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ARTEMIS 4th Peer Learning Session: How to finance seagrass restoration with nature credits?

Identifying the related challenges, risks, success factors and best practices for market development.

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About this report

This report summarises the key discussions and takeaways from the fourth ARTEMIS Peer Learning session, held in a hybrid format on October 9th, 2025. The session brought together over 30 participants and keynote speakers from science, practice, and the private sector to talk about developing a market for nature credits based on seagrass restoration. High level speaker Ece Ozdemiroglu (EFTEC) shared her knowledge on the challenges and success factors of developing nature markets in a keynote. David Álvarez Garcia and Paula Castillo Alonso (ECOACSA) presented insights into commercial, legal and registry considerations for seagrass restoration projects, as had been collected over the past months. Moreover, they demonstrated the advancements made on the PES Cookbook, designed to help aspiring seagrass restoration PES Schemes on their path to maturity and the market size estimation for these types of schemes. Lastly, Pere Giralt and Ramon Scholl (Bax Innovation) facilitated an interactive session to identify and prioritize the main risks faced by seagrass restoration projects when setting up and exploiting PES schemes.

Key takeways on nature markets

- **Nature markets are emerging tools to recognize and trade the value of ecosystem services, addressing the long-standing gap where nature has been treated as a free, unaccounted input in the economy.**
- **Seagrass meadows, despite their vital role in carbon storage, biodiversity, and coastal protection, currently lack a formal market mechanism-limiting investment and restoration incentives.**
- **The evolution from Polluter Pays to Beneficiary Pays principles has paved the way for Payments for Ecosystem Services (PES) and now nature markets, where third parties can invest in measurable environmental outcomes such as carbon or biodiversity credits.**
- **The growth of nature markets is driven by rising awareness of nature's economic importance, widening public funding gaps, and increasing experience with carbon and biodiversity crediting systems.**
- **Successful PES design requires balance: developers must adapt to existing legal, ecological, and market contexts while building transparent, credible, and trusted mechanisms that align with stakeholder needs.**

Table 1: Overview of main risks and success factors

RISKS	SUCCESS FACTORS
• Connected Nexus Challenges Affecting Restoration Outcomes • Conflict of Sea(bed) Uses • Lack of Alignment with the Demand-side Interests and Needs • Insufficient Legal Backing • Insufficient Quality of Restoration Projects	• Trust and Transparency from all market actors • Multi-actor Governance of Sea(bed) and its uses • Stacking Multiple Benefits Into a Single Credit • Legal Clarity on Policies, Governance Rights and Responsibilities • Viable Business Models of Nature Credits and Restoration Projects

Status of Artemis Credit Schemes (PES Cookbook)

As a project, Artemis is working towards establishing nature credit schemes, which capitalize on the environmental services generated by seagrass restoration efforts, such as carbon sequestration and biodiversity conservation. To facilitate other seagrass restoration projects to follow suit and create a seagrass nature credit market, Artemis is creating a PES Cookbook to guide projects through the process.

During the Peer to Peer session, the advancements on the PES Cookbook were presented across the Legal and Registry, Commercial and Financial topics. For each of these, insights have been gathered in close collaboration with the pilot sites, leading to key challenges and recommendations for the first version of the framework, which is later to be integrated into the Cookbook. The last workshop, on risks related to the development and exploitation of nature credits (focused primarily on carbon and biodiversity) for seagrass restoration, was conducted in-person during the fourth peer-to-peer session in Monfalcone. During this workshop, risks were identified and prioritized, so that they can be effectively incorporated and addressed in the PES Cookbook.

Keynote

Ece Ozdemiroglu, CEO and Co-Founder of EFTEC

Ece Ozdemiroglu is one of the lead experts on the topic of nature markets and environmental economics. She is CEO and Co-Founder at Economics for the Environment Consultancy ltd. (EFTEC). During the keynote, she shared some of the key lessons learned from their experience with nature markets, such as the UK's Biodiversity Net Gain.

Introduction to Nature Markets

Markets are powerful mechanisms for organizing the exchange of resources between the producers of a product or service and its users. When designed to trade coffee, for instance, they excel at ensuring that coffee flows efficiently from producers to consumers, generating and transferring value along the way. However, markets only address what they are designed to include, often failing to reflect any externalities, such as environmental degradation, social inequalities or the depletion of natural assets. This has traditionally created many problems, as economic systems have considered nature as a free input, rather than a valuable asset at the foundation of value creation.

> *"For ecosystems like seagrass meadows, which provide immense carbon storage and biodiversity benefits, there is currently no established market.*
>
> *There is no formal mechanism through which their value can be traded, invested in, or financially rewarded. This absence makes it challenging to attract private finance or incentivize restoration, despite their high ecological and climate importance."*

Over time, various approaches have sought to bridge this gap. The **Polluter Pays Principle (PPP)** was an early step, introducing taxes and tradable permits to internalize environmental costs by making those responsible for pollution bear its economic burden. Building on this, the **Beneficiary Pays Principle (BPP)** advanced the idea of compensating those who maintain or enhance ecosystem services from which others benefit. This approach underpins **Payments for Ecosystem Services (PES)**, where stakeholders, such as landowners, communities, or companies, are rewarded for preserving or restoring natural assets in specific locations.

Nature markets represent the next evolution of this thinking. They extend the Beneficiary Pays concept beyond local contexts, allowing third parties to invest in the protection or restoration of natural assets, even in remote locations, in exchange for measurable ecological outcomes such as carbon credits, biodiversity gains, or water quality improvements.

This shift has been driven by three key forces:

- **Rising awareness** of how nature underpins economies and human well-being.
- **Widening public funding gaps** for conservation and restoration, highlighting the need for private capital.
- **Growing experience** with environmental markets, such as carbon and biodiversity crediting, that demonstrate how nature can be valued and traded responsibly.

Market Characteristics

Currently, nature markets are diverse in structure and operation, reflecting a combination of intentional design choices and contextual realities that lie beyond the control of those developing them. While certain elements, such as governance models or verification procedures, can be shaped by the market developer, others are defined by existing regulatory frameworks, stakeholder expectations, or environmental conditions.

When establishing a Payment for Environmental Services (PES) scheme, it is therefore essential to recognize both the factors that can be designed and those that must be navigated or adapted to. Aligning the scheme with the specific context and needs of the targeted market helps ensure that environmental value is appropriately recognized and that trust is built among key stakeholders. Table 2 below outlines some of the main characteristics and influencing factors that shape nature markets.

Table 2: Main characteristics shaping nature markets (EFTEC, 2025)

CHARACTERISTIC	OPTIONS	DESCRIPTION
Buyer Motivation	• Compliance • Voluntary	Are buyers obliged to buy credits, for example to offset their impacts, or is it on a voluntary basis?
Credit Type	• Ecosystem Asset • Biodiversity • Ecosystem Service	Refers to the underlying basis of what is being measured and traded in the market.
Credit Status	• Pending (validated) • Issued (verified)	Indicates the stage of development and assurance of a credit. (Validated is before monitoring, verified is after auditing)
Environmental Good	• Carbon • Biodiversity • Nutrient • Water • Etc.	Defines the specific environmental parameter or "good" captured by the credit.
Credit Duration	• Perpetuity • Time limited	Refers to the timeframe during which the credited environmental benefit is guaranteed.
Market Boundary	• Global • National • Local (planning, boundary, catchment)	Defines the geographical or regulatory scope within which credits are recognized and traded. For example, can international buyers obtain the credits and use them effectively?
Credit Spatial Scale	• Hectares (e.g. seabed area) • Km^2 (e.g. afforestation)	Refers to the physical scale at which credits are generated and accounted for.

Integration of Challenge Analysis Workshop & Keynote

After the keynote speech by Ece Ozdemiroglu, the participants of the peer to peer learning workshop in Monfalcone reflected upon the presentation during an interactive workshop.

- **Identification of Risks & Success Factors**

This workshop was facilitated by **Ecoacsa** and **Bax Innovation** and focused on combining the work on the cookbook and the lessons learned from the keynote presentation. Participants **collaborated on the identification of risks faced** by Artemis' Seagrass Restoration Nature Credits. These risks have been detailed below and complemented with the success factors, as presented in the keynote presentation of **Ece Ozdemiroglu**.

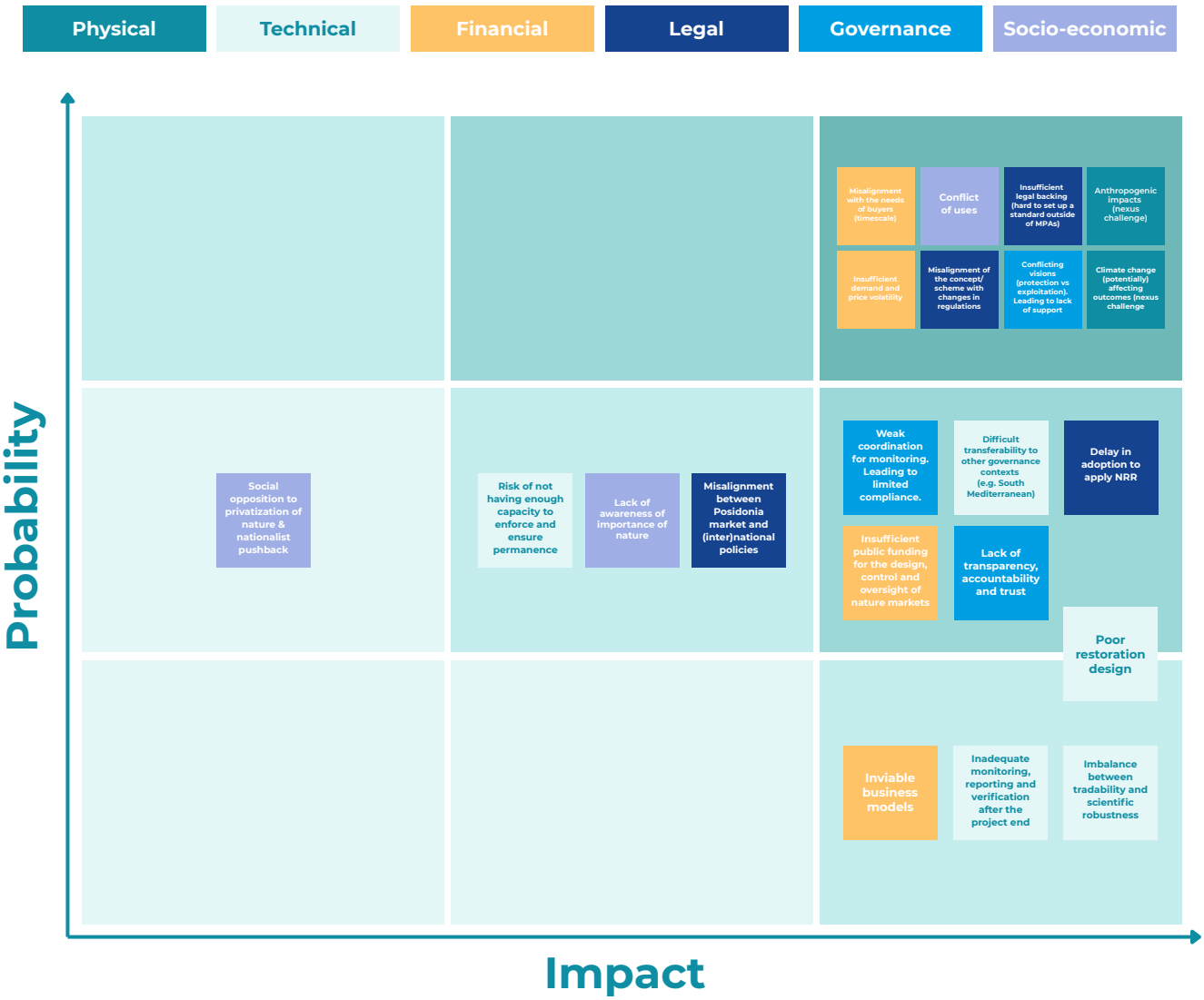
Table 3: Identified risks and success factors

RISKS	SUCCESS FACTORS
Nexus Challenges Seagrass restoration is a nexus challenge, which is complex and connected to many other challenges. **Anthropogenic pressures and climate change** could undermine the success of the restoration efforts.	**Trust and Transparency** Trust is crucial for the functioning of any market. In the context of nature credits, this requires **robust monitoring and transparent and timely sharing** of these results with buyers.
Conflict of Uses Restoration projects could be under threat from **competing uses of the area.** Claims on the area from economic sectors such as tourism, transport or aquaculture could reduce the backing of seagrass restoration.	**Multi-actor Governance** For the restoration project to be a success, it is important to **include a wide range of (preferably all) relevant stakeholders** in the governance processes. This ensures **legitimacy and long-term support** from influential actors.

RISKS	SUCCESS FACTORS
Lack of Alignment with Demand Potential buyers such as corporates or investors often are misaligned with restoration projects, for example, they consider **shorter time frames** that are insufficient for ecological effects to take place. This and immaturity of the market leads to **price volatility and lack of demand.**	**Multiple Benefits** Going from a narrow focus on carbon towards a broad **inclusion of various benefits** increases profitability and reduces perverse incentives. Conserving biodiversity and other ecosystem services gain importance and contribute to the income and overall value of the project.
Insufficient Legal Backing **Insufficient policy support and enforcement** from governments, such as through weak Nature Restoration Plans or limited enforcement of Marine Protected Areas. Additionally, nature markets will need to be controlled to safeguard their quality and trust of buyers.	**Legal Clarity** **Stable and well-enforced policies and legal governance frameworks** are the foundation for the long-term success of restoration efforts and nature markets. These reduce risks for investors and provide clarity and trust, allowing the nature market to function more effectively.
Low Quality of Restoration Projects All seagrass restoration projects are dependent on the **quality of restoration design.** Inadequate restoration design or monitoring could undermine trust in the associated nature market and hinder its funding in the long run.	**Adequate Financial Design** **Taking investors' needs and interests into account** in the design of the financial mechanisms used facilitates transactions. **Combining public and private funding** based on the benefits obtained by each actor allows for a more solid value proposition.

- **Identification of Risks & Success Factors**

After identifying the main risks faced by the Seagrass Restoration Nature Credits, as developed by the Artemis pilots, participants were asked to prioritize these risks. The prioritization of the risks was based on the impact a risk could have on the success of the nature credit and the probability of occurrence of this risk as a barrier to implementation. The scores were determined in collaboration under the guidance of the facilitators during the peer learning session in Monfalcone.



One conclusion that can be drawn from this prioritization exercise is that the highest priority risks span a series of topics: **Physical**, **Financial**, **Legal**, **Governance** and **Socio-Economic**. The technical challenges are generally slightly lower priority, mostly due to their lower probability of occurrence. This can be attributed to the fact that the technical challenges are to a higher degree within the sphere of influence of the pilot projects.

The highest priority risks include those previously described in table 3, including misalignment with the needs of buyers, conflict of uses, insufficient legal backing and the nexus challenges that seagrass restoration is related to. In addition to these, misalignment with regulations, conflicting visions on the use of the seagrass meadows and insufficient market demand have been placed in the highest category.

Some other important risks are related to the need for more ambitious and decisive action from governments, like through the funding of oversight of the nature market and the implementation of the Nature Restoration Law. Moreover, project developers will have to ensure a good quality project design, while balancing it with the need to keep the costs to a minimum to safeguard a viable business model. Some last considerations are linked to social factors such as the lack of awareness of the importance of nature and the social opposition to the privatization of it.

Conclusion

Seagrass restoration nature credits face a series of risks in a variety of categories; physical, technical, financial, legal, governance and socio-economic. Some of these could seriously hinder the establishment of a functional nature credit market. Nevertheless, the history of increasingly advanced nature-related markets has taught some valuable lessons on criteria for their success. If project developers design the credit markets with the success factors in mind, these risks can be (partially) mitigated, improving the chance of succeeding.

The findings presented in this report will be incorporated into the Cookbook and roadmap that are currently being developed by Artemis partners to assist seagrass restoration projects with their nature markets. These documents will be finished and made publicly available by Artemis partners in 2026.

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