

Factsheet – Carbon Sequestration

Carbon sequestration is the act of capturing carbon dioxide from the atmosphere, storing it, and preventing it from being re-released. This typically includes a range of artificial and natural processes that capture carbon as part of industrial, agricultural and land-use activities.

It is important to note that carbon sequestered could be released back into the atmosphere. For example, carbon could be temporarily released by a forest fire and re-captured by re-growth or permanently released through the conversion of a forest to a settlement.

Types of carbon sequestration

Carbon sequestration can be either natural or artificial.

- **Natural carbon sequestration** is a cycle that's been happening on the planet for billions of years. It's the process by which nature balances the amount of carbon dioxide in the atmosphere. Carbon is sequestered and stored naturally in our soils, forests and oceans.

In Jersey, on-Island sequestration includes activities like tree and hedgerow planting and changing land-use to increase the amount of carbon our natural environment can absorb. These activities also have positive impacts on biodiversity and help support both nature's recovery and wider social and economic objectives.

- **Enhanced natural carbon sequestration** includes land management approaches to increase carbon content in soil, such as incorporating charcoal produced by biomass to soils, or enhanced weathering to accelerate natural processes that absorb carbon dioxide.
- **Artificial carbon sequestration** is the capture and storage of carbon dioxide produced, generally by large factories and power plants. This technology is still largely unproven at scale.

Land-use change

How we use our land affects the amount of carbon it can store. When we change how we use land, such as changing an area of grassland to cropland for farming, the amount of carbon stored in the land also changes.

Planting forests on land currently used for something else offers an opportunity for carbon sequestration. But, the amount of carbon sequestered is dependent on the size of area that can be converted to woodlands and the types of trees grown. Due

to Jersey's limited land area this would be relatively small. Initial analysis shows large scale reforestation in Jersey would only achieve a net reduction of around 1% of our current scope 1 emissions.

In 2018 land-use change accounted for -0.2% of Jersey's total greenhouse gas emissions. The negative value means that overall, the land-use sector was an *emissions sink* rather than a *source of emissions*.

Cropland converted to grassland was the only emission sink in 2018. Converting cropland to grassland resulted in 5,863 tonnes of carbon being stored in the land rather than being emitted into the atmosphere.

Other forms of land-use change can result in increased emissions. For example, converting grassland to cropland or cropland to settlements.

This shows that we need to be mindful of how we use land in Jersey, especially when it comes to changing its use. Land use types that sequester the most carbon, such as forests and grasslands, are an essential part of our journey to being carbon neutral. This can be achieved by protecting what we have, while also looking to encourage land-use changes and activities that increase Jersey's capacity to sequester more carbon dioxide.

Blue carbon

Blue carbon is the carbon dioxide that is captured and stored in coastal and marine ecosystems such as mangroves, marshes and seagrass meadows. These coastal ecosystems have the potential to store more carbon than forests on land.

Jersey's offshore and onshore blue carbon resources are currently being studied. The results suggest that Jersey has some habitats that are important carbon sinks.

Farming practices in Jersey

Changes in Jersey's agricultural practices could potentially sequester more carbon. The amount of carbon stored in and emitted or removed from cropland depends on:

- crop type
- management practices
- soil variables
- climate variables

How we use and manage soil affects how much carbon it can store. We can increase sequestration in soils through things like:

- the use of cover crops
- artificial soil covers
- crop residues

- or through external sources such as compost or manure

Healthy soils can also sequester carbon and are resistant to erosion, support flood management, as well as being central to sustainable farming. Every hectare of land that raises its soil organic matter levels by just 0.1% will sequester 8.9 tonnes of carbon dioxide per year¹.

Annual crops (such as cereals, vegetables) are harvested each year, so there is no long-term storage of carbon in these plants. By comparison, perennial woody crops such as fruit trees and vines can store significant carbon in long-lived plants. However, replacement of annual crops by perennial crops would result in limited carbon sequestration in Jersey.

Agriculture accounted for 6% of Jersey's total greenhouse gas emissions in 2018. The largest agriculture emissions source that year was from the farming of dairy cattle. Agriculture represents relatively limited scope for impacting on Jersey's total greenhouse gas emissions.

On-Island carbon sequestration is different to carbon off-setting

Carbon offsetting involves calculating a person or entity's greenhouse gas emissions. Once calculated, you buy credits from emission reduction projects. These projects must prevent or remove the equal amount of greenhouse emissions elsewhere.

More information on carbon offsetting is provided in the separate factsheet.

Read more about carbon sequestration:

Carbon sequestration and the role of soil and crops, Aether.

How we use land impacts Jersey's greenhouse gas (GHG) emissions. It can also lead to carbon from the atmosphere being sequestered (stored) in our soils and plants. This report covers the calculation methodologies, scale and potential of carbon sequestration in Jersey, and explains the role of carbon storage and management in the context of Jersey's GHG emissions inventory.

<https://www.gov.je/Government/Pages/StatesReports.aspx?ReportID=5274>

What is carbon capture and storage and what role can it play in tackling climate change? <https://www.lse.ac.uk/granthaminstitute/explainers/what-is-carbon-capture-and-storage-and-what-role-can-it-play-in-tackling-climate-change/>

What is blue carbon? <https://oceanservice.noaa.gov/facts/bluecarbon.html>

¹ <https://www.farmcarbontoolkit.org.uk/toolkit/soils-sequestration>