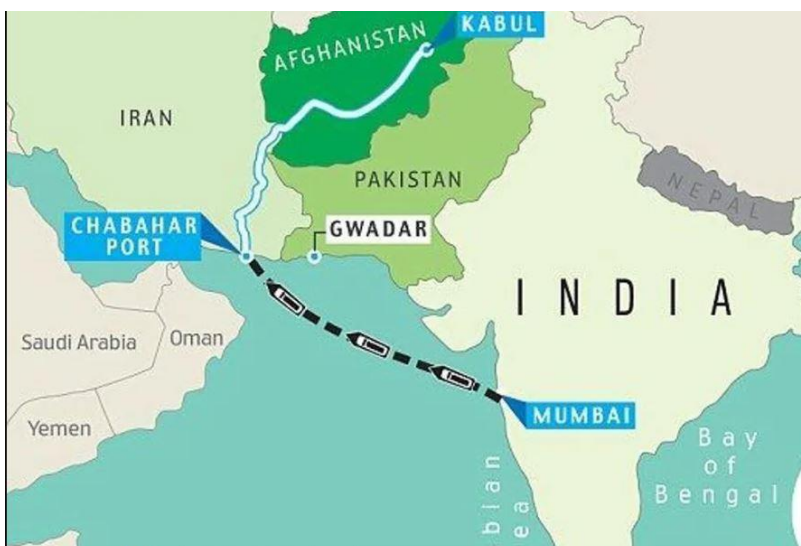
India recently signed a 10-year agreement with Iran to develop and manage the Chabahar port, marking a pivotal development in bilateral ties between the two nations.

Why in News?

- The **long-term agreement**, to be valid for 10 years and extended subsequently, was being negotiated by the two sides over the past three years and had been held up over differences on a clause related to arbitration.
- It **replaces an initial pact inked in 2016** that covered India's operations at the Shahid Beheshti terminal of Chabahar port and has been renewed annually.
- **India Ports Global Chabahar Free Zone (IPGCFZ)**, a **subsidiary of state-run India Global Ports Limited (IGPL)**, **currently operates the Shahid Beheshti terminal at Chabahar port.**
- This is the **first time India will take over the management of an overseas port.**

About Chabahar Port:

- It is a **deep-water port** located in **Iran's** Sistan-Baluchistan province.
- It is on the **Gulf of Oman** at the **mouth of the Strait of Hormuz.**
- It is the **only Iranian port** having **direct access to the Indian Ocean.**
- It **consists of two separate ports** called **Shahid Beheshti** and **Shahid Kalantari.**
- It's geographic **proximity to** countries such as **Afghanistan, Pakistan, and India**, as well as its status as a **key transit center on the burgeoning International North-South Transport Corridor (INSTC)**, gives it the potential to develop into one of the most important commercial hubs in the region.
 - **INSTC** is a **multi-modal transportation route linking the Indian Ocean and the Persian Gulf to the Caspian Sea via Iran**, and onward to **northern Europe via Saint Petersburg in Russia.**
- **Kandla port** in Gujarat is **550 Nautical Miles from Chabahar port**, while the distance between **Chabahar and Mumbai** is **786 Nautical Miles.**
- **Chabahar Project:**



- In May **2016**, **India** **signed** a **tripartite agreement** with **Iran** and **Afghanistan** to develop the **Shahid Beheshti Terminal** at Chabahar.
- It is India's **first foreign port project**.
- The deal agreement aims to **establish an international transport and transit corridor in Chabahar**.
- The construction of the Chabahar Port and the construction of a **rail line from Chabahar Port to Zahedan** are the major highlights of this project.
- The idea was that the port would enable India **to bypass Pakistan and access Afghanistan**, and **ultimately Central Asia**.
- Moreover, the port could **serve as a hub for transit trade between India, Iran, and Afghanistan** and provide an alternative route to the traditional Silk Road that passes through China.



2. What is GPT-4o?

Overview:

The ChatGPT, OpenAI has brought the capabilities of GPT-4 through its latest model named GPT-4o.

About GPT-4o:

- GPT-4o (“o” for “omni”) offers GPT-4 level intelligence and it is much faster and improves its capabilities across **text, vision, and audio**.
- **Features**
 - It makes **human-to-machine interaction** much more natural and far easier.
 - The voice mode on GPT-4o is efficient and intuitively recognises **the voice of the speaker** or multiple speakers.
 - Until now, **the voice mode** had three models that came together to deliver the feature. These are – **transcription, intelligence, and text-to-speech** and they all came together and orchestrated to deliver the voice mode. This led to latency, however, with GPT-4o all of this happens natively. “GPT-4o reasons across voice, text, and vision.
 - It also **has a vision**, allowing users to upload photos and documents, and can **start conversations** about the same.
 - One can also use **the Memory feature**, and browse to **search real-time information** during conversations. Also, OpenAI has improved the quality and the speed in 50 different languages.
 - This model **can pick up on a user’s emotions**, and come up with different kinds of emotive styles of conversation.
 - It is also **capable of telling** about your **feelings** by looking at your face in real-time.

3. Soil nailing

Why in the News?

The State Highways Department of Tamil Nadu is carrying out Soil Nailing exercise. This project called 'slope stabilization using soil nailing and Hydroseeding method' is being conducted along major roads in the Nilgiris area of Tamil Nadu.

About Soil Nailing

- 1. About Soil nailing:** It is a geotechnical engineering technique that involves the insertion of reinforcing elements into the soil in a specified area to strengthen it.
- 2. Material:** It involves drilling steel tendons into the soil and grouting them in place to form a composite structure akin to a gravity wall.
- 3. Applications:** It is commonly used for stabilizing slopes and landslides, supporting excavations, and repairing existing retaining walls.



4. Methods of application:

Soil Nailing Method	Description	Common Uses
Drilled and Grouted	Nails are inserted into pre-drilled holes and then filled with grouting material to bond with the soil, forming a composite mass similar to a gravity wall.	Stabilizing slopes, supporting excavations
Driven Soil Nailing	Nails are driven into the soil for temporary stabilization. It is a faster method but lacks corrosion protection for the steel.	Temporary slope stabilization
Drilling Soil Nailing	Utilizes hollow bars that are drilled into the soil; grout is injected through these bars, making this method faster than driven nails.	Supporting excavations, stabilizing slopes
Jet Grouted Soil Nailing	Steel bars are installed in holes created by jet grouting, then filled with concrete grout, particularly used in eroding soils.	Repairing existing retaining walls, stabilizing eroded slopes
Launched Soil Nailing	Steel bars are launched into the soil using an air compression mechanism in a single shot, rapidly placing nails into position.	Rapid stabilization in urgent situations

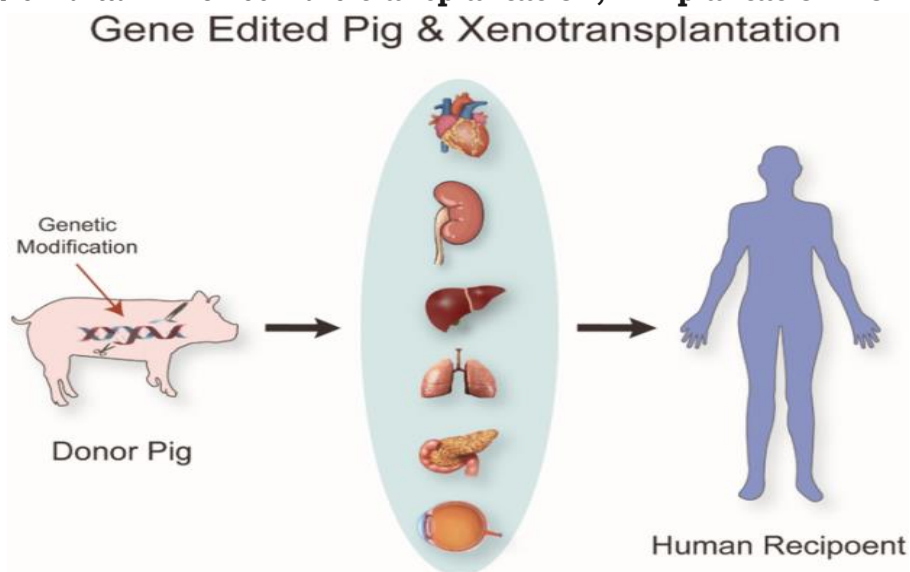
4. Xenotransplantation

Why in News?

Recently, the first recipient of a modified pig kidney transplant passed away around two months after the surgery was carried out.

About Xenotransplantation:

- It is any procedure that involves the **transplantation, implantation or infusion** into a human recipient of either live **cells, tissues, or organs** from a **nonhuman animal** source or human body fluids, cells, tissues or organs that have had ex vivo contact with live nonhuman animal cells, tissues or organs.
- Xenotransplantation involving the heart was first tried in humans in the 1980s.
- The animal organ selected has to undergo **genetic modifications**, so that the human body does not reject it.
- Even after the operation, constant monitoring needs to be done to check the body's response to the organ.
- **Why pig is often used for Xenotransplantation?**
 - Pig heart valves have been used for replacing damaged valves in humans for over 50 years now.
 - The pig's **anatomical and physiological** parameters are **similar** to that of humans, and the breeding of pigs in farms is widespread and cost-effective.
 - Also, many varieties of pig breeds are farmed, which provides an opportunity for the size of the harvested organs to be matched with the specific needs of the human recipient.
- In January 2022, the first xenotransplantation of a genetically-modified pig heart was done.



5. Exercise SHAKTI

Why in News?

- The 7th edition of India- France Joint Military Exercise SHAKTI commenced at Umroi, in Meghalaya.

About

- Exercise “Shakti” is a **biennial** event conducted alternatively in India and France.
 - The last edition took place in France in **2021**.
- Indian contingent comprising **90 personnel** is being represented primarily by a Battalion of the RAJPUT Regiment besides personnel from other arms and services.



Other exercises between India and France

- **Exercise Garuda:** Indian Air Force & French Air Force
- **Exercise Varuna:** Indian Navy & French Navy
- **Exercise Desert Knight:** It is conducted between the Indian Air Force (IAF), French Air and Space Force (FASF) and United Arab Emirates (UAE) Air Force.