



## The Inherent Benefits of Carbon Farming

*This editorial is based on ["Why carbon is the 'crop' of the future"](#) which was published in *The Hindu BusinessLine* on 20/05/2022. It talks about why carbon farming is a viable solution for our broken food systems.*

**For Prelims:** Carbon farming, Carbon sequestration, Agricultural Emissions, GHG Emissions, UNFCCC, Carbon credits, Carbon Banks, Paris Climate Conference, 4 per 1000 initiative, Net zero emissions

**For Mains:** Agricultural emissions, Carbon farming - significance, Measures that can be taken to encourage carbon farming, Carbon as a cash crop for farmers.

It is beyond any doubt that industrial agriculture results in less food out of the ground, with fewer nutrients, less efficiently, more expensively, and with greater environmental devastation than small and organic farming.

Although global trade did pull millions out of poverty, it also left a colonialist imprint on the planet in different ways: with **differentiated access to nutritious food**, reducing the biodiversity of our diet, **injudicious ecological practices** like **monocropping** and **systematic erosion of soil** and mounting cost of technology, **chemicals** — **exiling the farmers out of their fair share of the progress** and most importantly, **deepening the climate change crisis**.

[Carbon farming](#) can be seen as one of the prudent ways to fix our broken food systems.

### What is Carbon Farming?

- **Carbon farming** (also known as [carbon sequestration](#)) is a system of agricultural management that **helps the land store more carbon** and **reduce the amount of Greenhouse Gases (GHGs) that it releases** into the atmosphere.
- It involves practices that are known to improve the rate at which CO<sub>2</sub> is removed from the atmosphere and converted to plant material and soil organic matter.
- Carbon farming is successful when **carbon gains** resulting from enhanced land management or conservation practices **exceed carbon losses**.

### What about Agricultural Emissions?

- Agriculture covers more than half of Earth's terrestrial surface and contributes roughly one-third of [global GHG emissions](#).
- According to the **Third Biennial Update Report** submitted by the Government of India in early 2021 to the [UNFCCC](#), the agriculture sector **contributes 14% of the total GHG emissions**.
  - [Agricultural emissions in India](#) are primarily from the livestock sector (54.6%) and the

use of [nitrogenous fertilisers](#) (19%).

- Amongst these, [GHG emissions from rice cultivation](#) during 2016 accounted for 71.322 million tonnes “CO<sub>2</sub> equivalent”, which analysts say might have gone up to **72.329 million tonnes “CO<sub>2</sub> equivalent” during 2018-19.**
  - Switching to regenerative agriculture practices can reduce it and **carbon farming can accelerate this shift.**

## Why is Carbon Farming a Viable Option?

- **Climate Friendly:** Carbon farming promises a bold new agricultural business model — **one that fights climate change, creates jobs, and saves farms** that might otherwise be unprofitable.
  - In essence, a climate solution, and increased **income generation opportunity** and ensuring a **food security net** for the population.
- **Optimising Carbon Capture:** It is a **whole farm approach** to optimising carbon capture on working landscapes by implementing practices that are known to **improve the rate at which CO<sub>2</sub> is removed from the atmosphere** and stored in plant material and/or soil organic matter.
  - Carbon farming can incentivise our farmers to **introduce regenerative practices** in their agricultural processes helping them shift their focus from improving yields to functioning ecosystems and **sequestering carbon that can be sold or traded in carbon markets.**
- **Farmer Friendly:** It not only **improves the health of soil** but can also result in **improved quality, organic and chemical-free food** (farm-to-fork models) along with **boosted/secondary income** from [carbon credits](#) for the marginalised farmers.
- **Growth in Carbon Market:** The total value of the **global carbon markets grew by 20% in 2020** — the fourth consecutive year of record growth — and is well on its way in raising a critical mass of investors.
  - The value of traded global markets for **carbon dioxide permits grew by 164%** to a record €760 billion (\$851 billion) in 2021.
  - Carbon thus can effectively prove to be the **‘cash crop’ of the future** for farmers

## How Aware is the World about the Significance of Carbon Farming?

- An international initiative called **'4 per 1000'**, launched at the [2015 Paris climate conference](#), showed that **increasing soil carbon worldwide by just 0.4%** yearly could **offset that year's new growth in CO<sub>2</sub> emissions** from fossil fuel emissions.
- Carbon farming is also big on political agendas and climate manifestos. The **US administration has been planning to launch a carbon bank for farmers** as part of a plan to fight climate change.
  - Former US President Donald Trump declared the **soil to be the next frontier of the climate change fight.**
- The zeal is also found in the **global private sector** with corporate behemoths like McDonald's, Target, Cargill pledging to use **funds to support regenerative practices.**
  - 2022 has been the **biggest year in carbon capture investment** with big tech companies like Stripe, Alphabet, Meta and Shopify announcing \$925 million worth of **carbon removal offsets** over the next eight years.
  - This private sector enthusiasm and burgeoning market sentiment has to be matched by public sector boost.
- In India, **Meghalaya is currently working on a blueprint of a 'carbon farming' Act** to create a prototype of sustainable agriculture model for the entire North-East region.
  - The North-East Region has shown tremendous progress in adopting organic and sustainable agriculture practices; [Sikkim became the first State in the world to become fully organic](#) in 2016.

## What Steps can be Taken to Encourage Carbon Farming?

- **Tapping the Potential of Soil:** Soil is one of the **most untapped and underutilised defences against climate change** and acts as an **efficient carbon sink.** India should **capitalise on it to achieve its [Net Zero target](#)** and decarbonising pathway.
  - Studies show that soil removes about 25% of the world's fossil-fuel emissions each year

and has been the missing link from the globally prescribed carbon management practices and narrative.

- **Legal Backing for Carbon Farming:** An extensive and pioneering **carbon farming Act with a robust transition plan** can effectively demonstrate the idea of **creating a carbon sink on working land** and farm the way out of climate crisis, improve nutrition, reduce the punishing inequalities within farming communities, **alter the land use pattern** and provide the much-needed solution to fix our broken food systems.
- **Direct Incentives for Farmers:** The land sector is key for reaching a climate-neutral economy, because it can capture CO<sub>2</sub> from the atmosphere.
  - However, to encourage the agriculture and forestry sectors, it is necessary to **create direct incentives for the adoption of climate-friendly practices**, as currently there is no targeted policy tool to significantly incentivise the increase and protection of carbon sinks.
- **Carbon Credits and Carbon Banks:** The farmers can be rewarded through globally tradable **carbon credits**. **Carbon banks** can also be created that would **buy and sell carbon credits from farmers**.
  - These credits could then be sold to corporations needing to offset their emissions.
  - Paying farmers to restore carbon-depleted soils offers a great opportunity for a natural climate solution and to **stabilise global warming below 2°C**.
- **Collective Participation:** For the overall framework of carbon farming to be successful, it would have to **include sound policies, public-private partnerships, accurate quantification methodologies** and **supportive financing** to efficiently implement the idea.
  - It requires it to be **done at a scale where measurable carbon capture can be achieved** along with maintaining healthy soils that absorb and store carbon.

#### ***Drishti Mains Question***

"Carbon farming can be seen as one of the prudent ways to fix our broken food systems". Comment.

### **UPSC Civil Services Examination, Previous Year Questions (PYQs)**

#### **Q. What is blue carbon?**

- (a) Carbon captured by oceans and coastal ecosystems
- (b) Carbon sequestered in forest biomass and agricultural soils
- (c) Carbon contained in petroleum and natural gas
- (d) Carbon present in atmosphere

**Ans: (a)**

#### **Q. Which of the following statements best describes "carbon fertilisation"? (2018)**

- (a) Increased plant growth due to increased concentration of carbon dioxide in the atmosphere.
- (b) Increased temperature of Earth due to increased concentration of carbon dioxide in the atmosphere.
- (c) Increased acidity of oceans as a result of increased concentration of carbon dioxide in the atmosphere.
- (d) Adaptation of all living beings on Earth to the climate change brought about by the increased concentration of carbon dioxide in the atmosphere.

**Ans: (a)**

#### **Q. Which one of the following statements best the term 'Social Cost of Carbon'? (2020)**

It is a measure, in monetary value, of the -

- (a) long-term damage done by a tonne of CO<sub>2</sub> emissions in a given year.
- (b) requirement of fossil fuels for a country to provide goods and services to its citizens, based on the burning of those fuels.
- (c) efforts put in by a climate refugee to adapt to live in a new place.
- (d) contribution of an individual person to the carbon footprint on the planet Earth.

**Ans: (a)**

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