4. Melting Antarctic Ice

Why in News?

- Recently, A study published in Nature has revealed that rapidly melting Antarctic ice is dramatically slowing down the flow of water through the world's oceans, and could have a disastrous impact on global climate, marine food chain and on the stability of ice shelves.

Highlights

- As temperatures rise and freshwater from Antarctica's melting ice enters the ocean, the salinity and density of the surface water are reduced, diminishing the downward flow to the sea's bottom.
- The study showed that warm water intrusions in the western Antarctic ice shelf would increase, but it did not look at how this might create a feedback effect and generate even more melting.
- The report found deepwater circulation in the Antarctic could weaken at twice the rate of decline in the North Atlantic.
- Also, deep ocean water flows from Antarctica could decline by 40% by 2050.
- The findings also suggest the ocean would not be able to absorb as much carbon dioxide as its upper layers become more stratified, leaving more CO_2 in the atmosphere.
- Ocean overturning allows nutrients to rise up from the bottom, with the Southern Ocean supporting about three-quarters of global phytoplankton production, the base of the food chain.
- Slowing the sinking near Antarctica slows down the whole circulation and hence also reduces the amount of nutrients that get returned from the deep ocean back up to the surface