Offshore aquifers

Prelims: *Current events of national and international importance | Geography*

Why in news?

Recently, the international scientists have discovered the existence of large aquifer, under the Atlantic Ocean, first global expedition to drill systematically under the sea for freshwater.

- **Offshore aquifers –**
  - The offshore aquifer is just one of many depositories of freshwater known to ***exist in shallow salt waters*** around the globe.
  - Like aquifers on land, offshore aquifers are ***bodies of rock or sediment which contain freshwater***.
  - Scientists believe that offshore aquifers can ***extend up to 90 kilometres*** off the coast and contain more freshwater than all the water that has ever been removed from aquifers on land.
- **Extent -** The scientists have confirmed the existence of offshore aquifers at several locations, including ***off the coasts of Australia, China, North America, and South Africa***.
- It is estimated that there was a million cubic kilometers of freshwater beneath the sea floor ***about 10% of all terrestrial fresh groundwater***.
- **Source of freshwater –** There are two theories -
  - **Ice Age Hypothesis** – The water might have reached beneath the sea floor, when sea levels were lower and large areas that are currently covered by the ocean were dry land.
  - As a result, rain trickled into the ground, building up large volumes of freshwater.
  - **Connection Hypothesis** - Offshore aquifers could be connected to onshore aquifers, which regularly supply them with water after rainfall.
- **Freshwater Preservation -** The freshwater beneath offshore aquifers may not be getting mixed with salty water ***due to a cap rock layer***, built

from compacted clay-rich sediment, over the aquifers.

- **Challenges in extraction -** offshore drilling is quite expensive; not clear about the impact of the ecology and marine life; and the issues of ownership and rights.
- **Significance -** Offshore aquifers can be untapped freshwater reserves and help deal with water scarcity on land.

According to a 2023 ***United Nations report,*** *the world is currently facing an unprecedented water crisis, with global freshwater demand predicted to exceed supply by 40% by 2030.*

A triple crisis *- misusing water, polluting water, and changing the whole global hydrological cycle*

Reference

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