

“Whalecoin”: recovering whale populations as carbon offset credit within extension of the EU Emissions Trading System (EU-ETS) to maritime transport

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Fin whales are considered as an **endangered species** in the Mediterranean sea according to IUCN Red List and today's population is a fraction of what was before modern whaling which severely exploited the species during the 20th century. Currently among the main **anthropogenic threats/pressures to the species there are the shipping-lanes**: general vessel disturbance disrupting the habitat for the species (more dangerous in feeding, breeding and nursery in specific seasons), ship strikes, shipping noise. Shipping-lanes on the other hand are nowadays essential for human population with transport of goods, products and people more sustainable compared to air and wheels.

Fin whales are, in addition of being an important and protected component of the marine biodiversity, also playing a very important role, though still largely unknown, towards climate change and marine biodiversity. Their poo is very rich in Fe, N and P, and essential for phytoplankton growth and when deep diving, they “pump” up the nutrients from the seafloor, and when they die, their bodies store carbon down in the ocean. Their role in carbon sequestration (direct and indirect) recently suggested **a carbon asset based on whales recovering**.

Whale-carbon credits represent a novel potential financial mechanism where the carbon sequestration capabilities of whales are quantified into tradable credits, enabling investors and companies to offset their carbon emissions by investing in the conservation and restoration of whale populations. The **estimated carbon value** of a whale should consider: the amount of carbon stored per-kilogram over the whale's lifetime, the carbon stored in the long-term by the phytoplankton benefiting from the whale's activity, and the social cost of carbon, that is, the **monetary value of the economic consequences** (i.e. changes productivity, damages from catastrophes, etc) of one extra ton of carbon dioxide emissions. A simpler alternative is the average **price t CO₂ as quoted in EU-ETS**.

How can Whale carbon Offsets and Credits fund the whale population recovery to sustainable numbers?

Here we suggest two different roadmaps in order to **finance conservation measures to recover whale populations within the framework of the EU-ETS**, reducing the impact of shipping lines: i.e. observers, or technical devices, on board, relocation of routes to avoid ship strikes and designation of new at sea protected areas MPA/IMMAs, PSSA and relative compensation to the maritime industry.

Considering CO₂ biological storing in ETS

EU-ETS regulates half of the European CO₂ emissions since 2005. The system focuses mainly on direct industrial emissions, with limited impact of carbon storage at geological sites. Taking into account the CO₂ biological storing should be addressed in coming years.

2003/87/CE Directive could be amended to extend the carbon removal accountability to NBS. The Regulation proposal on Carbon Removal Certification is a good starting point, though limited to the voluntary market. Following steps are challenging, needing a long-term perspective.

Maritime operators, in EU-ETS since 2024, might receive free-allocation based on NBS, including whale conservation. A consistent approach implies a reliable monitoring of additional carbon: in an environmental/financial market the principle “a ton is a ton” is mandatory.

The target of the ETS is the reduction of emissions (essentially through the application of a tax). Currently the mechanism is based on the MRV system, so directly linked to fuel consumptions. It could be profitable to introduce “corrective factors” also based, for example, on initiatives still linked to environmental protection or biological CO₂ storage.

Auctioning revenues of maritime transport to be used for whale conservation

EU Directive 2023/959 has extended ETS scope to maritime transport, with auctioning as the only allocation method. Approximately 7 billions €/y are expected at EU level; a minor percentage of this huge amount could be bounded to whale conservation.

EU Directive 2003/87/CE mentions options for Member States to spend auctioning revenues, including forestry carbon capture. Since whales capture carbon, an explicit focus could stress the general provision “to contribute to the protection, restoration and better management of marine-based ecosystems”.

A compensation system might be introduced to spend >10% of auctioning revenues from maritime transport, with active whale conservation measures starting from at sea protected or special areas with appropriated recommendation to be pursued in order to reduce collision risk.

Engaging with stakeholders and policy makers in the EU carbon trading market and in the International Maritime Organization to explore interest, requirements, and potential frameworks for whale carbon offsets will be crucial for both the roadmaps