

18-10-2022

The Energy and Resources Institute, TERI Assessment

Why in Newspapers?

Recently on October 5, 2020, The Energy and Resources Institute (TERI) has released an assessment, according to which, the annual economic value of ecosystem services provided by Delhi Zoo is Rs 426 crores.

Quick Issue?

- The study was conducted by the Central Zoo Authority (CZA).
- Ecosystem services include biodiversity conservation, job creation, education and research, organic storage, and recreational and cultural contributions.

Historical Background?

- Their contribution to the ecosystem services is about Rs 55,209 crore when carbon storage, surrogate value of land and land value of Delhi Zoo are taken together.
- This is a 'first-of-its-kind' study in India, which has given a "Powerful Baseline Assessment" of critical ecosystem services provided by zoos.
- These estimates can be used to calculate the value provided by zoos across India.
- These are the benefits provided by ecosystems that contribute to making human life possible and worth living.
- Examples of ecosystem services include pleasurable and spiritual benefits in natural areas such as food and water, regulation of floods, soil erosion and disease outbreaks, and non-material benefits.
- According to the Millennium Ecosystem Assessment (MEA), 2005, ecosystem services are "the benefits that people accrue from the ecosystem".
- Classification:- Millennium Ecosystem Assessment (MEA) classifies ecosystem services into four main types-
 - Provisioning Services: These are products derived from ecosystems such as food, fresh water, wood, fiber, genetic resources and medicines etc.
 - Regulating Services: These are defined as the benefits derived from regulation of ecosystem processes such as climate regulation, natural hazard regulation, water purification and waste management, pollination or pest control, etc.

Other Key Facts?

Millennium Ecosystem Assessment (MEA)

- The Millennium Ecosystem Assessment (MEA), a major assessment of human impact on the environment, was demanded by UN Secretary-General Kofi Annan in the year 2000.
- **Purpose -**
 - To assess the consequences of the ecosystem and change it for human welfare.
 - To study the scientific basis for the conservation and sustainable use of those systems and take necessary action to increase their contribution to human welfare.



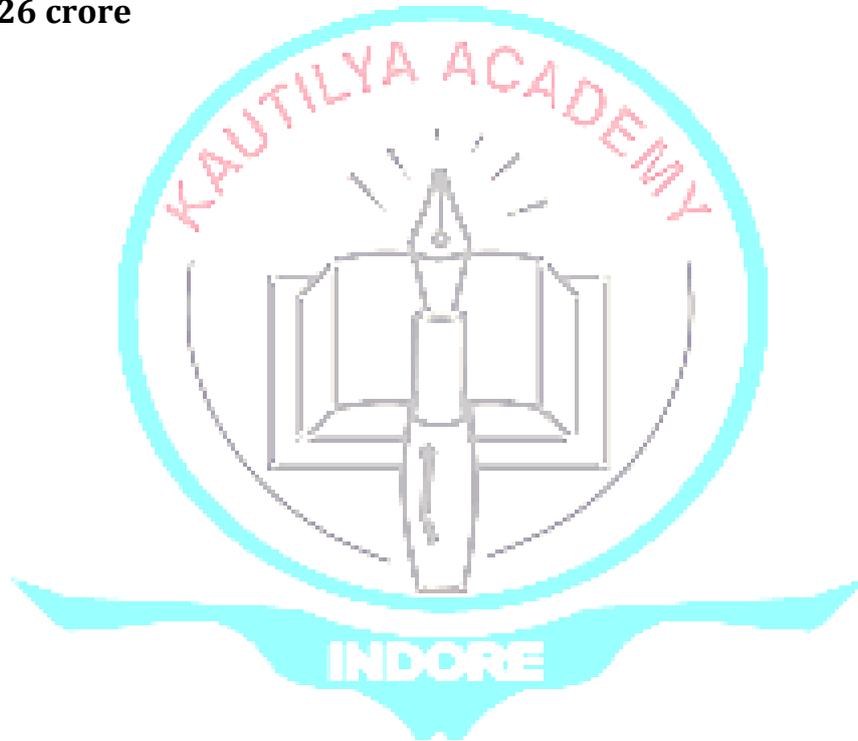
- Habitat Services: These highlight the importance of ecosystems for providing habitat for migratory species and maintaining the viability of gene-pools.
- Cultural Services: These include the non-material benefits that people derive from ecosystems, such as spiritual enrichment, intellectual development, entertainment and aesthetic value, etc.

Likely Question Asked In Preliminary Exam

Que. On October 5, 2020, The Energy and Resources Institute (TERI) has released an estimate, according to which, what is the annual economic value of ecosystem services provided by Delhi Zoo.

- (a) Rs 446 crore (b) Rs 420 crore
(c) Rs 436 crore (d) Rs 426 crore

Answer - (d) Rs 426 crore





Galapagos Islands

Why in Newspapers?

A recent study found that cold ocean currents have protected the Galapagos Islands from global warming.

Quick Issue?

- The islands are protected from warming by the equatorial ocean current of a cold, easterly flowing Pacific Ocean.

Historical Background?

- **Location:-** The Galapagos Islands are a part of Ecuador, spread over an area of about 60,000 sq km. It is located in the Pacific Ocean, about 1,000 km from the South American continent.
- **Conservation status:-** Ecuador declared the Galapagos a wildlife sanctuary in the year 1935 and a national park in the year 1959. In 1978 the island became the first UNESCO World Heritage Site.
- Aquatic species like manta ray and shark are found on this island group.
- In addition, many aquatic wildlife species such as marine iguanas and webbed albatrosses are found on these islands.
- **Galapagos is home to critically endanger** – Galapagos penguins, Galapagos fur seals and Galapagos sea lions.
- **In addition, the giant turtle found here** - 'Galápagos' in Old Spanish - gives the name to the islands.
- British scientist Charles Darwin did some important studies on this island group in the year 1835, which played an important role in his theory of evolution.
- Darwin described these islands as "a world in itself". In these waters off the west coast of Ecuador, the corals do not bleach and die.

Other Key Facts?

Primary Force:

- **Heating by solar energy:-** Water expands by heating with solar energy. This is the reason why the sea level near the equator is about 8 cm higher than in the middle latitudes. Which creates a slope in the sea water and the water starts flowing down the slope.
- **Wind:** The wind blowing on the surface of the sea pushes the water to move. The friction between the air and the surface of the water affects the flow of the water body.
- **Gravity:-** It pulls the water downwards and creates a gradient.
- **Coriolis force:-** The Coriolis force affects the direction of motion of water and causes water to flow to the right in the northern hemisphere and to the left in the southern hemisphere.

Secondary Force:-

- **Difference in water density:-** It affects the vertical dynamics of ocean currents.
- Water with high salinity is more dense than water of low salinity, similarly the density of cold water is more than that of hot water.
- Water of higher density moves downwards, while lighter water tends to rise up.
- **Water temperature:-** Cold water ocean currents are generated when cold water at the poles descends and gradually moves towards the equator.



- Ocean currents are the continuous, predictable, directional movement of sea water. It is a large-scale flow of ocean water that is affected by various forces. They are like a river flowing through the oceans.
- Cold currents: They bring cold water to warm water areas. These currents are generally found on the west coast of continents in low and mid-latitudes (both hemispheres) and in the northern hemisphere in high latitudes along the east coast.
- Example: Canary Stream, California Stream, Benguela Stream etc.
- Warm currents: They bring warm water to areas of cold water and are usually found on the east coast of continents in low and middle latitudes (both hemispheres).
- Example: North Atlantic, Gulf Stream, Kuroshio Current etc.

Likely Question Asked In Preliminary Exam

Que. Consider the following factors:

1. Earth's rotation
2. Air pressure and wind
3. Density of ocean water
4. Earth's rotation

Which of the above factors affect ocean currents?

- (a) 1 and 2 only
(c) 1 and 3 only

- (b) 1, 2 and 4 only
(d) 2 and 4 only

Answer: (b) 1, 2 and 4 only

