



# Land Sink & Emissions

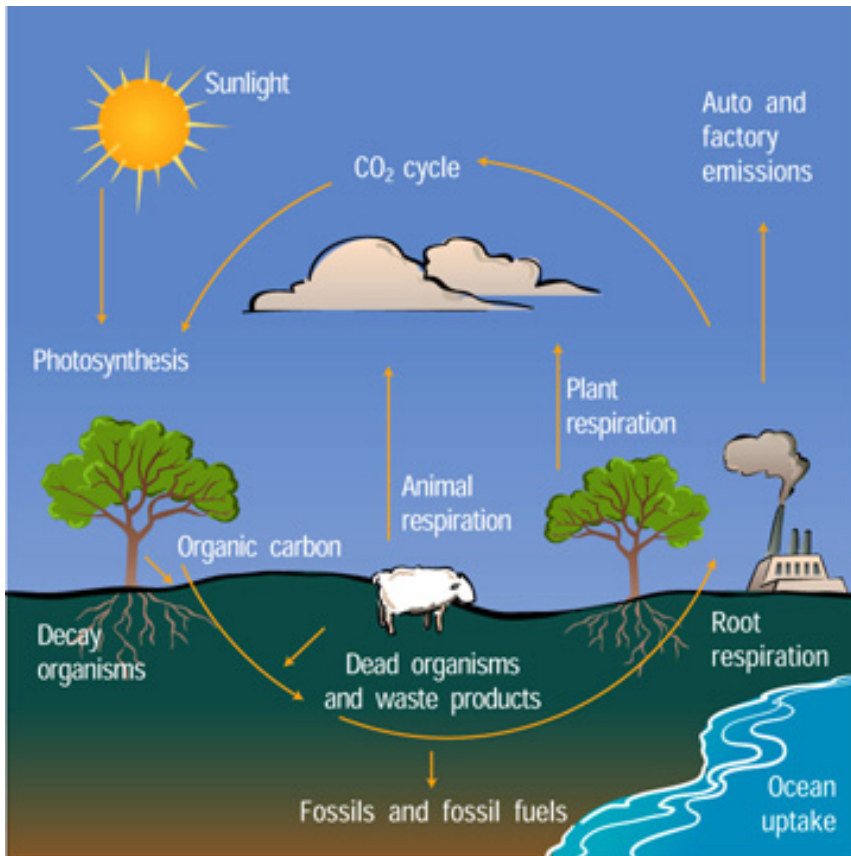
## Why in News

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 (CO<sub>2</sub>) emitted by humans is absorbed by the oceans and land.
  - About 30% by land and the rest by oceans.



#### ▪ Recognition of Role of Land:

- The role of land (forests and agricultural land) as a mitigation pathway to reduce CO<sub>2</sub> 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 CO<sub>2</sub> 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 CO<sub>2</sub> emissions in the same period.
- This means, **29-30% human-driven CO<sub>2</sub> 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 CO<sub>2</sub> 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 CO<sub>2</sub> Concentration:**

- **Climate Change 2021 Report: IPCC** states that **CO<sub>2</sub> emissions are the highest in at least two million years**. Humans have emitted 2,400 billion tonnes of CO<sub>2</sub> 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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