



Land Sink & Emissions

Why in News

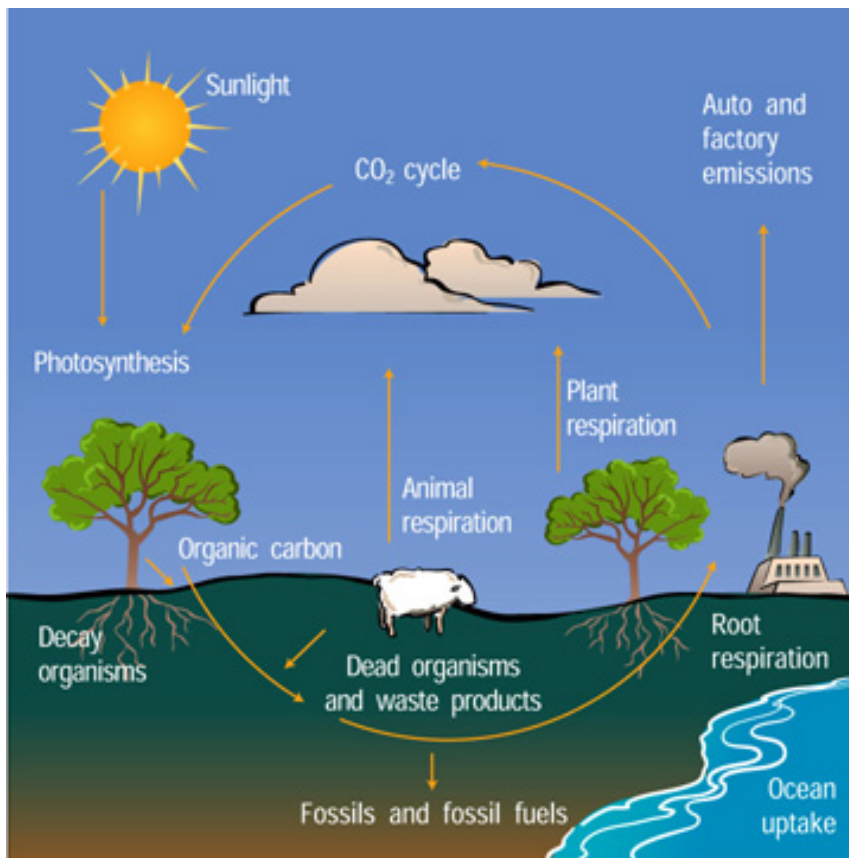
Despite caution from scientists, policymakers and corporations still assume that **natural carbon sinks like land and oceans will mop up their fossil fuel emissions.**

Key Points

▪ Land Sink:

- Land is a **critical component of the climate system**, actively **engaged in the flows of carbon, nitrogen, water, and oxygen** - essential building blocks for life.
- **Greenhouse Gases** (GHGs such as carbon dioxide) follow a natural cycle - they are constantly released into the atmosphere and are removed from it via natural 'sinks' such as the land and oceans.
- Plants and healthy ecosystems have an **unparalleled capacity to absorb carbon through photosynthesis** and store it in living biomass.
 - About 56% of the carbon dioxide (CO₂) emitted by humans is absorbed by the oceans and land.
 - About 30% by land and the rest by oceans.

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▪ Recognition of Role of Land:

- The role of land (forests and agricultural land) as a mitigation pathway to reduce CO₂ emissions was **recognised by** the [United Nations Framework Convention on Climate Change \(UNFCCC\)](#) in 1992.
- The [Kyoto Protocol](#) in 1997 **endorsed** the notion that not only should governments employ policies to enhance the land carbon sink capacities of their territories but also that such **mitigation could be set against requirements for reductions in emissions** from fossil fuel consumption.

▪ Related Data:

- Land use accounted for 13% of anthropogenic CO₂ emissions during 2007-2016, according to a report by The [Intergovernmental Panel on Climate Change](#) (IPCC) in 2019.
 - But it also **provided a net sink of around 11.2 gigatonnes** of carbon dioxide per year, equivalent to 29% of the total CO₂ emissions in the same period.
- This means, **29-30% human-driven CO₂ emissions have been soaked up by the world's land sinks** during the past three decades.

▪ Concerns:

◦ Rising Heat Levels:

- Increased heat levels are adding to the **moisture stress in forests and leading to widespread burning.**
- So, on the one hand, forests are being **cut for different economic activities, reducing their role as sinks** for the CO₂ released from fossil fuel burning.
- On the other hand, as temperatures increase, the forests will shrink further.

◦ Anthropogenic and Natural Factors:

- Human-induced factors such as **deforestation and natural factors** such as climate variability in sunshine, temperature and rainfall can cause a variation in the

strength of the land carbon sink.

- **Rising CO₂ Concentration:**

- [Climate Change 2021 Report: IPCC](#) states that **CO₂ emissions are the highest in at least two million years**. Humans have emitted 2,400 billion tonnes of CO₂ since the late 1800s.

- **Suggestions:**

- **Growing Trees:**

- The world is not on track to reduce GHG emissions at the scale needed to avert a temperature rise of 1.5°C over pre-industrial levels.
- The solution, then, is to **find ways in which emissions can be removed** from the atmosphere and growing trees becomes part of this package.

- **Get off Fossil Fuels:**

- There is a **need to use land especially in this interim of moving from fossil fuels to Renewables**; but in the end fossil fuels must be gotten rid of.

- **Artificial Carbon Sequestration:**

- The [artificial carbon trapping](#) technologies efficiently **capture carbon in large amounts**, convert it and also store it for thousands of years.
 - The technique is based on passing air through a stack of charged electrochemical plates.
- The technology aims to **make coal a viable, technical, environmental and economic case** for the future.

- **Related Initiatives:**

- **Bonn Challenge:**

- [Bonn Challenge](#) is a global effort **to bring 150 million hectares of the world's deforested and degraded land into restoration by 2020**, and 350 million hectares by 2030.

- **UN Decade on Ecosystem Restoration:**

- In March 2019, the [United Nation General Assembly](#) declared 2021-2030 as the UN Decade on Ecosystem Restoration **to “prevent, halt and reverse the degradation of ecosystems worldwide”**.

- **LEAF Coalition:**

- It is [an effort](#) led by the US, the UK and Norway **to mobilise at least USD 1 billion for financing countries** committed to protecting their tropical forests.

[Source: DTE](#)

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