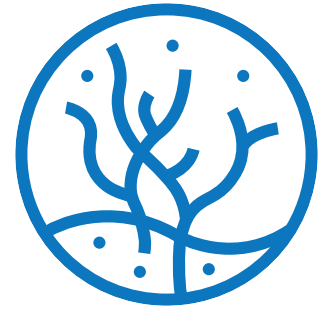


BLUE CARBON CREDITS



**BETWEEN EXPECTATIONS AND HAZARDS :
STUDY ON STAKEHOLDERS' PERCEPTIONS
ON BLUE CARBON CREDITS.**



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Cover Picture | *Posidonia beds in the Sormiou calanque, Marseille, Bouches-du-Rhône.* © Sami Sarkis Underwater

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2 ABSTRACT

So-called Blue carbon ecosystems – mangroves, salt marshes and seagrass meadows - deliver important climate, biodiversity and coastal protection benefits. Their potential as carbon sinks, despite remaining uncertainties and limits of this potential, gave rise to the idea of using carbon market mechanisms to finance their protection and restoration. These mechanisms are controversial, particularly as regards their environmental integrity.

This report examines the perceptions of European stakeholders on blue carbon credits through 16 semi-directive interviews with scientists, policymakers, NGOs, and private actors. The study reveals contrasted views, ranging from strong support to deep scepticism based on ethical, operational, ecological, economic or reglementary arguments.

Surfrider Foundation Europe concludes that so-called blue carbon ecosystems must be protected and restored first and foremost for their multiple ecological functions, not for their commodification. Public governance, stable non-market financing, and the redirection of harmful subsidies are more credible and secure ways of ensuring their protection and restoration, rather than reliance on carbon credit schemes.

3 ACRONYMS

CDM: Clean Development Mechanism

VCS: Verified Carbon Standard

IPCC: Intergovernmental Panel on Climate Change

UN REDD+: United Nations Reducing Emissions from Deforestation and forest Degradation in Developing countries

NGO: Non-Governmental Organization

MPA: Marine Protected Area

MSFD: Marine Strategy Framework Directive

NRL: Nature Restoration Law

LULUCF: Land Use, Land Use Change and Forestry

So-called Blue Carbon Ecosystems: “Blue carbon ecosystems”

The term used in this report to designate on a single terminology mangroves, seagrass beds, salt marshes is “So-called Blue carbon ecosystems”. We use “so-called” to point the artificiality of this term limiting these ecosystems to only their ability to sequester carbon and masking their complexity and the large panel of ecosystemic services they provide. In order to avoid repeating “so-called” and to keep more fluidity, we will use the expression “Blue carbon” ecosystems except from the titles.

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5 INTRODUCTION

5.1 WHAT DOES “BLUE CARBON” REFER TO?

The term “blue carbon” was introduced in 2009 and refers to the capacity of coastal and marine ecosystems to capture and sequester atmospheric carbon in marine sediments (Nellemann 2009). While there is ongoing discussion within the scientific community as to which types of ecosystems should be included in this definition (kelp forests, mud flats, macroalgae...), the current consensus labels three different types of ecosystems as “blue carbon ecosystems”¹:

- Salt marshes
- Seagrass beds
- Mangroves

The current report will focus on this definition.

These ecosystems are efficient carbon sinks in as far as:

- They produce a considerable amount of biomass, since they are composed of the photosynthetic plants.
- Their soils are oxygen-poor, hence very little carbon

is released through respiration and decomposition.

→ They store a great quantity of carbon captured in other ecosystems since they are situated at the sea-continent interface, with a root system capable of trapping large quantities of transited sediment.

The ability to store carbon has led, over a long period, to the establishment of large organic carbon stocks in these ecosystems (22,6 GtCO₂-eq for mangroves², 6,4 GtCO₂-eq for salt marshes³ and 9,6 GtCO₂-eq for seagrass⁴ worldwide), making their deterioration an additional source of greenhouse gases. However, although they are extremely efficient carbon sinks, so-called blue carbon ecosystems cannot be considered as a solution to compensate current anthropic emissions of greenhouse gases. The annual sequestration of worldwide ecosystems labelled as « blue carbon » represents less than 1% of current anthropic emissions^{5,6}.

This is a strong reminder that the most important action to take is to reduce the current greenhouse gas emissions drastically and immediately.

“Blue carbon ecosystems” could be important for

human societies not only because they are carbon sinks,⁷ but because:

- They improve water quality on a local level by filtering pollutants, diminishing eutrophication and tampering acidification.
- They help to limit coastal erosion by retaining sediments in coastal areas.
- They protect against submersion waves by dissipating the wave's energy and acting as a buffer tampon.
- They are an important reservoir of biodiversity.

They provide numerous other ecosystemic services and can be considered as “low-regret” solutions when applied, since they can provide both environmental and socio-economic benefits⁸. The protection and restoration of “Blue carbon ecosystems” thus remain capital issues, but should not be used to divert attention from the necessity of drastically and immediately reducing greenhouse gas emissions.

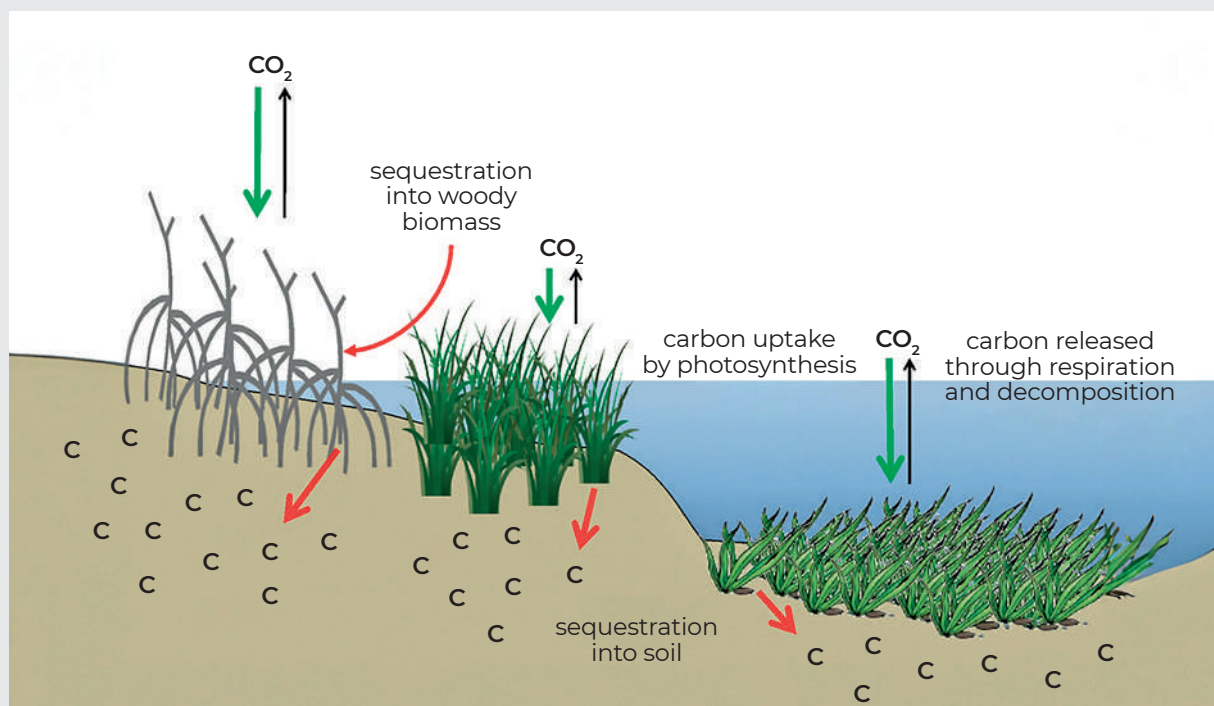
5.2 SO-CALLED BLUE CARBON ECOSYSTEMS IN EUROPE

“Blue carbon ecosystems” are present in most of European coastal areas. They cover a total of over 2 million hectares (ha) across the EU and their peripheral regions⁹.

Notes | 1. Lovelock, Catherine E., et Carlos M. Duarte. 2019. « Dimensions of Blue Carbon and emerging perspectives ». *Biology Letters* 15 (3): 20180781. <https://doi.org/10.1098/rsbl.2018.0781>. **Notes | 2.** Alongi, Daniel M. 2023. « Current Status and Emerging Perspectives of Coastal Blue Carbon Ecosystems ». *Carbon Footprints* 2 (3): 3. <https://doi.org/10.20517/cf.2023.04>. **Notes | 3. 4. 5.** Ibid. **Notes | 6.** IPCC, 2023: Summary for Policymakers. In: *Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Core Writing Team, H. Lee and J. Romero (eds.)]. IPCC, Geneva, Switzerland, pp. 1-34, doi: 10.59327/IPCC/AR6-9789291691647.001. **Notes | 7.** Macreadie, Peter I., Micheli D. P. Costa, Trisha B. Atwood, et al. 2021. « Blue Carbon as a Natural Climate Solution ». *Nature Reviews Earth & Environment* 2 (12): 826-39. <https://doi.org/10.1038/s43017-021-00224-1>. **Notes | 8.** Williamson, Phillip, et Jean-Pierre Gattuso. 2022. « Carbon Removal Using Coastal Blue Carbon Ecosystems Is Uncertain and Unreliable, With Questionable Climatic Cost-Effectiveness ». *Frontiers in Climate* 4 (juillet). <https://doi.org/10.3389/fclim.2022.853666>.

Figure 1 | Opposite | Mangrove forest in Salines pond, Sainte-Anne, Martinique. © Chromoprisme

Figure 2 | Below | Carbon sequestration in so-called blue carbon ecosystems. Source: Modified from “Clarifying the Role of Coastal and Marine Systems in Climate Mitigation ». *Frontiers in Ecology and the Environment*” (Howard et al. 2017).



This includes over 1.4 million ha of seagrass beds, the largest surface areas of which have been mapped in Denmark and Italy¹⁰. The net loss of seagrass cover in Europe has been estimated at 32,864 ha between 1869 and 2016¹¹. Salt marshes represent more than 600,000 ha with the highest surface areas being found in France and Romania¹². Mangroves cover around 90,000 ha, entirely in peripheral regions. The peripheral regions of Europe have so-called blue carbon ecosystems in Guadeloupe, Guyana, Martinique, Mayotte, Réunion and Saint-Martin¹³.

However, questions remain as to the availability and comparability of data on carbon stocks and carbon sequestration with so-called blue carbon ecosystems in Europe¹⁴.

5.3 CARBON CREDIT MECHANISMS

The idea of putting a price on carbon dates back to the 1960s, but was first implemented politically at the Earth Summit in Rio (1992) and continued in the Kyoto Protocol (1997), which introduced the first international carbon market mechanisms. The first tool developed was the Clean Development Mechanism (CDM), which allowed industrialised

countries to offset their emissions by financing carbon reduction projects in developing countries. The system was implemented in the 2000s, and marked the beginning of a market-based approach to combating climate change. Although the CDM ended in 2020, the Paris Agreement and in particular Article 6.4 paved the way for a new generation of carbon markets. Article 6.4 aims to improve regulation of the international trade in emission reduction units, in order to avoid double counting and ensure the integrity of projects eligible for credit issuance¹⁵. Despite these regulatory developments, growing criticism is emerging regarding the voluntary carbon market, particularly concerning both its ability to contribute effectively to mitigation, and also the associated risks of green-washing and the unequal distribution of environmental and economic benefits.

The literature identifies five major issues concerning the environmental integrity of carbon markets¹⁶:

→ **Additionality:** the project must generate reductions that would not have occurred without carbon credits; a credit must finance a project that would not have been financially viable without the

Figure 3 | Below | *Zostera marina* beds in the vicinity of St Helen's, Sicily, Italy. © Paul R. Sterry





Figure 4 | Above | Area of transition between mudflats (right of the picture) and salt marshes (left) in Aiguillon Bay, Charentes-Maritime. © Adeline Adam

issuance of these credits.

- Permanence: the avoidance or storage of emissions must be maintained in the long term.
- Carbon leakage: the project must not result in emissions being displaced to another location but must reduce pressures.
- Double counting: the same credit must not be issued or claimed more than once, either by different countries or by different actors.
- Rigorous quantification and monitoring: reductions must be measurable and verifiable, with a transparent methodological framework.

A study published in 2024 reveals that companies prioritise low-cost credits on the voluntary market, and that these credits are associated with projects of low environmental integrity¹⁷.

In addition to environmental integrity considerations, the literature also focuses on the social consequences of such projects, where benefits do not always reach local populations. They may become a tool that encourages land-grabbing practices, as has been the case with the UN REDD+ mechanism for forest conservation¹⁸. Other ethical considerations have been identified regarding associated carbon offsets. These raise concerns about a “right to pollute” for buyers, which allegedly keeps them from having to drastically reduce their greenhouse gas emissions^{19 20}.

Although the many controversies surrounding voluntary carbon markets have affected market demand, they continue to attract significant demand, with a value of over US\$700 million in 2023²¹.

Notes | 9. 14. Remeta, P., Whiteoak, K., Cziesielski, M.J., Rukmana, R., Biemann, M., Macreadie, P., Costa, M., Wartman, M., Serrano, O. Crotty, F., Wiltshire, J., Decherf, C., Watterson, J., Kiff, B., Herold, L. *Studies in support of the implementation of the Mission – Wetlands and Blue Carbon: Final Report*. 2025. Publications Office of the European Union, 2025, doi: 10.2926/9638373. **Notes | 10. 11. 12. 13.** Ibid. **Notes | 15.** Paris Agreement 2015. **Notes | 16.** Schneider, Lambert, et Stephanie La Hoz Theuer. 2019. « Environmental integrity of international carbon market mechanisms under the Paris Agreement ». *Climate Policy* 19 (3): 386 400. <https://doi.org/10.1080/14693062.2018.1521332>. **Notes | 17.** Trencher, Gregory, Sascha Nick, Jordan Carlson, et Matthew Johnson. 2024. « Demand for Low-Quality Offsets by Major Companies Undermines Climate Integrity of the Voluntary Carbon Market ». *Nature Communications* 15 (1). <https://doi.org/10.1038/s41467-024-51151-w>. **Notes | 18.** Ingalls, Micah L., Patrick Meyfroidt, Phuc Xuan To, Miles Kenney-Lazar, et Michael Epprecht. 2018. « The transboundary displacement of deforestation under REDD+: Problematic intersections between the trade of forest-risk commodities and land grabbing in the Mekong region ». *Global Environmental Change* 50 (mai): 255 67. <https://doi.org/10.1016/j.gloenvcha.2018.04.003>. **Notes | 19.** Carbon Market Watch. 2025. *Behind the Green Curtain: Big Oil and the Voluntary Carbon Market*. <https://carbonmarketwatch.org/2025/02/12/behind-the-green-curtain-big-oil-and-the-voluntary-carbon-market>. **Notes | 20.** Reclaim Finance. 2022. *20 ans d'expérience en matière de compensation carbone : leçons pour le secteur financier*. <https://reclaimfinance.org/site/2022/02/03/20-ans-dexperience-en-matiere-de-compensation-lecons-pour-le-secteur-financier>. **Notes | 21.** Greenfield, Patrick. 2024. « Market Value of Carbon Offsets Drops 61%, Report Finds ». *Environment. The Guardian*. www.theguardian.com/environment/article/2024/may/31/market-value-of-carbon-offsets-drops-61-aooe.

5.4 CURRENT STATE OF INTERNATIONAL AND EUROPEAN BLUE CARBON MARKETS

The blue carbon market is defined as the market that allows for the purchase and sale of carbon credits related to the protection or restoration of blue carbon ecosystems. Between 2013 and 2022, blue carbon credits represented only 0.7% of the international voluntary carbon market²². However, there is growing demand for them on the carbon market²³. They are issued mainly by the Clean Development Mechanisms on mangroves (AR-AM 00014) and the Verra VCS label, which has produced two methods for reducing emissions from deforestation and degradation of wetlands, and for restoring seagrass beds and wetlands (VM007 and VM0033). The vast majority of these accredited projects are mangrove protection and restoration projects in Pakistan, Senegal, and Indonesia.

National markets have also been developed in Japan and the United States, with methodologies for the protection and restoration of seagrass beds at local and national levels in Japan, and for the restoration of wetlands under the American Carbon Registry²⁴.

At European level, although several blue carbon methodologies exist (including Label Bas Carbone in France, Andalusia Blue Carbon Standard and UK Saltmarsh Code), none of them resulted in the issuance of European blue carbon credits until May

2025. The main reasons for this is the high cost for such accreditation. A first project has recently announced its accreditation by the Label Bas Carbone for its method of protecting *Posidonia* seagrass beds. This is expected to result in the issuance of nearly 100,000 carbon credits sold at €75 per unit²⁵, well above the voluntary carbon market average in 2023, which had an average price of €8.05/TCO₂-eq²⁶.

5.5 BLUE CARBON UNCERTAINTIES

The environmental integrity of blue carbon credit issuance faces the same challenges as terrestrial carbon credits. The unique characteristics of these ecosystems, and the scientific uncertainties associated, pose additional difficulties in quantifying the climate benefits to be gained from protection and restoration activities.

There is significant variability in sequestration rates in these ecosystems from one site to another (a factor of 600 between the lowest and highest rates for salt marshes, 76 for seagrass beds, and 19 for mangroves)²⁷.

It is also important to take into account the proportion of allochthonous and autochthonous carbon sequestered, to avoid the risk of double counting. Autochthonous carbon refers to carbon directly captured in the ecosystem through its production, while allochthonous carbon is captured in other ecosystems and ends up trapped in blue carbon ecosystems, thus creating a risk of double coun-

Notes | 22. McKinsey. 2022. « Blue carbon: The potential of coastal and oceanic climate action | McKinsey ». www.mckinsey.com/capabilities/sustainability/our-insights/blue-carbon-the-potential-of-coastal-and-oceanic-climate-action. **Notes | 23.** Friess, Daniel A., Jen Howard, Mark Huxham, Peter I. Macreadie, et Finnley Ross. 2022. « Capitalizing on the Global Financial Interest in Blue Carbon ». *PLOS Climate* 1 (8): e0000061. <https://doi.org/10.1371/journal.pclm.0000061>. **Notes | 24.** Comte, Adrien, Jeanne Barreyre, Briac Monnier, et al. 2024. « Operationalizing blue carbon principles in France: Methodological developments for *Posidonia oceanica* seagrass meadows and institutionalization ». *Marine Pollution Bulletin* 198 (January): 115822. <https://doi.org/10.1016/j.marpolbul.2023.115822>. **Notes | 25.** Andromède Océanologie. 2025. *Posidonie : premiers crédits carbone bleus Méditerranéens certifiés par l'Etat français*. Juin 15. <https://www.andromede-ocean.com/blog/2025/06/15/posidonie-premiers-credits-carbone-bleus-mediterraneens-certifies-par-letat-francais>. **Notes | 26.** nfoCC. 2024. *Etat des lieux de la contribution carbone vue de France 2023 (sur les données 2022)*. **Notes | 27.** Williamson, Phillip, et Jean-Pierre Gattuso. 2022. « Carbon Removal Using Coastal Blue Carbon Ecosystems Is Uncertain and Unreliable, With Questionable Climatic Cost-Effectiveness ». *Frontiers in Climate* 4 (juillet). <https://doi.org/10.3389/fclim.2022.853666>. **Notes | 28.** Houston, Alex, Hilary Kennedy, et William E. N. Austin. 2024. « Additionality in Blue Carbon Ecosystems: Recommendations for a Universally Applicable Accounting Methodology ». *Global Change Biology* 30 (11). <https://doi.org/10.1111/gcb.17559>. **Notes | 29.** Williamson, Phillip, et Jean-Pierre Gattuso. 2022. « Carbon Removal Using Coastal Blue Carbon Ecosystems Is Uncertain and Unreliable, With Questionable Climatic Cost-Effectiveness ». *Frontiers in Climate* 4 (juillet). <https://doi.org/10.3389/fclim.2022.853666>. **Notes | 30.** Comte, Adrien, Jeanne Barreyre, Briac Monnier, et al. 2024. « Operationalizing blue carbon principles in France: Methodological developments for *Posidonia oceanica* seagrass meadows and institutionalization ». *Marine Pollution Bulletin* 198 (January): 115822. <https://doi.org/10.1016/j.marpolbul.2023.115822>.

ting. This specificity greatly complicates blue carbon accounting and tempers the carbon sequestration capacity of these ecosystems, with allochthonous carbon accounting for up to 90% of the carbon storage measured at ecosystem level, with very strong local variations depending on geomorphological characteristics²⁸.

Many uncertainties have to be resolved before the climate benefits of these ecosystems can be quantified: methodologies for quantifying stocks vary significantly, physical and chemical factors can interfere with quantification, and variations in methane and nitrous oxide flows (greenhouse gases)

must also be taken into account. There are also knowledge gaps regarding the permanence of sequestration and the local vulnerability of these ecosystems to the effects of climate change (rising sea levels, increased marine heatwaves and storm risks, ocean acidification, etc.)²⁹.

These scientific uncertainties create tensions between the scientific integrity of the methodology and the costs that may be associated with it. This was the conclusion of the Blue Natura project in Spain, which required a cost of €900 per ton of carbon to achieve a scientifically robust methodology³⁰.

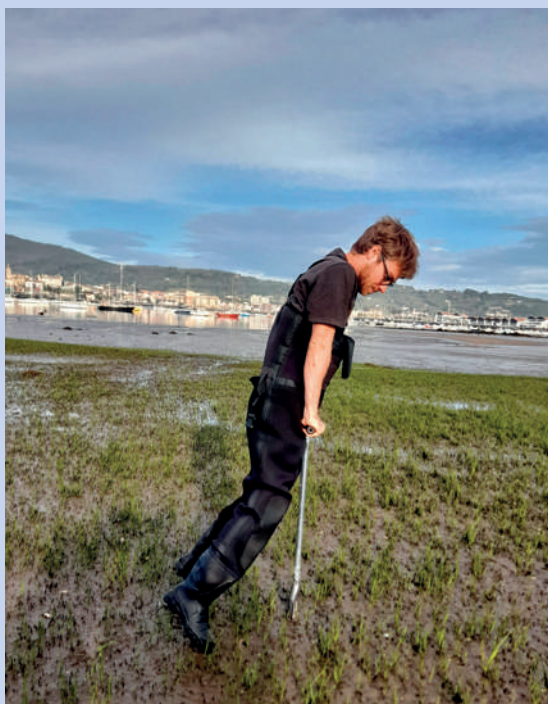
Surfrider, an expert organisation since 2023

Surfrider has been working since 2023 on so-called blue carbon ecosystems. The organisation focuses on three main axes, all contributing to improved protection and restoration of these ecosystems in Europe :

→ **Data and knowledge acquisition :** for example, in-field assessment of carbon stocks in an estuary harbouring both salt marshes and seagrass beds

→ **Awareness-raising and scientific mediation :** for example, by creating an exhibition mixing art and science on so-called blue carbon ecosystems

→ **Advocacy :** for example, by distributing a report on the potential actions at local level for French territorial communities on so-called blue carbon ecosystems



6

METHODOLOGY

No study in the literature has focused on the perception of blue carbon credits by European stakeholders working on blue carbon ecosystems. This study aims to fill the gap by addressing the following question: “How are the challenges associated with blue carbon credits perceived by European stakeholders involved in activities related to so-called blue carbon ecosystems?”

19 semi-directive interviews were conducted to answer this question. The aim was to gather and subsequently analyse the perceptions, arguments, and issues identified by various professionals working in the field of blue carbon. 16 interviews were retained for the study and 3 were excluded due to their lack of relevance on the topic.

The interviews were analysed using qualitative thematic analysis, with a focus on arguments, rationales for action, and representations. Particular attention was paid to each stakeholder's opinions on the use of blue carbon credits for ecosystem conservation.

Participants were classified according to the following criteria:

1. Main area of expertise:

- Natural sciences: fundamental sciences, applied sciences, or ecological engineering.
- Economy/Finance: fundraising, prospecting, and blue finance.
- Policy/Law: use of regulatory tools, public policy development, lobbying.

2. Scale of action:

- Fieldwork - Works directly in the field (surveys, conservation and restoration projects, etc.);
- Local - Works directly with field actors facing local issues;
- National,
- European,
- International.

Figure 5 | Opposite | *Zostera marina* beds in the vicinity of St Helen's, Sicily, Italy. © Paul R. Sterry

Table 1 | Below | List of interviewees.

PARTICIPANT	EMPLOYER	MAIN FIELD	SCALE
Researcher in marine chemistry and coastal management	Public research	Natural sciences	European
Researcher in monetary valuation of salt marshes	Public research	Policy/Law	International
Marine protected areas (MPA) officer (seagrass beds)	Public institution	Natural sciences	Fieldwork
Seagrass Research engineer	NGO	Natural sciences	Fieldwork
Lobbyist/Advocate for the protection of blue carbon ecosystems	Public institution	Policy/Law	European
Marine biologist (seagrass protection/restoration project)	Private firm	Natural sciences	Fieldwork
Blue finance expert	Independent consultant	Economy/Finance	International
Funding and operation coordinator for mangrove restoration	Private firm	Economy/Finance	Local
Climate risk insurer (mangrove projects)	Private firm	Economy/Finance	International
Employee responsible for European marine policy	Public institution	Policy/Law	European
Marine Protected Area Financing Consultant	Private firm	Economy/Finance	Local
Blue carbon methodology redactor	Private firm	Natural sciences	Local
Carbon accreditation officer	Public institution	Policy/Law	National
Carbon Contribution Mechanisms Project officer	Public institution	Policy/Law	National
Network coordinator for Posidonia seagrass beds	Public institution	Natural sciences	Local
Manager of an ocean impact investment fund	Private firm	Economy/Finance	International

Two main elements were used in the analysis of these interviews:

Table 2 | Below | Categorization of stakeholders' position on blue carbon credits, from "favourable" to "unfavourable".

POSITION	GENERAL POSITIONING ON BLUE CARBON CREDITS
Favourable	Carbon credits are considered a good complementary lever in mobilising financial support for blue carbon ecosystems.
Fairly favourable	Carbon credits have the potential to contribute to the financing of blue carbon ecosystems, provided that technical or governance improvements are made.
Neutral	The stakeholder does not explicitly express an opinion on the subject, or the comments expressed do not enable a clear position to be determined.
Fairly unfavourable	The stakeholder expresses doubts about the effectiveness of carbon credits and prefers to explore other financing mechanisms.
Unfavourable	The stakeholder believes that carbon credits are unsuitable for conservation financing needs

Table 3 | Below | Categories of arguments used by the stakeholders according to the different stakes.

CATEGORY OF STAKES IDENTIFIED	TYPE OF ARGUMENTS USED
Ecological / Environmental	Carbon sequestration, biodiversity, uncertainties on measurement...
Economic/financial	Profitability, diversification of source of financing, carbon pricing...
Legal / regulatory	Labels, standards, land rights, The Paris Agreement...
Ethics / policy	Corporate responsibility, monetarisation of nature, green-washing...
Social / governance	Stakeholders involved, consultation, conflicts of use or of governance...
Technical / Operational	Implementation, feasibility, financial tools...

7 RESULTS AND DISCUSSION

7.1 IDENTIFICATION OF STAKEHOLDERS' POSITIONING

The different actors' positions, ranging from unfavourable to favourable, was evaluated as shown in Figure 6. Participants classified as "Favourable" benefit directly or indirectly from the tool (seagrass protection company, insurer) or push for its use in

the context of their missions (carbon accreditation officer, blue finance expert). When criticism of the existing market is expressed, it is accompanied by a vision of how to overcome this challenge.

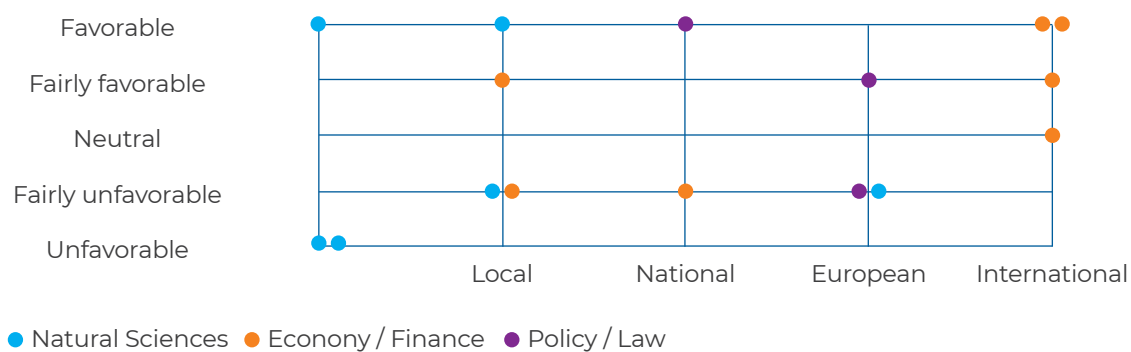


Figure 6 | Above | Participants' position according to expertise area and proximity to the field.

Participants classified as "Favourable" benefit directly or indirectly from the tool (seagrass protection company, insurer) or push for its use in the context of their missions (carbon accreditation of-

ficer, blue finance expert). When criticism of the existing market is expressed, it is accompanied by a vision of how to overcome this challenge.

JOB TITLE OF INTERVIEWEE	JUSTIFICATION OF THE CLASSIFICATION
Climate risk insurer (mangrove projects)	The insurer working on mangroves does not criticise the carbon mechanism itself, as he/she does not work directly with it. However, the revenue from blue carbon credits is partially used by one of the insured projects to pay the insurance premium, which is recognised to be quite expensive: "If you're working on a purely public conservation project, if you don't have a carbon mechanism, if you don't have sustainable funding for the conservation program, you're going to spend a lot of time trying to set up this insurance mechanism without success." However, this interview reveals the possibility of financial intermediaries capturing revenues from the sale of carbon credits.

Table 4 | Above | Stakeholders adopting a favourable position on blue carbon credits.

RESULTS AND DISCUSSION

Table 4 | Below | Stakeholders adopting a favourable position on blue carbon credits.

JOB TITLE OF INTERVIEWEE	JUSTIFICATION OF THE CLASSIFICATION
Blue Finance Expert	The blue finance expert is committed to developing the blue carbon market to include its other ecosystem services. The interviewee maintains that blue carbon credits are an economic lever with strong potential, provided that the existing carbon market is corrected and regulated to align with the expectations of financiers with conservation needs. <i>"If we have a robust calculation about carbon value and if the country has a regulatory regime in which that value can be monetised, then you have a regulated market into which that project can sell credits, and that would be an additional revenue source for the people who improve that ecosystem."</i> He argues that financial tools, when well designed and managed, can be adapted to conservation issues <i>"You can design markets so that they're efficient, you can get outcomes so that significant money flows toward needs to flow and all this is work to be done. The blue natural capital space is well suited to actually do that with, but it hasn't yet been done at any scale in most places."</i> The blue carbon market as it exists today does not yet meet the stated conservation financing objectives, in his view.
Carbon accreditation officer	The public institution employee takes a "favourable" position. The employee's job is to ensure that the verification of the blue carbon ecosystems protection method is operational in order to enable the issuance of carbon credits. <i>"Another problem we encounter with the methods is that, in wanting them to be as robust as possible, they are so robust that we don't have any projects. Perhaps this is something we should review, to see how we can make them less stringent if we still don't have any projects."</i> In order to accredit projects and issue credits, the participant suggests lowering the scientific robustness, which is considered a deterrent to project review. The aim here is to find the right balance between economic, scientific and political considerations, in order to make the issuance of carbon credits possible and their purchase attractive to financiers, without compromising environmental integrity.

Table 4 | Below | Stakeholders adopting a favourable position on blue carbon credits.

JOB TITLE OF INTERVIEWEE	JUSTIFICATION OF THE CLASSIFICATION
Marine biologist (seagrass protection / restoration project)	The participant's company has recently started issuing carbon credits for the protection of seagrass beds. The interviewee was involved in the accreditation process. As such, the position is considered to be in favour of blue carbon credits. However, the interviewee questions the logic of private financing for conservation. <i>"The real limitations are having funding that enables us to scientifically monitor a project, and financiers who are not going to ask us for figures that are meaningless in relation to the restoration program, such as ensuring a survival rate. Companies want an immediate return on their investment; they want direct results so they can use them and promote them."</i> The use of carbon credits seems to be justified here by the difficulty of finding financial partners to support the project over several years. The decision to use carbon credits is motivated by the need to find ways to ensure the continuation of the activities already carried out by the company.
Blue carbon methodology redactor	<i>"[Within the team], we all agree that we need carbon credits" [...] "We are waiting for projects on seagrass protection to emerge. We want to be sure that existing methodologies are being used properly, but yes, I would also like to see methodologies for restoration."</i> This company employee is responsible for drafting blue carbon accreditation methodologies for mangroves and seagrass beds, which explains his optimistic stance. The interviewee points out that there are still some obstacles to implementing these methodologies: <i>"I think the problem is that these are often very small areas, and the cost involved can sometimes be discouraging for project leaders. Even with carbon finance, they ultimately see limited value in it. [...] They also undoubtedly lack knowledge about carbon finance. "</i> However, the interviewee points out that this is not always perceived as advantageous for project leaders because accreditation represents a financial burden and requires specific skills.

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Participants classified as “fairly favourable” express the many challenges linked to the tool, including: the risks of exploitation, lack of data, absence of a legal framework, etc. These are obstacles that are

nevertheless perceived as surmountable by most respondents in this category, who wish to continue exploring this tool but are cautious about its use.

Table 5 | Below | Stakeholders with a “fairly favourable” position on blue carbon credits.

JOB TITLE OF INTERVIEWEE	JUSTIFICATION OF THE CLASSIFICATION
Researcher in monetary valuation of salt marshes	The researcher studying the value of salt marsh ecosystem services is very aware of the excesses of the carbon market, which he/she mentions during the interview. He/she argues that credits, if well designed, can be a lever for financing in a context where there is a lack of resources allocated to the conservation and restoration of coastal ecosystems. <i>"Apart from that, I think it's also what we do with carbon credits. [...] There are advantages to implementing carbon credits because not enough funds are being put into protecting these essential ecosystems. [...] We really shouldn't consider them a magic solution. I think it's a lever for financing, but it's not a solution. [...] For me, there are too many biases involved for us to say that the carbon market is working properly."</i> Carbon credits are seen as a potential financial tool, but the many pitfalls of the blue carbon market in its current state prevent it from being a reliable financial tool for conservation.
Funding and operation coordinator for mangrove restoration	The participant works for a company that raises funds to finance mangrove and coral restoration projects around the world. The company currently relies on three- to five-year sponsorships, and its reporting consists mainly of observing the growth of these ecosystems. It is now considering implementing carbon credits, a financing mechanism that it believes companies are seeking. <i>"We are looking into everything related to carbon certification because we can see that it is a subject that interests them, so we know we need to move in that direction. [...] When it comes to carbon issues, it's a bit of a double-edged sword because there are companies that are showing interest, and I understand why. On the other hand, we find that scientists are more cautious about these issues. They tell us that if it's about carbon sequestration, they're not interested."</i> Here, the “fairly favourable” position is interpreted as a need to diversify financing mechanisms to increase sources of income in the context of the company's commercial development.

JOB TITLE OF INTERVIEWEE	JUSTIFICATION OF THE CLASSIFICATION
Employee responsible for European marine policy	The interviewee emphasises that, as things stand, there is not enough scientific data on carbon sequestration potential to structure a European blue carbon market. However, there is a willingness to explore the possibilities and define the conditions for creating a market. <i>"There is not yet enough data to allow the creation of blue carbon credits or nature credits. [...] We emphasise that we are exploring this possibility, without making any promises. [...] There is a carbon certification framework, but it will take some time before it is ready. This will require more investment at the outset, but we will do everything we can to make it happen."</i> The lack of a European framework for this type of credit is also identified as an obstacle to the creation of a regulated blue carbon market.

Actor classified as neutral has said that her/his management fund is not interested in blue carbon credits. The lack of profitability renders carbon cre-

ditions incompatible with the fund's investment criteria.

Table 6 | Below | Stakeholders adopting a neutral position on blue carbon credits.

JOB TITLE OF INTERVIEWEE	JUSTIFICATION OF THE CLASSIFICATION
Manager of an ocean impact investment fund	The manager of a blue investment fund was classified as neutral due to a lack of knowledge about these tools. <i>"I don't know anything about carbon credits, or at least I haven't taken much interest in the subject so far."</i>

Actors classified as "fairly unfavourable" are somewhat sceptical about the ability of carbon credits to finance conservation. They identify numerous limitations to the tool and prefer to explore other non-market-based mechanisms. Even within

organisations that advise on or work toward project accreditation, some interviews reveal a disconnection between participants' opinions and the objectives of their missions.

Table 7 | Below | Stakeholders with a "fairly unfavourable" position on blue carbon credits.

JOB TITLE OF INTERVIEWEE	JUSTIFICATION OF THE CLASSIFICATION
Lobbyist for the protection of the blue carbon ecosystems	The lobbyist for the protection of the blue carbon ecosystems, working closely with scientists, is somewhat sceptical about the use of blue carbon credits. <i>"Some scientists are reluctant to get involved in these kinds of issues because they don't want to</i>

Table 7 | Below | Stakeholders with a “fairly unfavourable” position on blue carbon credits.

JOB TITLE OF INTERVIEWEE	JUSTIFICATION OF THE CLASSIFICATION
	<i>give the impression that we should be focusing on this and can forget the rest. That's why I have a problem with the concept of credits, because in fact we can't promise additionality, nor can we promise the restoration of an ecosystem service."</i> This lobbyist identifies a lack of public policies for biodiversity protection and climate change that could elevate blue carbon to the status of a solution. The interviewee does not believe in the tool without real political support and is more in favour of integrating blue carbon ecosystems into the European regulatory framework in order to compel states to protect and restore their coastal ecosystems: within the Marine Strategy Framework Directive (MSFD), the Nature Restoration Law (NRL) or the Land Use, Land Use Change and Forestry (LULUCF) Regulation.
Researcher in marine chemistry and coastal management	The marine chemistry and coastal management researcher is part of a European program whose mission is to explore the potential of blue carbon sequestration on a European scale. <i>"The existing credits mechanism are not really based on sciences. they are based on encouraging people to invest and protect because the carbon sequestration potential hasn't been proved yet which is one of our job"</i> This researcher argues that current carbon accreditation mechanisms do not reflect scientific realities and emphasizes the scientific uncertainties and dangers of political manipulation of the tool. This researcher is working to explore other ways of approaching the protection and restoration of blue carbon ecosystems. <i>"We are trying to draw some win-win situation that are above carbon credits. [...] We need a new integrated management system that recognizes the interaction between the land use and the coastline but also maritime activities, fisheries..."</i>
Marine Protected Area Financing Consultant	<i>"It's often included in consulting work. Unfortunately, the issue works in reverse. [...] In theory, we should be asking ourselves, 'What are your needs on the ground in terms of conservation, and what are the best ways to finance you from an ethical standpoint? But on the other hand, those who have a form of power are the ones who will give</i>

JOB TITLE OF INTERVIEWEE	JUSTIFICATION OF THE CLASSIFICATION
	<i>money [...] and who also have a vision of how conservation should be done."</i> The interviewee incorporates the carbon tool into his consulting work but is sceptical about its ability to provide additional funding for conservation actors. <i>"We're more opportunistic than totally convinced by the idea, but the problem is that we have to capture the funding and try to make good use of it. But there are lots of people who have said that, and it hasn't necessarily worked out well. "</i> He is seeking to develop other types of tools that make carbon credits unnecessary. <i>"We had been working with managers of Marine Protected Areas in the Mediterranean to establish entrance fees and concession fees so that they could develop their own financing mechanisms without depending on national or supra-national mechanisms such as carbon credits."</i>
Carbon Contribution Mechanisms Project officer	The conflict between the institution's mission and its own perception of carbon credits also emerges in this interview. It reveals the difficulty faced by political actors when positioning themselves, and who find themselves caught between compromises. <i>"We strongly encourage the use of carbon credits to promote demand for these projects and encourage domestic offsetting. [...] But we are still trying to find a balance between economic feasibility, scientific robustness, and environmental integrity."</i> This interview was conducted with two employees from the institution. The carbon accreditation officer left before the end of the interview. Once alone, the interviewee added: <i>"The question we should be asking is, are credits the right instrument for [ecosystem conservation]? And often, in my opinion, the answer is no."</i>
Network coordinator for Posidonia seagrass beds	The interviewee gives his opinion on existing methodologies for the conservation of Posidonia seagrass beds. <i>"Carbon storage, yes, but it's not astronomical, given that today we are unable to put sufficiently profitable figures on this subject to make it a</i>

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Table 7 | Below | Stakeholders with a “fairly unfavourable” position on blue carbon credits.

JOB TITLE OF INTERVIEWEE	JUSTIFICATION OF THE CLASSIFICATION
	<i>carbon market. [...] The carbon ton was too expensive and not attractive to potential financiers. After that, it's true that it's quite a slippery subject because there's a real business behind it and it goes off in all directions. [...] We're quite cautious, [we] aren't really fully committed to the blue carbon issue. "</i> He suggests that the financial requirements for protection operations imply a price per ton of carbon that would not be attractive to financiers, which explains why there is currently only one certified project after three years of studying the method. There seems to be a fear that the carbon market will pave the way for a conservation business.

Actors classified as unfavourable are strongly opposed to carbon credits on the grounds that they are technically too difficult to implement and ecologically undesirable. The enthusiasm surrounding

this tool is seen as symptomatic of a financial framework for the conservation and ecological restoration of “blue carbon” ecosystems that is not aligned with the needs on the ground.

Table 8 | Below | Stakeholders unfavourably positioned on blue carbon credits.

JOB TITLE OF INTERVIEWEE	JUSTIFICATION OF THE CLASSIFICATION
Seagrass Research engineer	The interviewee is sceptical about the blue economy and its potential ethical pitfalls. <i>“Just because there's economics behind it, can we give it a colour? It's blue, it's green, but behind it all there is business, which means building bigger ports, deeper boats, and that encroaches on the Posidonia. [They say] it doesn't because we can move it, but that is something we have to fight against.”</i> The participant deplores the fact that conservation projects have to bow to the expectations of public and private funders or else take the risk of not being funded. <i>“When a private foundation offers us money to carry out a restoration project, and we suggest a passive action more in line with MPA-type management, that doesn't provide much opportunity for communication and doesn't correspond to the sponsor's wishes. They want the money to be directed towards actions where a diver takes some Posidonia and plants it to restore the area, which is a shame.”</i>

JOB TITLE OF INTERVIEWEE	JUSTIFICATION OF THE CLASSIFICATION
	<i>"At the same time, I see Marine Protected Area managers who lack the resources to maintain what is already working, and when we see hundreds of thousands of euros being distributed for actions that are a bit of a gamble, when they should be supporting managers, strengthening teams, improving the monitoring of integral reserves, creating new ones..."</i> This interviewee's position is considered unfavourable, although the position is not expressed directly on carbon credits but rather on blue economy as a whole, stating that <i>"I am not very familiar"</i> with the issue and <i>"not really concerned"</i> and adds, <i>"I remain cautious on this issue."</i>
Marine protected areas officer (seagrass beds)	<i>"I have the impression that we are compensating for the initial loss rather than for future carbon emissions. I see the private sector's interest in ecological restoration, but the problem is that they want ambitious targets with figures, essentially so that they can claim carbon credits. This is difficult to achieve because we are not there yet. We are much more focused on planning and on scientific research into methods, and private financiers are not interested in that."</i> The interviewee argues that the cost of protection and restoration is too high for financiers to agree to pay the real price per ton of blue carbon associated with these actions. <i>"I often think that the day financiers pick up a calculator and look at the orders of magnitude, the cost of ecological restoration, the carbon gains... We'll lose them, but I don't know why they're still interested in this. I can't really explain it."</i> The officer refuses to talk about blue carbon in relation to the protected area's seagrass beds. The interviewee advocates an ecosystem-based approach, identifying the Marine Protected Area's seagrass beds as the species that supports the entire biodiversity of the local ecosystem.

7.2 IDENTIFIED CHALLENGES ON BLUE CARBON CREDITS

Analysis of the arguments relating to blue carbon credits reveals that, regardless of their position, participants raise similar challenges – ethical, ecological, technical, regulatory and financial – when assessing the use of carbon credits in conservation financing. However, the challenges raised and emphasised diverged according to the interviewee's general view on blue carbon credits.

Those opposed express strong mistrust of carbon credits, which they perceive as based on uncertain scientific foundations, with questionable ecological effectiveness and potentially problematic ethical implications. Their discourse is based on a structural questioning of the tool, which they consider unsuitable, or even counterproductive, for addressing conservation issues.

Conversely, those in favour recognise the current limitations of blue carbon credits, but consider them surmountable. Their position is based less on a belief in the soundness of the mechanism than on the conviction that, despite everything, it represents a financing opportunity that should not be dismissed. This approach is based on the idea that carbon credits could, in the long term, contribute

to the implementation of restoration projects, provided they are subject to rigorous scientific frameworks and strengthened regulatory oversight.

This discrepancy reveals a divide between a critical interpretation based on strict ethical and ecological principles, and a more instrumental approach geared towards finding immediate solutions in the face of urgent financing needs and the imperative for companies to contribute to climate action.

The arguments concerning the challenges associated with blue carbon credits can be classified around five main themes :

→ Ethical / political (*in blue in the following tables*)

→ Technical/operational
(*in orange in the following tables*)

→ Ecological/ Naturalist
(*in green in the following tables*)

→ Economic/financial
(*in yellow in the following tables*)

→ Reglementary/legal
(*in purple in the following tables*)

Table 9 | Below | Consensual challenges on blue carbon credit

IDENTIFIED CHALLENGES	Number of "favourable" or "fairly favourable" interviewees who mentioned this challenge (Total : 7)	Number of "unfavourable" or "fairly unfavourable" " interviewees who mentioned this challenge (Total : 8)
Risk of decorrelation between the discourse associated with carbon credits and current science	3	4
Risk of making carbon credits appear as a solution in the fight against climate change	2	3
Absence of clearly defined scientific protocols for carbon sequestration or complexity of implementation	3	2
Resulting invisibility of other ecosystemic services, limited framing	5	3
Absence of capacity to finance small scale actions	2	2

Table 10 | Below | Challenges mainly identified by those unfavourably positioned on blue carbon credits

IDENTIFIED CHALLENGES	Number of "favourable" or "fairly favourable" interviewees who mentioned this challenge (Total : 7)	Number of "unfavourable" or "fairly unfavourable" " interviewees who mentioned this challenge (Total : 8)
Necessity of regulating the voluntary market to prevent its abuses	0	2

Table 11 | Below | Challenges mainly identified by those favourably positioned on blue carbon credits.

IDENTIFIED CHALLENGES	Number of "favourable" or "fairly favourable" interviewees who mentioned this challenge (Total : 7)	Number of "unfavourable" or "fairly unfavourable" " interviewees who mentioned this challenge (Total : 8)
Heterogeneity and unpredictability of carbon sequestration	3	0
Uncertainty of restoration operation success	3	1
Limitations in the potential of carbon sequestration	2	1
Lack of data available to quantify the sequestration potential	4	1
Necessity of ensuring that conservation's real costs are reflected	2	0
Absence of solutions for financing the construction and monitoring of the project through carbon credits (preliminary research, pilot projects...)	2	0

7.3 IDENTIFIED CHALLENGES CONCERNING THE CONSERVATION AND RESTORATION OF SO-CALLED BLUE CARBON ECOSYSTEMS

Analysis of the arguments for conservation and restoration reveals partial agreement on the fundamental principles of coastal and marine ecosystem conservation, such as the scientific basis for action, the need for public involvement, and the call for stable funding that is not solely mar-

ket-driven. However, these points of agreement mask differences of opinion on the specific financing arrangements.

Opponents of carbon credits express a strong attachment to conservation that is disconnected from speculative logic, insisting on the ethical,

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ecological, and operational limitations of using these instruments. Conversely, supporters of carbon credit mechanisms – although themselves aware of the many flaws in the system - see the latter as a necessity. Their support stems less from a belief in the intrinsic effectiveness of the mechanism than from a need to diversify sources of funding in the face of insufficient public funds.

This paradox illustrates a central tension: carbon

credits are not necessarily seen as an ideal tool, but as an option to be considered in a context of budgetary scarcity. It thus crystallises a conflict between two visions of conservation:

- One structured around principles of moderation, public governance and the long term;
- The other more flexible, seeking to take advantage of the opportunities offered by the market despite of the associated uncertainties.

Table 12 | Below | Consensual challenges on conservation and restoration.

IDENTIFIED CHALLENGES	Number of "favourable" or "fairly favourable" interviewees who mentioned this challenge (Total : 7)	Number of "unfavourable" or "fairly unfavourable" " interviewees who mentioned this challenge (Total : 8)
Necessity of basing restoration and conservation on scientific consensus rather than on financial and political interests	3	2
Need for conservation financing not based on market-dependent sources	3	2
Need to directly involve in conservation economic stakeholders whose activities rely on marine and coastal ecosystems, and phase out subsidies that are harmful to marine ecosystems.	3	2
Need to find long term financing for projects	3	2
Need to prioritise pressure reduction over restoration efforts	4	2

Table 13 | Below | Challenges on conservation and restoration mainly identified by those who are unfavourably positioned on blue carbon credits

IDENTIFIED CHALLENGES	Number of "favourable" or "fairly favourable" interviewees who mentioned this challenge (Total : 7)	Number of "unfavourable" or "fairly unfavourable" " interviewees who mentioned this challenge (Total : 8)
Difficulty in quantifying the impact of ecosystemic services	1	3

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Table 13 | Below | Challenges on conservation and restoration mainly identified by those who are unfavourably positioned on blue carbon credits

IDENTIFIED CHALLENGES	Number of "favourable" or "fairly favourable" interviewees who mentioned this challenge (Total : 7)	Number of "unfavourable" or "fairly unfavourable" " interviewees who mentioned this challenge (Total : 8)
Need to create business models for conservation and de-risking financial investment	0	2
Necessity to speak the same language as the financiers and adapt to their needs	1	3

Table 14 | Below | Challenges on conservation and restoration mainly identified by those favourably positioned on blue carbon credits.

IDENTIFIED CHALLENGES	Number of "favourable" or "fairly favourable" interviewees who mentioned this challenge (Total : 7)	Number of "unfavourable" or "fairly unfavourable" " interviewees who mentioned this challenge (Total : 8)
Need for public governance of environment conservation	3	1
Need for concertation on local conservation management projects	3	1
Need to diversify funding to avoid being totally dependent on public policy	3	1
Uncertainty of future public funding (context of reduction in public funding for the environmental sector)	3	1
Necessity of effective and strong protection of marine protected areas	3	1

The analysis shows a diversity of positions, expressed in the interviews, on blue carbon credits, marked by differences related to institutional logic, scales of action, and the value systems of the actors involved. This confirms that there is no clear consensus among stakeholders (Figure 6). It does not necessarily confirm that proximity with the field is correlated with scepticism about blue carbon credit mechanisms. However, there is a ten-

dency, to be viewed with precaution due to the small size of the sample, towards optimism as regards this mechanism in people working at international scale.

The nature of the structure employing the interviewees emerges as an important data to consider while analysing positioning.

While some interviewees (Carbon contribution mechanisms project officer, MPA financing

consultant) distance themselves from their organisations in their discourse, the majority of private actors are favourably positioned, while public actors are unfavourably positioned on blue carbon credits. The favourable position is often interpreted as a need to find additional funding in a context of limited financial resources for conservation activities. Public actors, who are mainly funded by public subsidies, feel less concerned, even though they are threatened by significant budget cuts.

The type of employer thus appears, in this study, to be one of the factors influencing the positioning of stakeholders, with economic stakeholders tending to push for the use of the tool. However, the analysis does not take into account the level of knowledge of the tool, which also appears to have a significant influence on the interviewees. Actors in the economic and political spheres generally demonstrate a good knowledge of the tool, while scientific actors in the field seem to have less exposure to blue carbon credits.

7.4 A DIFFERENT PERCEPTION OF TECHNICAL CHALLENGES

Whether they are for or against blue carbon credits, stakeholders recognise that the credit carbon mechanisms face many challenges (Table 9). Interviewees who are opposed to them emphasise the need for caution with regard to the tool, citing frequently mentioned ecological and ethical issues (Table 11). They note that the current mechanism is incompatible with the real financial needs of those working in the field.

"[Carbon storage capacity is not astronomical], given that today we are unable to put sufficiently profitable figures on this subject to make it a carbon market." – Network coordinator for Posidonia seagrass beds

"The day financiers pick up a calculator and look at the orders of magnitude, the cost of ecological restoration, the gains in carbon storage... We'll lose them, but I don't know why they're still interested in this. I can't really explain it." – MPA officer (seagrass beds)

On the other hand, participants in favour of the tool

are committed to developing it into a more reliable conservation financing mechanism, and focus on removing technical constraints and changing the regulatory framework (Table 10).

"If we have a robust calculation about carbon value and if the country has a regulatory regime in which that value can be monetised, then you have a regulated market into which that project can sell credits and that would be an additional revenue source for the people who improve that ecosystem." – Blue Finance expert

Some participants in favour of carbon credits are refer to them as tools which, if used wisely, can address the chronic funding shortage for conservation.

"I think it's also what we do with carbon credits. There are advantages to using carbon credits because not enough funds are being put into protecting these ecosystems, which are essential." – Researcher in monetary valuation of salt marshes.

7.5 A TOOL PERCEIVED EITHER AS A STRATEGIC LEVER OR AS A SYMPTOM OF THE FINANCIALISATION OF NATURE CONSERVATION

The "win-win" argument (both for nature and for financiers) is frequently mentioned by participants in favour of the initiative. This observation is consistent with certain analyses³¹ which point to the private sector's growing interest in blue natural capital, which simultaneously represents a window of opportunity for stakeholders involved in the conservation of "blue carbon" ecosystems.

"There is a lot of interest in blue carbon, certainly at the project level, but financiers are also very interested. They are even willing to pay the price, so they are not too afraid." – Blue carbon methodology redactor

However, the logic of economic optimisation sometimes conflicts with ecological principles, and this is reflected in the participants' comments,

Notes | 31. Friess, Daniel A., Jen Howard, Mark Huxham, Peter I. Macreadie, et Finnley Ross. 2022. « Capitalizing on the Global Financial Interest in Blue Carbon ». *PLOS Climate* 1 (8): e0000061. <https://doi.org/10.1371/journal.pclm.0000061>.

which clearly express this difficult compromise.

"The existing credits mechanism are not really based on science, they are based on encouraging people to invest and protect because the carbon sequestration potential hasn't been proved yet, which is one of our jobs". – Researcher in marine chemistry and coastal management

Between scientific robustness and economic viability, it seems difficult for political institutions pushing for the use of blue carbon credits to find the right balance.

"Another problem we encounter with these methods is that, in striving to make them as robust as possible, they become so robust that we end up with no project. Perhaps this is something we should review, to see how we can make them easier to comply with if we still don't have a project." – Carbon contribution mechanisms project officer

Some participants, whether they are for or against the tool, express the difficulty that stakeholders in blue carbon ecosystem conservation encounter in complying with the framework currently imposed by carbon credits.

"Everything is up to the project developers, i.e. the region or other entities. Even if the goal of carbon finance is for them to pay nothing, they will never make money from it." – Blue carbon methodology redactor

"In theory, we should ask ourselves, 'Well, what are your needs on the ground in terms of conservation, and how can we finance you? And from an ethical standpoint, what are the best ways to fund you? But on the other hand, those who have a form of power are simply those who will give money [...] and they also have a vision of how conservation should be done.'" – MPA financing Consultant

Intermediaries, who act as a link between financiers and actors in the field, sometimes acknowledge the "opportunistic" nature of their desire to use blue carbon credits, revealing a contradiction between conviction in the efficiency of the tool and strategic necessity in the absence of other source of funding.

"We're more opportunistic than totally convinced by the idea, but the problem is that we need to secure funding and try to make something good out of it. But lots of people have said that, and it

hasn't always worked out well." – MPA financing consultant

"We are looking into everything related to carbon certification because we can see that it is a subject that interests [those financing the operations], so we know that we need to move in that direction." – Funding and operation coordinator for mangrove

7.6 CONFRONTATION OF TWO VISIONS: ECOLOGICAL PLANNING VERSUS MARKET LEVERS

The majority of participants opposed to the proposal are financed by public subsidies and regret the fact that ecosystem conservation is increasingly being framed in terms of an economic vision of ecosystems, sometimes even beyond blue carbon credits.

"I get the private sector's interest in ecological restoration. The problem is that they want ambitious targets with figures so that they can essentially claim carbon credits. That's difficult to deliver because we're not there yet. We're much more focused on planning and scientific research into methods, and private financiers aren't interested in that." – MPA officer (seagrass beds)

*"When a private foundation offers us money to carry out a restoration project, and when we suggest a passive approach more in line with MPA-type management, it is not easy to communicate on and doesn't fit to the sponsor's wishes. They prefer directing this money toward actions where a diver collects *Posidonia* and plants it to restore the seagrass bed. It's unfortunate."* – Seagrass research engineer

Some participants associate the fact that the private sector is playing an increasingly important role in conservation financing with the public sector's disengagement in the management of commons.

"It's so hard to implement policies that can bring funding for both climate change and biodiversity protection that blue carbon seems like a great idea." – Lobbyist for the protection of blue carbon ecosystems

"In parallel [to the money going to blue carbon], I see Marine Protected Area managers who lack the resources to maintain what is already working, and when we see hundreds of thousands of euros

being distributed for actions that are a bit of a gamble, when those 1 million euros should be used to support managers, strengthen teams, improve monitoring of integral reserves, create new ones, and so on.” – MPA financing consultant

The vision advocated by those opposed to blue carbon credit mechanisms (Table 11) is a form of management led by public actors, rooted in service and sobriety. They call for stronger regulation, ecological planning, and sustainable financing through taxation or taxes on harmful activities.

“We need a new integrated management system that recognises the interaction between the land use and the coastline but also maritime activities, fisheries...” – Researcher in marine chemistry and coastal management

The issue has also been pinpointed by the European Marine Board in their policy brief on the topic³². This independent organisation recommends social governance for blue carbon ecosystems management, with collaboration between natural scientists, field engineers, and social scientists to build a management built with local people.

7.7 OFFSETTING MARKETS: THE NEW PUBLIC POLICY TOOL FOR CLIMATE AND BIODIVERSITY?

The interviewees agree that carbon credit mechanisms are not a solution per se, but the more optimistic respondents see them as a tool which could be useful (Table 10). Those who defend them believe that a well-calibrated instrument could mobilise additional funding, which is essential for “blue carbon” ecosystem conservation activities (Table 10). Some of them specify that carbon credit mechanisms should not replace economic sanctions against actors who degrade these ecosystems (Table 10). Their opponents reject them because of the framework they impose on “blue carbon” ecosystem management. They consider that with these mechanisms the public sector is

delegating its missions to the private sector, and judge this to be incompatible with sound ecosystem management (Table 11).

This divergence of views illustrates a broader controversy over the instruments used to finance environmental policies/ nature protection: some believe that the instrument is neutral, its effect depending solely on its use, while others argue that the instrument structures the political action itself.

«There is a dialectic of the instrument. The latter is both the bearer of the initial choices that shape it and an active element in the designation of situations, and hence in the restructuring of those initial choices³³. »

Godard³⁴ argues that a public policy instrument is not a neutral or passive tool. It is shaped by initial political choices and, in turn, influences how the problem is framed. Designed with certain objectives in mind, the instrument then redefines reality, restructuring the problem according to its own logic. This point was originally raised in the case of carbon quotas, and can be extended to voluntary carbon markets. The emergence of carbon credits in the European agenda of decision-makers³⁵ can be explained by a political context which is favourable to private financial involvement, based more on incentives than regulation. However, the instrument ultimately directs conservation efforts toward what is quantifiable (carbon sequestration) and competitive on the carbon market (price per ton of carbon). There is thus a risk that the actors in charge of the management of marine areas will be forced to adapt to the tools rather than adapting the tools to the real needs of marine conservation.

Notes | 32. European Marine Board. 2023. « Blue Carbon: Challenges and Opportunities to Mitigate the Climate and Biodiversity Crises | European Marine Board ». <https://www.marineboard.eu/publications/blue-carbon>.

Notes | 33. Translated from the original: « Il existe ainsi une dialectique de l'instrument. Ce dernier est à la fois porteur de choix premiers qui le façonnent et élément actif de désignation des situations et, de ce fait, de restructuration de ces choix premiers. » **Notes | 34.** Godard, Olivier. 2014. « Chapitre 4 / Instruments

Économiques, justification et normes de justice: Le cas de la politique climatique ». In *L'instrumentation de l'action publique*. Presses de Sciences Po. <https://doi.org/10.3917/scpo.halpe.2014.01.0143>. **Notes | 35.** European Commission, Ocean Pact, June 2025.

8 SURFRIDER EUROPE'S VIEWS

This study, based on the analysis of interviews conducted with various stakeholders, on the review of a large number of scientific publications and on discussions with experts, has led Surfrider Europe to develop the following recommendations on the management of so-called blue carbon ecosystems and blue carbon credits:

→ **Drastically and immediately reduce emissions at source.** Climate mitigation can be a success only if the current rate of emissions is drastically reduced - and blue carbon credit mechanisms are diverting attention and resources from this. The current global sequestration of “blue carbon” ecosystems represents less than 1% of global current emissions. Successful climate mitigation will reduce current and future pressures on so-called blue carbon ecosystems.

→ **Strengthen the protection and restoration of so-called blue carbon ecosystems** in view of the many ecological functions they fulfil (including water quality regulation, coastal stabilisation, wave energy attenuation, biodiversity support and carbon sinks) by integrating them into the existing frameworks such as the Marine Strategy Framework Directive (MSFD), the Nature Restoration Law (NRL) or the Land Use, Land Use Change and Forestry (LULUCF) Regulation in order to compel states to take actions on ecosystems within their jurisdiction.

→ **Improve the mapping and scientific understanding of “blue carbon” ecosystems:** there are still many uncertainties surrounding local carbon sequestration assessment, the assessment of the balance of other greenhouse gases in these ecosystems, and on their ability to adapt to the consequences of climate change in the different regions of Europe.

→ **Move away from/avoid relying on carbon credit mechanisms** to finance the protection and restoration of “blue carbon” ecosystems:

- Carbon credit mechanisms induce a focus on the carbon parameter alone, while the management of healthy ecosystems depends on many factors. There is a risk that the constraints imposed by carbon credit mechanisms could define management of these ecosystems, rather than the ecological parameters that should prevail.

- The carbon credit mechanisms risk favouring only large-surface conservation projects in order to ensure their rentability.

- Local communities must be concerted and actively involved in environmental conservation projects to improve the success rate of these projects and to ensure that environmental conservation does not harm human rights. The involvement of private, profit-seeking actors has already been the source of human rights violations.

→ **Stop environmentally harmful subsidies and redirect them towards environmental conservation activities.** It will then be possible to fill the funding gap for “blue carbon” ecosystems without needing to set blue carbon credit mechanisms – thus avoiding the risks and pitfalls identified in this paper.

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