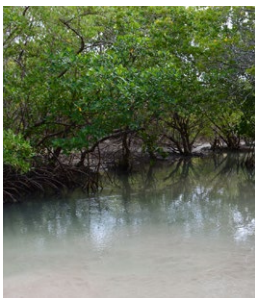
OCEAN OF SOLUTIONS

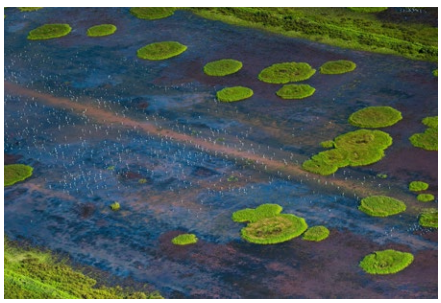
to tackle climate change and biodiversity loss









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OCEAN AND CLIMATE (2021), Ocean of Solutions to tackle climate change and biodiversity loss, Ocean & Climate Platform, p. 1-72

The Ocean & Climate Platform, who are we?

The Ocean & Climate Platform is an international network of more than 90 organisations from civil society - including NGOs, research institutes, foundations, local authorities, international organisations and private sector entities - united around a key message: "a healthy ocean for a protected climate".

The Platform aims to promote scientific expertise and advocate for a better recognition of ocean-climate-biodiversity issues by national and international decision-makers. At the science-policy interface, the Platform supports policymakers in need of scientific information and guidance in the implementation of public policies.

In addition, the Platform provides a forum for exchange and reflection: where stakeholders can build a common and holistic approach to the challenge of protecting marine ecosystems and tackling climate change. Drawing on its members' expertise, the Platform brings light to concrete solutions, based on the latest available science, to preserve the ocean, its biodiversity and the climate.

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The ocean at the heart of climate and biodiversity interactions

Central to climate and biodiversity interactions, the ocean plays a key role in regulating the climate system and in providing life support to all species on Earth. In 2019, the conclusions of the IPCC Special Report on the Ocean and Cryosphere clearly put forth the interconnection between the ocean, climate and biodiversity, specifically highlighting the crucial role marine ecosystems play in mitigating and adapting to the effects of climate change. The very same year, the IPBES Global Assessment Report on Biodiversity and Ecosystem Services identified climate change as one of the five direct drivers of change in nature, noting that its effects "are accelerating in marine [...] ecosystems[1]" including, for example, coral reefs. There is no getting around it: climate change is ocean change. As a result, we must simultaneously address the decline in ocean health, climate change and biodiversity loss to successfully overcome the greatest challenges of our time.

The ocean sits at the crossroads of all major challenges facing humanity today, and climate change and biodiversity loss are no exception. The ocean is fundamental to the sustainable world we must build as it ensures food security, human well-being, decent jobs, energy transition, a fruitful economy, a healthy ocean and a protected climate. At the heart of this "life-supporting package", the ocean greatly contributes to the 2030 Agenda, providing solutions and opportunities to draw a sustainable path between protection and production. In that regard, Sustainable Development Goals (SDG) 14 "Life Below Water", which aims to "conserve and sustainably use the oceans, seas and marine resources for sustainable development", sets out a global plan to restore respect and balance to humanity's relationship with the ocean.

Figure 1. SDG 14 connections with other SDGs (Adapted from IRD)

[1] *IPBES (2019): Global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. E. S. Brondizio, J. Settele, S. Díaz, and H. T. Ngo (editors). IPBES secretariat, Bonn, Germany.*

Driving ambition to set the ocean on a path to recovery

They [the Conventions on Climate and Biodiversity] represent first steps in the processes of addressing two of the most serious threats to the habitability of our planet. Signing them will not, in itself, be sufficient. Their real importance will depend on the extent to which they give rise to concrete actions and are followed quickly by protocols containing the special measures required to make them fully effective and the finances needed to implement them.

Maurice Strong, Secretary General of the Earth Summit, 1992

As early as 1992, world leaders were advocating for concrete actions and stressing the importance of creating the enabling conditions to implement such actions. This message remains particularly meaningful and powerful today. Now more than ever, it is essential to increase global efforts and allocate more resources towards initiatives that address both the impacts of climate change and the loss of biodiversity. Long-term objectives cannot overshadow short-term action. Internationally set goals and targets under the Paris Agreement and upcoming Post-2020 Global Biodiversity Framework are ambitious. If we are to succeed in limiting global warming to 2°C, we must live in harmony with Nature and urgently implement measures to speed up the transition towards sustainable societies and territories.

To swim the talk, the Ocean & Climate Platform aims at mobilizing civil society across sectors and around the globe to drive bold actions to set the ocean on a path to recovery, requisite to tackle climate and biodiversity challenges. It is our common responsibility to act ambitiously to strengthen ocean-based solutions, recognizing the incredible potential of marine and coastal ecosystems in acting as buffers against the impacts of climate change. For instance, natural coastal ecosystems such as coral reefs and salt marshes have the ability to significantly reduce wave heights[2]. Likewise, mangroves are able to block storm surges (i.e., the rise in sea level during storms) and dampen waves, which protects people and infrastructures near the shore[3].

While much of recent attention has focused on the vulnerability of the ocean, marine ecosystems and the populations that rely on them, we must not forget that the ocean also is a powerful source of untapped solutions and innovation. Such solutions are slowly emerging from a diverse range of sectors, providing key opportunities for concrete action.

The present report *Ocean of Solutions to tackle climate change and biodiversity loss* aims to share accessible, reliable, scalable and replicable ocean-based solutions to address the climate and biodiversity crises. Complementary to the Platform's policy recommendations "A healthy ocean, a protected climate[4]", this report is the result of the experiences and commitments of the members of the Ocean & Climate Platform in safeguarding the ocean and marine resources. More than 50 organisations put forth one of their flagship initiatives to encourage transformative change at all levels. It provides a pivot from 'problem' to 'solution', responding to policy requests and societal needs.

[2] *Ferrario, Filippo & Beck, Michael & Storlazzi, Curt & Micheli, Fiorenza & Shepard, Christine & Airoldi, Laura. (2014). The effectiveness of coral reefs for coastal hazard risk reduction and adaptation. Nature communications. 5. 3794. 10.1038/ncomms4794.*

[3] *Beck, M. Menendez, P. (2020). Protecting mangroves can prevent billions of dollars in global flooding damage every year. The Conservation. available at: https://theconversation.com/protecting-mangroves-can-prevent-billions-of-dollars-in-global-flooding-damage-every-year-132424*

[4] *OCEAN AND CLIMATE, 2019, Policy Recommendations: A healthy ocean, a protected climate. available at: https://ocean-climate.org/en/policy-recommendations-a-healthy-ocean-a-protected-climate/*

OCEAN OF SOLUTIONS REPORT: OVERVIEW OF PROJECTS

The projects featured in the *Ocean of Solutions* report are ocean-based initiatives, building on the best available science, and developed to safeguard biodiversity, while mitigating and/or adapting to the effects of climate change. These solutions were classified under four broad categories:

Protecting and restoring coastal and marine ecosystems

Promoting research, developing scientific approaches and innovation

Enhancing the transition towards low-carbon societies, territories and economies

Education, awareness-raising and advocacy

PROTECTING AND RESTORING COASTAL AND MARINE ECOSYSTEMS:

- Conservation International: Vida Manglar
- International Union for Conservation of Nature (IUCN): Blue Natural Capital Financing Facility
- Tēnaka: Blue Carbon Program
- The Nature Conservancy (TNC): Increasing Coastal Wetlands Ambition in Climate Commitments - A case study from Seychelles
- Superior Council of Scientific Investigations (CSIC): MPA-Engage
- Mediterranean Protected Areas Network (MedPAN): Interreg Med MPA NETWORKS
- French national museum of natural history (MNHN): East Antarctic Marine Protected Area
- Sulubaaï Environmental Foundation: Sea Academy: for a sustainable management of the marine resources of Shark Fin Bay (Palawan, The Philippines)
- Blue Seeds: Financing mechanisms: a guide for Marine Protected Areas
- French Office for Biodiversity (OFB): Artisan
- Ramsar Convention: Adaptive management of the Camargue's former saltworks
- The Sea People: Yaf Keru, Raja Ampat reef restoration project
- Coral Guardian: Blue Center
- Scientific Centre of Monaco (CSM) and Oceanographic Institute – Foundation Albert 1st, Prince of Monaco
- International Alliance to Combat Ocean Acidification (OA Alliance): Ocean Acidification Action Planning

PROMOTING RESEARCH, DEVELOPING SCIENTIFIC APPROACH AND INNOVATION:

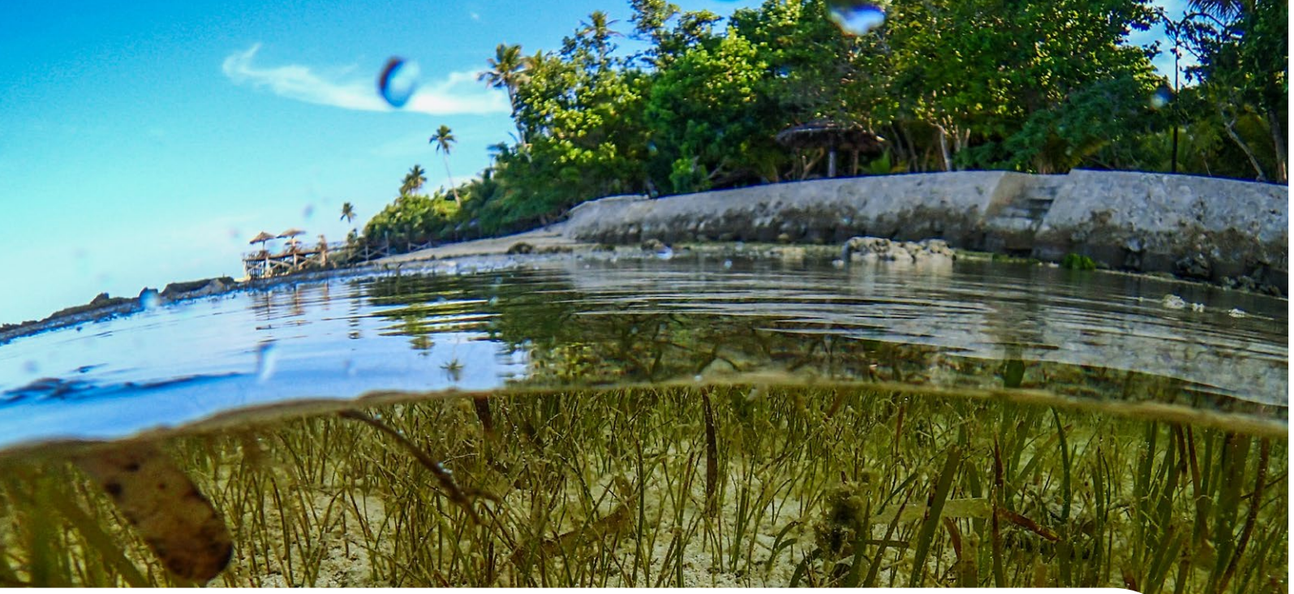
- International Atomic Energy Agency (IAEA): Ocean Acidification International Coordination Center
- Deep Ocean Stewardship Initiative (DOSI): Building Climate Change into Management of the Deep Sea
- Under The Pole: Deephope
- Océanopolis: Objectif Plancton
- Tara Foundation and the French Facility for Global Environment (FFEM): Ocean Plankton, Climate and Development
- 1.618 Programme Esprit de Velox: Esprit de Velox
- Polar Ocean (Océan Polaire): Polar Pod
- Hydrographic and Oceanographic Service of the French Navy (SHOM): Homonim: Observation and Modelling of Sea-Levels
- Mercator Ocean International: EU Copernicus Marine Service Ocean Reporting
- The French National Centre for Scientific Research (CNRS): Blue Climate Initiative (Biodiversity and Nature-Based Solutions Working Group)
- Future Earth: Ocean Knowledge Action Network
- French National Research Institute for Sustainable Development (IRD): SOOT-SEA: Impact of Black Carbon in South-East Asia
- French National Institute for Ocean Science (IFREMER): Fifty years of ecological changes: Regime shifts and drivers in a coastal Mediterranean lagoon during oligotrophication.

ENHANCING THE TRANSITION TOWARDS LOW-CARBON AND RESILIENT SOCIETIES:

- Ocean Conservancy: Shores Forward
- Communauté d'Agglomération de La Rochelle: La Rochelle Territoire Zéro Carbone (Blue Carbon axis)
- Nouvelle-Aquitaine Regional Council: Coastal and estuarine marshes regional aid regulation
- Institut France-Québec Maritime (IFQM): ARICO: Co-construction of Adaptation Scenarios to Coastal Risks of Maritime Territories.
- Conservatoire du Littoral: ADAPTO: Towards adaptative coastal management
- Ocean & Climate Platform: Sea'Ties
- wpd: Fécamp windfarm
- France Nature Environnement (FNE): Eoloscope offshore
- Consult'Ocean: Fishing and Marine Renewable Energy
- Planète Mer: PELA-Méd: Fishermen Committed to the Future of the Mediterranean Sea
- Our Fish: Frontiers in Marine Science Research Topic: How Overfishing Handicaps Resilience of Marine Resources Under Climate Change
- The Ocean Foundation: SeaGreen Sargassum Insetting
- Paul Ricard Oceanographic Institute (IOPR): New Innovative Feed for Sustainable and Environment-friendly Aquaculture
- Armateurs de France: The Blue Charter
- French Maritime Cluster (CMF): Coalition for the Eco-Energy Transition of Maritime Industries
- Surfrider Foundation Europe: Green Marine Europe
- The International Fund for Animal Welfare (IFAW): Blue speeds for shipping

RAISING AWARENESS, MOBILIZING CITIZENS AND PROMOTING OCEAN LITERACY:

- University of Brest (UBO): BLUE DiplomaSEA
- Ethic Ocean: Species Guide for seafood buyers
- World Ocean Network: Mr.Goodfish
- Institut Marin Seaquarium: ReSeaclon, fishermen and territory against marine litter
- Expédition MED: Plastic Free Mediterranean Sea - Exhibitions for Education
- Aquarium Tropical de la Porte Dorée: Ocean Festival ('Fête de l'océan')
- Tour des deux Amériques solidaire en voilier: T2A Expedition
- Neographic Digital: Blue Box, The first immersive nomadic & engaged experiences
- Nausicaa: In The Eye Of The Climate
- Global Ocean Forum: Roadmap to Oceans and Climate Action Initiative
- Institut Français de la Mer (IFM) and Innovations bleues: The Ocean, a global common



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PROTECTING AND RESTORING COASTAL AND MARINE ECOSYSTEMS

Coastal and marine ecosystems, which include marine living organisms and natural habitats, are essential for people and nature. These ecosystems offer a wide range of vital services to local populations, from livelihoods to coastline protection. The ocean protects millions of people, including by nurturing marine life, detoxifying land-based pollutants and supplying food, while contributing to climate mitigation and adaptation.

The ocean and marine ecosystems are key to mitigate climate change by sequestering and storing greenhouse gases (GHG) emissions. For example, blue carbon ecosystems (i.e., mangroves, seagrasses and salt marshes) act as carbon sinks, absorbing approximately one-fourth of the total annual anthropogenic emissions of carbon dioxide[5]. Ocean-based mitigation solutions include avoiding the loss and degradation of blue carbon ecosystems, as well as restoring them. They are crucial to deter long-term climate and ocean change (i.e., ocean acidification, ocean warming and deoxygenation), and their irreversible impacts.

Besides, the ocean also provides essential adaptation solutions to reduce and cope with the adverse effects of climate change on coastal and marine ecosystems. These ecosystems often serve as the first line of defence in protecting low-lying communities from extreme weather events and rising sea-levels. Such is the case of coral reefs, which can be powerful levers to support resilience at the local scale. On that front, local communities must be included in the effective design and implementation of the strategies that ensure coastal and marine ecosystems continue to provide key services to our health and well-being, moving towards a just and equitable transition.

These mitigation and adaptation strategies can result in multiple co-benefits that will contribute to achieving the sustainable development goals. For instance, the ocean supports hundreds of millions of jobs in tourism, fishing and transportation. Coastal and marine ecosystems therefore have a significant economic value[6]. In that regard, coral reefs alone contribute $11.5 billion a year to global tourism, benefitting more than 100 countries and providing food and livelihoods to local people[7].

This first section showcases initiatives that effectively protect and restore coastal and marine ecosystems, therefore helping the ocean to continue providing vital ecosystem services and related socio-economic benefits humanity depends on.

[5] *United Nations (2016), The First Global Integrated Marine Assessment. Section B. II.*

[6] *ibid*

[7] *Masson-Delmotte, V., P. Zhai, H.O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani et al., eds. 2019. Global Warming of 1.5°C: An IPCC Special Report on the Impacts of Global Warming of 1.5°C above Pre-industrial Levels and Related Global Greenhouse Gas Emission Pathways, in the Context of Strengthening the Global Response to the Threat of Climate Change, Sustainable Development, and Efforts to Eradicate Poverty. Intergovernmental Panel on Climate Change.*

CONSERVATION INTERNATIONAL

Vida Manglar: Blue Carbon project in the Morrosquillo Gulf in Cispata, Colombia

The Vida Manglar blue carbon project addresses the expansion of agricultural lands, unsustainable tourism infrastructure, and increased logging, by conserving and restoring about 11,000 hectares of natural mangroves forests. The project is an inter-institutional and regional community initiative, which seeks certification of actions related to the reduction of carbon emissions due to unplanned deforestation (AUDD) and the conservation of coastal wetlands (CIW).

Budget:
N/A

Funding sources:
Public, private and multilateral funding

Scale:
Local

Geographical location:
Cispata, Gulf of Morrosquillo, Colombia

Partner(s):
Instituto de Investigaciones Marinas y Costeras, Corporación Autónoma Regional de los Valles del Sinú y del San Jorge; CARSUCRE; Fundación Omacha; South Pole Carbon Asset Management Ltda;

Project duration:
2015-2045

SDG 13

MITIGATION & ADAPTATION

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OBJECTIVES

Vida Manglar hopes that through efforts, like Cispata, they will not only help to preserve and restore blue carbon ecosystems, but develop learnings that can be shared with other like-minded communities and countries in support of a global endeavor to conserve and restore coastal blue carbon ecosystems - ambitious and tangible steps forward in demonstrating how nature-based solutions can contribute to our economy and protect the planet.

MAIN ACTIVITIES

The main activities consist in mangrove restoration, avoided deforestation and biodiversity conservation of three key species - Manatees, Needle crocodiles and Otters – all while providing direct and indirect benefits to 4,000 people living in or around the project area (e.g. food, firewood, coastal protection and livelihoods). Conservation International uses Cispatá mangroves (i.e. the sale of carbon offsets) to develop a long-term sustainable financing strategy for the region. This will provide a degree of financial security, and the initial funding needed to develop a sustainable ecotourism program and improve fishing practices in the region.

RESULTS & IMPACTS

Overall, the project is planned for 30 years (2015 – 2045), and Vida Manglar expects to reduce a total of 939,296 tCO_2e. The project is receiving credits for reducing deforestation in about 7,561 ha of mangrove forests, but the funding generated by the sale of credits (via the international voluntary market) will contribute to finance the management and protection of the entire 11,800 ha MPA. .

MITIGATION & ADAPTATION

- Promote the restoration of mangroves through a carbon crediting project;
- Conserve key biodiversity in the area and enhance mangroves' carbon sequestration capabilities;
- Build local communities' capacities, including the adaptation to the impacts of climate change.

WHAT MAKES IT INNOVATIVE

The Vida Manglar project is the first in the world to use the new Verified Carbon Standard (VCS) blue carbon modules to generate credits from a blue carbon ecosystem, it is the first REDD+ project in Colombia developed with mangroves, and the project is achieving Climate, Community & Biodiversity (CCB) benefits.

INTERNATIONAL UNION FOR CONSERVATION OF NATURE (IUCN)

Blue Natural Capital Financing Facility

The Blue Natural Capital Financing Facility (BNCFF) breaks the well-known cycle of economic degradation associated with business success by assisting coastal and marine projects that generate economic as well as positive social and environmental returns, with funding and technical assistance. With a particular focus on climate change, sustainable blue economy and Nature-based Solutions, the BNCFF is a tool that offers meaningful and lasting positive and transformative impact for the sustainable, long-term management of coastal and marine ecosystems needs.

Budget:
2.34 M CHF (2,13M €)

Funding sources:
Public and philanthropic

Scale:
Global

Geographical location:
Global

Partner(s):
Ministry of Environment, Climate and Sustainable Development, Government of Luxembourg, Total Foundation

Project duration:
2018 - 2021

SDG

MITIGATION & ADAPTATION

OBJECTIVES

Blue Natural Capital projects aim to protect, restore and enhance natural ecosystems to better support climate change adaptation and mitigation efforts whilst conserving biodiversity and other vital coastal and marine natural resources. In line with that, the BNCFF supports the development of sound, investable blue natural capital projects with clear ecosystem service benefits, based on multiple income streams and appropriate risk-return profiles. The BNCFF assists project partners in assessing, preparing and structuring opportunities into bankable investments. This helps to reduce the risk of natural capital investments.

MAIN ACTIVITIES

The main activities are: (1) preparing a pipeline of investable projects in natural coastal systems; (2) ensuring a sound environmental and social vetting process to measure and inform on positive impacts and minimize potential risks; (3) advising on best-practices and standards for sound implementation of Nature-based Solutions in coastal environments; (4) supporting project developers towards the development of bankable investment opportunities based on blue natural capital; (5) providing technical assistance to project developers; and (6) developing blue prints based on BNCFF funded projects.

RESULTS & IMPACTS

The BNCFF supports 7 projects: (1) Blue carbon ecosystem conservation projects in Indonesia, Kenya and Zanzibar; (2) "Net-works" (project to collect fishing nets and to sustainably produce seaweed); (3) Selva Shrimp in Indonesia (aquaculture project); (4) "Blue Alliance for the Oriental Mindoro Marine Protected Areas" in the Philippines; and (5) "SeatechEnergy" in Indonesia (seaweed farming project).

MITIGATION & ADAPTATION

- Through the protection, restoration and conservation of coastal ecosystems the BNCFF supports climate change adaptation and mitigation efforts whilst conserving biodiversity and other vital coastal and marine natural resources.

WHAT MAKES IT INNOVATIVE

The BNCFF project adopts a holistic approach combining inclusive economic growth with ecosystem conservation, and has the potential to bring the necessary paradigm shift in society. It aspires to use an innovative, blended financing model to access different revenue streams and attract new investors.

Protecting and restoring coastal and marine ecosystems

TĒNAKA

Tēnaka Blue Carbon Program

Tenaka is a social business whose mission is to help corporations willing to shift to regenerative businesses, i.e. committing to promote net-positive business for Planet and People. Alongside the Coral Restoration Program, the Tenaka Blue Carbon Program is now focusing on mangrove restoration at scale through carbon compensation mechanisms and scientific impact measurement tools.

Budget:
80k€

Funding sources:
Private (tailor-made Corporate Responsibility Programs)

Scale:
Subregional

Geographical location:
Malaysian Borneo

Partner(s):
DoDo brand (Kering group) and Dataiku

Project duration:
2020-2025

SDG

MITIGATION & ADAPTATION

OBJECTIVES

Tenaka is to restore 12ha of damaged mangrove forests in 2021, which will sequester more than 10 000 tons of CO_2. This program will also benefit more than 13 000 different species of marine and terrestrial wildlife, and will be carried out by more than 30 different scientific and local partners. If Covid-19 allows it, Tenaka will also work alongside local schools with the objective of bringing +600 students onsite to help with plantation and scientific monitoring activities, while learning more about the crucial role of mangrove forests.

MAIN ACTIVITIES

Tenaka mainly conducts blue carbon ecosystem restoration and awareness-raising activities. The plantation activities are split between the nurseries, where mangrove seedlings are raised during 6 to 12 months, and the plantation site where the mature seedlings are to be planted. Scientific monitoring is a key activity to be carried out by our scientific partners alongside volunteers and students.

RESULTS & IMPACTS

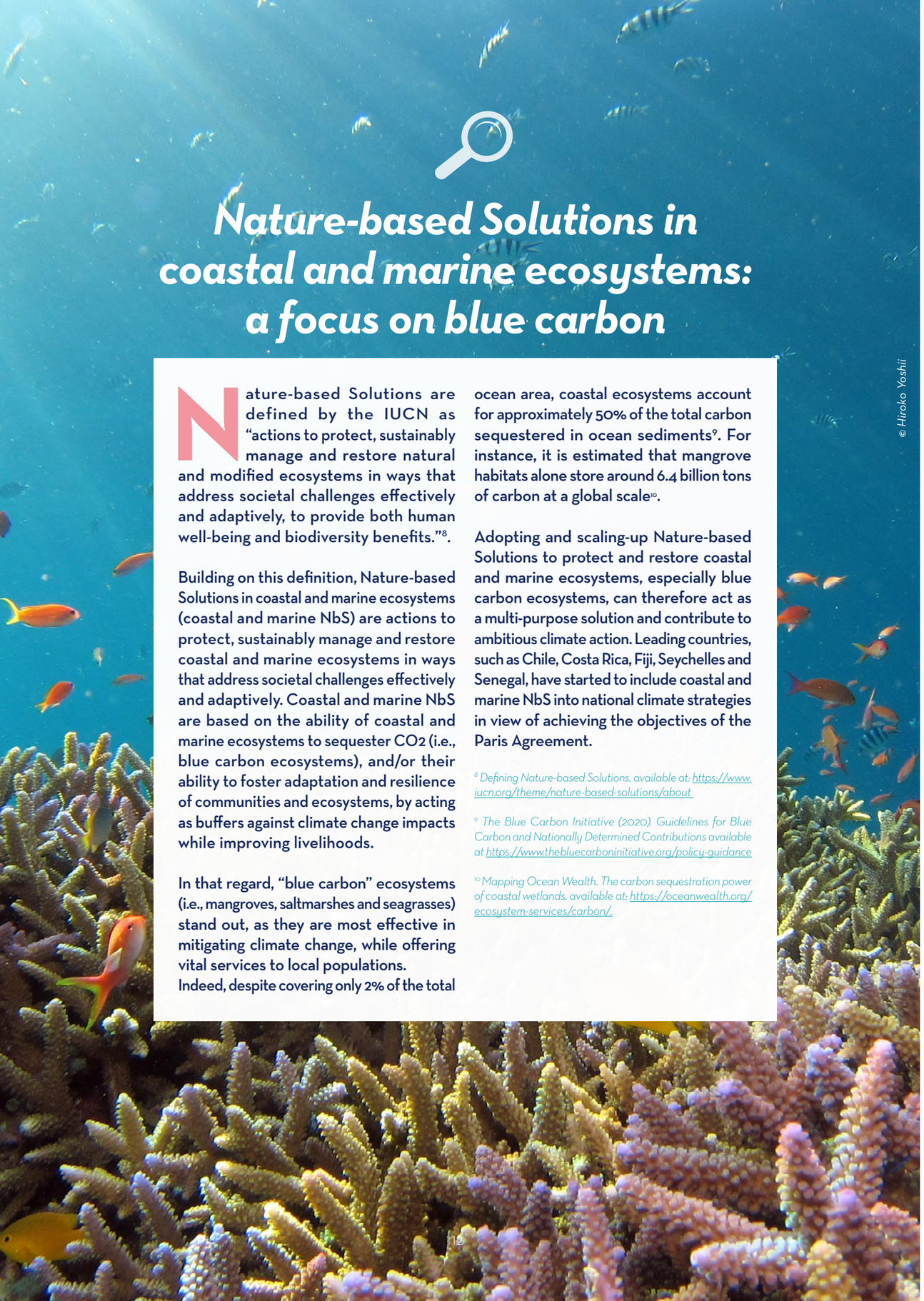
The Tenaka Science® platform uses data visualization tools to make scientific and impact measurements data available to Tenaka's clients and their communities. Key data incorporated in the Impact Reporting hinge around biodiversity metrics, CO_2 and associated greenhouse gases sequestration.

MITIGATION & ADAPTATION

- Regenerate coastal habitats to mitigate the climate crisis, as the impacts of carbon sequestration by these habitats is 3 to 5 times more important than terrestrial forests;
- Enhance adaptation co-benefits for local population (e.g. biodiversity, jobs, livelihoods, protection against climate disaster);
- Provide local solutions for the adaptation of coastal communities (i.e. among the most vulnerable to the climate crisis).

WHAT MAKES IT INNOVATIVE

Tenaka believes businesses have the power to regenerate ecosystems and have a duty to repair damages made to the ocean. The model is set to convince companies in many different fields to invest in ecosystem restoration.



Nature-based Solutions in coastal and marine ecosystems: a focus on blue carbon

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Nature-based Solutions are defined by the IUCN as "actions to protect, sustainably manage and restore natural and modified ecosystems in ways that address societal challenges effectively and adaptively, to provide both human well-being and biodiversity benefits."[8].

Building on this definition, Nature-based Solutions in coastal and marine ecosystems (coastal and marine NbS) are actions to protect, sustainably manage and restore coastal and marine ecosystems in ways that address societal challenges effectively and adaptively. Coastal and marine NbS are based on the ability of coastal and marine ecosystems to sequester CO_2 (i.e., blue carbon ecosystems), and/or their ability to foster adaptation and resilience of communities and ecosystems, by acting as buffers against climate change impacts while improving livelihoods.

In that regard, "blue carbon" ecosystems (i.e., mangroves, saltmarshes and seagrasses) stand out, as they are most effective in mitigating climate change, while offering vital services to local populations. Indeed, despite covering only 2% of the total ocean area, coastal ecosystems account for approximately 50% of the total carbon sequestered in ocean sediments[9]. For instance, it is estimated that mangrove habitats alone store around 6.4 billion tons of carbon at a global scale[10].

Adopting and scaling-up Nature-based Solutions to protect and restore coastal and marine ecosystems, especially blue carbon ecosystems, can therefore act as a multi-purpose solution and contribute to ambitious climate action. Leading countries, such as Chile, Costa Rica, Fiji, Seychelles and Senegal, have started to include coastal and marine NbS into national climate strategies in view of achieving the objectives of the Paris Agreement.

[8] *Defining Nature-based Solutions. available at: https://www.iucn.org/theme/nature-based-solutions/about*

[9] *The Blue Carbon Initiative (2020). Guidelines for Blue Carbon and Nationally Determined Contributions available at https://www.thebluecarboninitiative.org/policy-guidance*

[10] *Mapping Ocean Wealth. The carbon sequestration power of coastal wetlands. available at: https://oceanwealth.org/ecosystem-services/carbon/.*

THE NATURE CONSERVANCY (TNC)

Increasing Coastal Wetlands Ambition in Climate Commitments: A case study from Seychelles

Seychelles has committed to fully map the extent of seagrass and mangrove habitats within its Economic Exclusive Zone, in turn ascribing a value to the carbon stored within such habitats. The Seychelles is committing to protecting coastal wetlands and will integrate blue carbon values of seagrass meadows within its next Nationally Determined Contribution and increase ambition by putting in place protections for at least 50% of Seychelles seagrass and mangrove ecosystems by 2025, and 100% of seagrass and mangrove ecosystems by 2030.

Budget:
N/A

Funding sources:
Private and Public

Scale:
Local

Geographical location:
Seychelles

Partner(s):
Seychelles Conservation & Climate Adaptation Trust (SeyCCAT), Pew Charitable Trusts

Project duration:
2020-2022

SDG

MITIGATION & ADAPTATION

© SeyCCAT/Charlene Albert

OBJECTIVES

The project objectives are twofold: (1) Generate data on blue carbon ecosystems in Seychelles by applying the latest remote-sensing methods and carbon assessment techniques to develop a field-validated map of the extent of seagrass meadows and associated carbon stocks in Seychelles waters; and (2) Include ambitious blue carbon targets into the Nationally Determined Contribution.

MAIN ACTIVITIES

Main activities include: (1) supporting the creation of a field-validated map of the extent of seagrass meadows and associated carbon stocks in Seychelles waters, by using the latest remote-sensing methods and carbon assessment techniques; and (2) supporting the drafting of the Seychelles' updated 2021 NDC to signal wider ambition and to identify clear and transparent contributions. The project also contributes to including the carbon stock value of these seagrass ecosystems in other future mitigation policies.

RESULTS & IMPACTS

Seychelles has recently announced its commitments to protect at least 50% of Seychelles seagrass and mangrove ecosystems by 2025, and 100% of seagrass and mangrove ecosystems by 2030, subject to external support, reflecting their value for mitigation, adaptation and resilience. These targets, by going beyond reporting of carbon stocks in blue carbon ecosystems, will solidify Seychelles' leadership in coastal wetland protection and inspire other states to make similar commitments.

MITIGATION & ADAPTATION

- Integrate blue carbon targets in the Seychelles' Nationally Determined Contribution;
- Increase resilience from coastal communities;
- Enhance strong mitigation co-benefits from blue carbon ecosystems.

WHAT MAKES IT INNOVATIVE

Despite growing recognition of the values provided by seagrass, the extent of their coverage is far less well known. Various localized mapping efforts have occurred globally, but no country has committed to mapping at the scale its full EEZ, which in the case of Seychelles represents a significant undertaking.

SUPERIOR COUNCIL OF SCIENTIFIC INVESTIGATIONS (CSIC)

MPA-Engage

In the context of climate change seriously threatening coastal ecosystems and the services that they provide they provide to Mediterranean societies, it is necessary to tackle these impacts. Marine Protected Areas (MPAs) are important for preserving and enhancing socio-ecological resilience, however there is a lack of specific adaptation plans in most MPAs. MPA-Engage stands for Engaging Mediterranean key actors in Ecosystem Approach to manage MPAs to better face climate change, and will help address the impacts of climate change while creating specific adaptation plans.

Budget:
About 3 million €

Funding sources:
Public

Scale:
Regional

Geographical location:
Mediterranean

Partner(s):
14 partners including the management bodies of 7 Marine Protected Areas (MPA)

Project duration:
2019-2022

SDG

MITIGATION & ADAPTATION


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OBJECTIVES

The overall objective of the MPA-Engage project is to support and promote the role of Mediterranean MPAs as nature-based solutions for the implementation of adaptation and mitigation actions. The project will produce adaptation plans for 7 MPAs and will put the Mediterranean Sea at the forefront of marine conservation in the face of climate change. To do so, MPA-Engage will involve the main stakeholders of each MPA: managers, socio-economic actors – recreational diving sector and artisanal fishing, local and regional authorities, research institutions and the general public.

MAIN ACTIVITIES

MPA-Engage's main activities are: (1) improving the knowledge on marine ecosystems and their inter-linkages with human activities to face the impact of climate change; (2) fostering the implementation and development of standardized tools for monitoring schemes (e.g. vulnerability assessments, monitoring schemes and adaptation plans in Mediterranean MPAs and small-scale and recreational fishery sectors); (3) promoting stakeholder engagement through participatory approaches; and (4) mainstreaming developed and upgraded climate policies in the Mediterranean Sea.

RESULTS & IMPACTS

Development of socio-ecological vulnerability tool and trainings (webinars with +100 participants), development of 11 harmonized monitoring protocols and training (webinars +250 participants), development of citizen science strategies for MPAs and training (webinar +150 participants), consolidation of T-MED-Net platform +18 million temperature samples secured, development of the Marine Heat Wave tracker near real time in the Mediterranean, temperature data visualization services at local, ecoregion and regional scales, 23 MPAs in the network, +70 sites running monitoring activities, +1000 mass mortality records in the mass mortality events database

MITIGATION & ADAPTATION

- Identify actions to address adaptation and mitigation of the ecological and socio-economic systems;
- Upgrade climate policies in the Mediterranean Sea and increase the effectiveness of MPAs;
- Develop adaptation plans in Mediterranean MPAs;
- Enhance knowledge on marine ecosystems to better face the impacts of climate change.

WHAT MAKES IT INNOVATIVE

MPA-Engage seeks to enhance and improve the management of Mediterranean MPAs to face climate change and ensure their role as effective nature-based solutions. It also creates specific adaptation plans that most MPAs do not have.

Protecting and restoring coastal and marine ecosystems

MEDITERRANEAN PROTECTED AREAS NETWORK (MEDPAN)

Interreg Med MPA NETWORKS

Lead partner

When effectively managed, marine protected areas (MPAs) are one of the most effective tools for the conservation of marine biodiversity. The MPA NETWORKS project aims at improving marine biodiversity protection by strengthening MPA management through networking activities at different levels, testing and capitalising solutions, transferring knowledge and building capacity.

Budget:
2,664 millions €

Funding sources:
Public and private

Scale:
Regional

Geographical location:
Mediterranean

Partner(s):
9 partners including MPA managers

Project duration:
2019-2022

SDG

MITIGATION & ADAPTATION


© Parc national de Brijuni, Croatie

OBJECTIVES

The project aims to boost the effectiveness of MPAs through strong, active and connected networks of MPA managers. It provides sustainable solutions to key challenges requiring a supra-MPA approach, considering MPA management effectiveness, Small scale fisheries management, Mobile species conservation and sustainable financing.

MAIN ACTIVITIES

The network's main activities include: (1) Designing a new collaborative process to strengthen and connect networks at national and regional levels on key topics; (2) Setting up concrete actions through 9 pilot projects in 7 countries; (3) Building skills and capacities of MPA actors; (4) Building strong alliances of sites sharing similar challenges; (5) Developing a new Post 2020 Roadmap for Mediterranean MPAs and a coordinated MPA voices with shared recommendations to support pro-MPA policy-making.

RESULTS & IMPACTS

Pilot projects have started to test methodologies to improve fisheries management, sustainable financing and mobile species conservation. First training modules have been implemented for MPAs. National and regional thematic networks of MPA managers have started to be reinforced and connected. The process to develop a Post 2020 Mediterranean MPA Roadmap has started.

MITIGATION & ADAPTATION

- Effectively manage marine protected areas to strengthen their role as marine spatial management tool, therefore supporting ecosystem-based adaptation and mitigation.

WHAT MAKES IT INNOVATIVE

Networks of MPA managers enable working on MPAs with a new dynamic. Networking activities facilitate exchanges, capitalization and increased knowledge. Through joined forces of networks and a dynamic bottom-up approach linking experience on the ground and decision-making processes, MPA voices are coordinated to support policy-making at all levels.

FRENCH NATIONAL MUSEUM OF NATURAL HISTORY (MNHN)

East Antarctic Marine Protected Area

The Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) has committed to designing a representative network of Marine Protected Areas in the Southern Ocean (i.e. Mac Robertson, Drygalski and D'Urville Sea-Mertz) to ensure long term protection of all identified habitats, biodiversity and ecological processes. East Antarctic Marine Protected Area (EAMPA) is one of the identified areas that will contribute to the protection of pelagic and benthic ecoregions used as proxies, in a data poor region, to biodiversity. Its design and objectives have been reviewed and await consensus from CCAMLR Members.

Budget:
3 500 k€

Funding sources:
Public

Scale:
Subregional

Geographical location:
D'Urville Sea, Mac Robertson and Drygalski, Antarctica

Leading partner(s):
University of La Sorbonne, Australian Antarctic Division

Other partner organisation(s):
The French Office for Biodiversity and The French Polar Institute Paul Emile Victor

Project duration:
2007 - 2021

SDG 13

MITIGATION & ADAPTATION


© IPEV - Cyril Gallut

OBJECTIVES

The objectives are: (1) To include every type of habitat and ecosystem (and the associated biodiversity) that occurs in the East Antarctic; (2) To conserve the biodiversity of the East Antarctic; (3) To protect key ecosystem processes, habitats and species, including nursery grounds for Antarctic krill, Antarctic toothfish, and silverfish; (4) To provide reference areas for studying the impacts of fishing and ecosystem changes (e.g. climate change); (5) To allow the MPA to be used for research and monitoring; (6) To allow activities consistent with providing for multiple use within the individual MPAs when those activities will not impact on the objectives of those MPAs.

MAIN ACTIVITIES

Main activities include: leading scientific expeditions (e.g. 2007-2008 CEAMARC expedition, and 2009-2017 REVOLTA expeditions), planning marine protected areas deployment (e.g. 2011 MPA-workshop in Brest), and drafting policy recommendations (e.g. First EAMPA design submitted at CCAMLR Scientific Committee in 2011, First presentation to the Commission of the EAMPA draft Conservation Measure in 2012, A reduced version of the EAMPA draft Conservation Measure is presented to the Commission in 2014 and Major reassessment of EAMPA Conservation Measure in 2019).

RESULTS & IMPACTS

In 2011, CCAMLR adopted a framework for establishing marine protected areas in the form of a conservation measure and in doing so, the Commission committed to create a representative system of MPAs in the CCAMLR area. Besides, scientific progress were made, such as refining the work on the bioregionalisation of East-Antarctica and on the Ecoregionalisation of D'Urville Sea using demersal fish D'Urville Sea bird colonies included in the CCAMLR Ecosystem Monitoring Program to monitor Climate Change effects on long term biological series of observations.

MITIGATION & ADAPTATION

- Protect key ecosystems, including nursery grounds for krill;
- Create an area linked to other MPAs around Antarctica where human exploitation will be reduced;
- Enhance scientific monitoring to help assess species resilience in the face of Climate Change.
- Study the impacts of fishing and ecosystem changes (e.g. climate change);

WHAT MAKES IT INNOVATIVE

The Southern Ocean is a data poor area and designing MPAs in such an area has proved to be difficult. To overcome this issue, the MNHN developed, in collaboration with other funding partners, proxies to habitat diversity and the associated biodiversity. A reduced set of variables proved to be sufficient to describe ecoregions, pelagic and benthic.

Protecting and restoring coastal and marine ecosystems

SULUBAAÏ ENVIRONMENTAL FOUNDATION

Sea Academy: for a sustainable management of the marine resources of Shark Fin Bay (Palawan, The Philippines)

The project focuses on ecosystem preservation, education & training, economic development and scientific research. The core of the project is the creation of 3 participative MPAs managed by local communities. Scientific innovating techniques are used to monitor the MPAs. Active restoration on corals and fish communities respectfully with a new-designed artificial reef and post-larvae capture-culture-release. An educational program will make students discover their marine ecosystems and understand how to protect them.

Budget:
1 700 k€

Funding sources:
Public and private

Scale:
Local

Geographical location:
Shark Fin Bay, Palawan, The Philippines

Partner(s):
CRIOBE, Andromede Oceanologie, Chorus Research Institute, Ecocean, Western Philippines University, Marine Science Institute

Project duration:
2021-2024

SDG 2, 4, 8, 11

MITIGATION & ADAPTATION


© ECOCEAN

OBJECTIVES

The overall goal is to restore the marine biodiversity and restock the fish population of Shark Fin Bay for the benefits of local populations. The main stake is food security since local populations critically depend on marine resources for their protein income. The objectives are: (1) to preserve ecosystems by creating 3 participative marine protected areas (MPAs) of 50 ha each; (2) to restore coral reefs and fish populations inside the MPAs and expecting spill-over effect; (3) to teach and train students and adults for a sustainable management of marine resources; (4) to share the experience and replicate it in Palawan and South Asia.

MAIN ACTIVITIES

Scientific monitoring uses passive acoustic, photogrammetry environmental DNA, combined with the standard visual census protocol to evaluate MPAs. Besides, activities for the restoration of marine ecosystems include managing artificial reefs where the reefs were damaged by blast fishing and capture-raising-release of wild post-larvae to repopulate the fish communities, as well as raising some of the common post-larvae captured for local food consumption. In addition, the Sea Academy educational program is offered to the school to bring students in the marine ecosystems and provides adapted courses and activities to discover their marine environment.

RESULTS & IMPACTS

Many activities were delayed because of the COVID-19 pandemic. However, to date the MPAs have been voted with the villages, the schools are involved in the educational program and the Sea Academy is now building the necessary facilities to start the restoration program. Expected results within 3 years include: (1) 3 new MPAs (150 ha) managed by Sandoval, Silanga and Depla barangays; (2) 600 ha of marine environment watch; (3) 120 000 juvenile fish released in each MPA; (4) 150 000 juvenile culture fish in each barangay; (5) 600 children participant of the Sea Academy educational program; and (6) 15 created jobs with job training for local people.

MITIGATION & ADAPTATION

- Provide a sustainable model of development to maintain and restore the degraded coastal ecosystems;
- Reduce the fishing and destructive pressures on coastal ecosystems;
- Provide local jobs to avoid local people moving to cities etc;
- Organize activities like mangrove planting and clean up with local communities.

WHAT MAKES IT INNOVATIVE

This project creates a network of participative MPAs, it involves public and private funds and partners. It has a complete approach through protection, restoration and education activities, and provides in a very short term all the tools for the local population to keep the activities running. It is easily replicable.

Towards climate-smart designs of Marine Protected Areas:

Marine Protected Areas (MPAs) are an area-based management tool with biodiversity conservation as primary objective. In addition to restoring fish abundance and biomass[11], they provide a wide range of other long-term ecological and socioeconomic benefits, such as habitat protection, export of eggs, larvae and adults in fishing grounds and increase in fishing yields[12]. As such, MPAs play a key role in rebuilding marine populations and habitats, which contribute to the resilience of both marine populations and coastal communities to climate change[13].

The effectiveness of MPAs at delivering positive outcomes is mitigated by various drivers. MPAs' level of protection, management, age and size play key roles[14, 15]. In particular, bigger and older[14,15] and those being fully or highly protected[16 17], are the most effective.

MPA effectiveness will also be affected by future ocean conditions. Climate-smart MPAs should be designed in ways to cope with future climatic conditions. This is achieved for example by choosing the MPA's location based on climate vulnerability criteria, or by creating networks of MPAs which account for future changes in the ocean's connectivity and migration corridors[18, 19]. Implementing such designs requires improved dialogue between the scientific community, policy-makers and local stakeholders, including Indigenous and local knowledge holders.

Additionally, MPAs serve as an invaluable source of information by providing a reference to how marine ecosystems react to climate change in the absence of human disturbance. By phasing out additional anthropogenic pressures, they can be used by the scientific community as "sentinels of climate change, laboratories to monitor the effects of climate change and areas where to develop new management tools"[20].

[11] *Lester et al. (2009). Biological effects within no-take marine reserves: a global synthesis*

[12] *Di Lorenzo et al. (2020). Assessing spillover from marine protected areas and its drivers: A meta-analytical approach.*

[13] *Roberts (2017). Marine reserves can mitigate and promote adaptation to climate change.*

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[16] *Zupan et al. (2018). Marine partially protected areas: drivers of ecological effectiveness. Front. Ecol. Environ. 16, 381–387. https://doi.org/10.1002/fee.1934.*

[17] *Bárbara Horta e Costa (2016). A regulation-based classification system for Marine Protected Areas (MPAs)*

[18] *Wilson (2020). Incorporating climate change adaptation into marine protected area planning*

[19] *Mc Leod (2009). Designing marine protected area networks to address the impacts of climate change.*

[20] *Ocean and Climate Platform (2019). High-Level Scientific Conference: From COP21 towards the United Nations Decade of Ocean Science for Sustainable Development (2021-2030). Conference Report. Paris, France.*

BLUE SEEDS

Financing Mechanisms: a Guide for Marine Protected Areas

Only 12% of the financial needs of MPAs are covered by their current resources. Drawing on its experience in the field and its multidisciplinary approach, Blue Seeds developed a practical guide presenting funding mechanisms adapted to MPAs. This guide offers the opportunity to marine conservation stakeholders to increase their positive impact in the Mediterranean Sea. By making it available to everyone free of charge, BlueSeeds hopes to inspire new, lasting initiatives with strong positive ecological, social and economic effects.

Budget:
100k €

Funding sources:
Private

Scale:
Regional

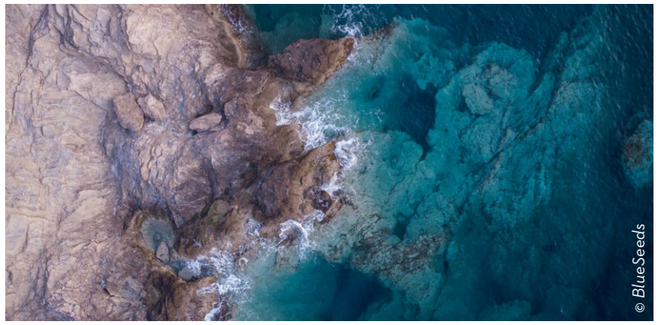
Geographical location:
Mediterranean

Partner(s):
6 partners including MedPAN and the MAVA Foundation

Project duration:
2020-2022

SDG

MITIGATION & ADAPTATION



OBJECTIVES

1) Methodology to develop a business plan and a financial strategy. A lot of MPAs do not have time or skills to develop tools that link their management plan and environmental objectives to financial figures. Many business plans are prepared by consultants, and once the contract is over, MPAs do not have the skills to use it. BlueSeeds wants to empower MPA managers on those finance issues. (2) Methodology to implement financing mechanisms for MPAs (e.g., revolving fund, visitor fees, concession fees). The guide provides MPA managers with a concrete toolbox, and Blue Seeds will support them with the implementation of financing mechanisms.

MAIN ACTIVITIES

After writing (for 9 months) and then promoting this guide through technical webinars, BlueSeeds started to look for marine protected areas to support the implementation of these financing mechanisms; and launched calls for expressions of interest for marine protected areas in the Mediterranean in May 2021.

RESULTS & IMPACTS

The guide was recently released, and was already downloaded over 370 times. Blue Seeds organized a webinar joined by 220 people from all over the world, which shows a great interest from MPAs on that topic. Impacts will be further assessed through the practical implementation of the mechanisms onto pilot sites. Blue Seeds also launched a first call for expression of interest in May 2021 to identify pilot sites for the practical implementation of the first mechanism introduced in the guide, more will follow this same year.

MITIGATION & ADAPTATION

- Make MPA more resilient by diversifying their source of revenue to reduce their financial gap;
- Reduce the financial uncertainty weighing on the shoulders of MPA-managers to help them better focus on actual conservation activities, hence being more impactful on these activities..

WHAT MAKES IT INNOVATIVE

This guide is a practical and concrete tool dedicated to help MPA managers to implement financing mechanisms. With its step-by-step approach, Blue Seeds wants to empower MPA managers and help them consolidate a sustainable financial strategy and a solid business plan, in order to achieve their conservation objectives over the long term.

FRENCH OFFICE FOR BIODIVERSITY (OFB)

Artisan

The Artisan project aims to establish a framework to further encourage the development of adaptation nature-based solutions at all levels, therefore increasing the resilience of territories to climate change. The EU-funded Artisan project was created in relation to France's *Biodiversity Plan* and France's National *Climate Adaptation Plan.*

Budget:
16,7 millions €

Funding sources:
Public

Scale:
Global

Geographical location:
France including overseas territories

Partner(s):
29 partners, including the IUCN French Committee

Project duration:
2021-2028

SDG

MITIGATION & ADAPTATION


© Cyrille Barnérias

OBJECTIVES

The Artisan project aims to increase the resilience of territories to climate change. To that end, it has three main priorities: (1) Demonstrate and showcase the potential of nature-based solutions; (2) Raise-awareness and build stakeholders capacity; (3) Support adaptation nature-based solutions projects in France (including overseas). The project targets elected representatives, local authorities, engineering and consulting firms, economic stakeholders and civil society.

MAIN ACTIVITIES

Main features of the project include: (1) A pilot site in Martinique to restore Mangroves to limit marine submersion; (2) A national network on coastal issues looking at risks of submersion, erosion and impacts of climate change on fisheries; (3) The diagnosis of impacts of climate change on fisheries and aquaculture and the link with nature-based solutions; (4) A methodological guide on tourism (including coastal tourism) with regards to nature-based solutions; and (5) All others aspects that could come back from the ground thanks to the national network.

RESULTS & IMPACTS

The French office for Biodiversity has selected the 10-pilote sites, and identified key stakeholders. It has designed the main features of the project. Related events will be convened including forums, award ceremonies and workshops.

MITIGATION & ADAPTATION

- Develop nature-based adaptation solutions to increase the resilience of territories to climate change;
- Place marine biodiversity at the heart of French climate mitigation and strategies;
- Enhance the potential mitigation co-benefits of adaptation nature-based solutions;
- Raise-awareness about climate impacts on coasts and coastal communities.

WHAT MAKES IT INNOVATIVE

Through the promotion of nature-based solutions, the Artisan project strengthens adaptation strategies, while providing mitigation co-benefits. It places biodiversity at the heart of French climate adaptation and mitigation strategies, enhancing synergies between climate and biodiversity action.

Protecting and restoring coastal and marine ecosystems

RAMSAR CONVENTION

Adaptive management of the Camargue's former saltworks

The main aim is to manage 6.500ha of former saltworks as «Nature-based Solutions» in a context of strong coastal erosion and increasing threats due to sea level rise. The ecological restoration of this site, through Ecosystem-based Adaptation and Disaster Risk Reduction approaches, is implemented in order to act as a «climate buffer» and protect human settlements and activities in the Rhône delta.

Budget:
520 M€ (Purchase of 6.500ha)
1.5M€ (Hydraulic works)

Funding sources:
Public and private

Scale:
Local

Geographical location:
Rhône delta, Southern France

Leading partner(s):
Conservatoire du Littoral, Parc Naturel Régional de Camargue

Other partner organisation(s):
Tour du Valat, Société Nationale de Protection de la Nature

Project duration:
Since 2008

SDG

ADAPTATION


© Jean Jalbert – Tour du Valat

OBJECTIVES

The overall goal is to implement adaptive management to sea-level rise, ensuring co-benefits to biodiversity and human well-being and safety. The objectives are to (1) Implement and test Nature-based Solutions approaches in the restoration process of coastal zones affected by erosion and sea-level rise; (2) Ensure a scientific approach of the restoration processes enabling transfer of experiences to other coastal areas facing similar challenges.

MAIN ACTIVITIES

Activities include: (1) restoring a more natural hydrological functioning that reconnects the surrounding hydrosystems; (2) restoring the natural ecosystems characteristic of coastal lagoons and sandy coastlines; (3) maintaining or increasing the carrying capacity for breeding colonial waterbirds; (4) implementing adaptive management to sea-level rise; and (5) contributing to sustainable developments, including facilitating the development of green tourism and recreational activities.

RESULTS & IMPACTS

Ecological, economic and social evaluations were carried out. Results include the very fast restoration of landscapes; the dissipation of wave energy during storms (by the re-connected lagoons, allowing low pressure on the inland protection dyke); the important quantity of sand entering the lagoons during storms (acting as buffers against future storms).

ADAPTATION

- Offer a large-scale adaptive response to coastal erosion and sea-level rise by implementing nature-based solutions.

WHAT MAKES IT INNOVATIVE

The project is an example of how humans can help to reverse a disturbance using nature-based solutions and adaptive restoration until nature recovers its functionality and resilience. It is a unique large-scale experiment (6.500 ha) in Europe for the implementation of Nature-based Solutions applied to coastal areas threatened by erosion and sea-level rise.

THE SEA PEOPLE

Yaf Keru, Raja Ampat reef restoration project

YAF KERU is a community-based reef restoration programme designed to convert former fishermen into coral gardeners. Restoration effort is focused on former bomb fishing grounds and specifically aims at improving substrate stabilisation to prevent burial of pristine primary reefs found below. The programme has an educational purpose with coral gardeners capable of educating both local community members and marine park visitors about ocean literacy and services provided by coral reefs YAF KERU means 'Coral garden' in Papuan language.

Budget:
150k€ per Hectare of reef restored

Funding sources:
Grants, Private donations

Scale:
Local

Geographical location:
Dampier Strait, Raja Ampat, West Papua, Indonesia

Partners:
5 partners including Planète Mer, Conservation International and the French National Museum of Natural History

Project duration:
2016 - 2023

SDG

MITIGATION & ADAPTATION


© The SEA People

OBJECTIVES

The main objectives are to: (1) Establish a skilled team of 10-20 Coral gardeners and provide sustainable and restorative livelihoods for 50-100 community members; (2) Restore up to 1 ha of degraded rubble slopes per year and establish the entire ecological functioning of healthy coral reefs within 3 years; (3) Establish a 500ha no-take zone around the project to improve local food security; (4) Provide educational and participative services to local tourism operators as a mean to achieve financial sustainability; (5) Use the programme as a platform for field research and coral ecology studies.

MAIN ACTIVITIES

Main activities are mainly: scientific activities (e.g. environmental assessment, substrate stabilisation, coral transplantation, participative science and conservation, social consultations) and awareness-raising activities (i.e. educational events, ecological and diving training, awareness and socialisation campaigns, crown of thorns culling campaigns).

RESULTS & IMPACTS

1400m² of reef have been restored in front of 4 local tourism villages. 14000+ coral fragments transplanted of at least 61 scleractinian species. The pilot provided training and salaries to 13 local community members. At present, the programme can sustainably cover 1 permanent position for a local project manager. In terms of education, the coral awareness campaigns have reached 1000 local villagers and more than 10,000 marine park visitors.

MITIGATION & ADAPTATION

- Maintain and enhance the resilience of coral reefs by developing the regeneration process and promoting sustainable practices among marine park stakeholders;
- Select a large range of heat-stress resistant coral species in the programme;
- Provide alternative livelihoods designed to reduce the anthropogenic pressures and impact caused by illegal extractive practices.

WHAT MAKES IT INNOVATIVE

YAF KERU is designed to be in the World's top 1% programmes of its kind in terms of scale and longevity. It is highly cost effective (150K euros/ha) and brings a permaculture approach to the field. Whilst reef restoration can have a significant ecological output, it also provides both a socio-economic and socio-cultural lift to the local community.

Protecting and restoring coastal and marine ecosystems

CORAL GUARDIAN

Blue Center

Based on its experience in Indonesia and in response to the climate emergency, Coral Guardian launched a training program in 2019, called the Blue Center, which enables any project leader or organization to benefit from theoretical, practical or financial support to launch a participatory marine conservation project. Several candidates have requested support from Coral Guardian in the implementation of their project. Two projects are already implemented in Indonesia and in Spain, and other projects are being reviewed.

Budget:
1 million € over 5 years

Funding sources:
Private

Scale:
Global

Geographical location:
Indonesia and Spain

Partner(s):
Equilibrio Marino, WES

Project duration:
2019 - 2023

SDG

ADAPTATION


© Coral Guardian / Coco Tamlyn

OBJECTIVES

The overall goal is to support project leaders in developing participatory marine conservation projects around the world. The three priorities are to (1) protect and restore coral ecosystems by involving local actors; to (2) raise awareness on coral issues among local and international communities; and to (3) contribute to expanding scientific knowledge related to coral ecosystems.

MAIN ACTIVITIES

The main activities conducted under this project are communication with the different project leaders to guide the coral restoration activities (e.g. training programmes), scientific monitoring of the restoration areas, and the development of awareness programmes. The implementation of these activities varies depending on the context, and is managed in collaboration with local organisations.

RESULTS & IMPACTS

Two projects have been developed since the launch of the Blue Center. The first project began in 2015 in Indonesia and joined the Blue Center in 2019. This project has seen 40000 corals transplanted, a local team of 8 full-time employees, a return of around 5 times more species of fish and 30 times more fish in the restoration area. A new project based in Spain joined the Blue Center in 2020, but it remains too early to have measurable results of the impact of the project. Worldwide, Coral Guardian has raised awareness among over 400.000 people.

MITIGATION

- Restore coral ecosystems to bring biodiversity back;
- Mitigate coastal erosion to help ecosystems adapt to a changing environment.

WHAT MAKES IT INNOVATIVE

The project is unique in its participatory approach. Project leaders are given the knowledge and skills to develop their own conservation project. Each project involves local and international actors to raise awareness at all levels. Each project includes scientific monitoring activities that contribute to its adaptive management.

SCIENTIFIC CENTRE OF MONACO (CSM) & OCEANOGRAPHIC INSTITUTE - FOUNDATION ALBERT 1ST, PRINCE OF MONACO

World Coral Conservatory

To counter the anticipated disappearance of coral reefs by 2100, the World Coral Conservatory was created as a "Noah's Ark" for corals. It is a bio-bank for corals that uses a global network of public aquaria and coral reef institutes. This conservatory will be used as (1) a reservoir for conservation, preservation of coral genetic and species diversity, and restoration projects; (2) a tool for research (i.e. basic, assisted-evolution stress-resistant genotypes, and biotechnology); and as (3) a platform for raising-awareness on the protection of coral reefs.

Budget:
10 million €

Funding sources:
Private

Scale:
Global

Geographical location:
Global

Partner(s):
26 partners including Nausicaa and Oceanopolis

Project duration:
2019-2029

SDG 13

ADAPTATION


© Institut océanographique/Michel Dagnino

OBJECTIVES

The aims of the World Coral Conservatory are: (1) To create a unique repository of living coral colonies (1000 species) ; (2) To contribute to protecting coral reef biodiversity; (3) To provide researchers from all over the world with referenced and trackable biological material; (4) To use the available biological resources for assisted evolution approaches to increase stress tolerance and recovery; (5) To provide comprehensive information on corals and coral reefs to the general public and stakeholders in order to educate and enable people to participate in the collective effort of coral reef conservation.

MAIN ACTIVITIES

There are four main activities in this project: (1) on-land nursery for conservation, (2) basic and applied research to better understand coral biology and make corals more resilient and tolerant to global change, (3) reef restoration thanks to assisted-evolution and (4) education and raising-awareness on protection of coral reefs.

RESULTS & IMPACTS

Since March 2019, 17 worldwide aquaria have been recruited as vaults for the coral biobank. Moreover, the CSM and the Oceanographic Institute have federated similar projects around the world and created the Global Coral Biobank Alliance with the Great Barrier Reef Legacy, the Florida Reef Tract project and the Smithsonian Conservation Biology Institute in Hawaii. At last, the scientific consortium comprises 6 international institutions (genetics, physiology, assisted-evolution). The project was published in Plos Biology, and the first collection of corals is planned for the second semester of 2021.

ADAPTATION

- Better understand coral resilience, recovery and tolerance to global changes;
- Develop assisted approaches to enhance coral resilience and tolerance to global changes;
- Enhance the ecosystem services provided by corals.

WHAT MAKES IT INNOVATIVE

It is the first time that a project aims at having 1000 species on-land nurseries (mainly aquariums) to save coral biodiversity. This will create a coral ID card for each species and will allow to build "super corals". The project will ensure the ability to maintain improved coral stocks that will allow the restoration of coral reefs, giving these corals a better survival rate.

Protecting and restoring coastal and marine ecosystems

INTERNATIONAL ALLIANCE TO COMBAT OCEAN ACIDIFICATION (OA ALLIANCE)

Ocean Acidification Action Planning

The International Alliance to Combat Ocean Acidification (OA Alliance) brings together governments and organizations from across the globe dedicated to taking urgent action to protect coastal communities and livelihoods from the threat of ocean acidification and other climate-ocean impacts. The OA Alliance helps decision-makers better understand climate impacts to marine resources and implement actions that reduce impacts and increase biodiversity, adaptative capacity and resiliency.

Budget:
N/A

Funding sources:
Public and private foundation

Scale:
Global

Geographical location:
North America

Partner(s):
Maine Ocean and Coastal Acidification Partnership; Oregon Coordinating Council on Ocean Acidification & Hypoxia

Project duration:
2017 - Present

SDG 13 15

MITIGATION & ADAPTATION


© Oregon Marine Reserves

OBJECTIVES

The OA Alliance aims to (1) Elevate urgency and ambition for climate action by highlighting impacts to ocean resources, ecosystems and communities; to (2) Integrate ocean into climate commitments, policies and multi-governmental frameworks; and to (3) Translate knowledge into policy actions by national, regional and subnational governments. Members of the OA Alliance are helping to promote and drive implementation of actions, including nature-based solutions, that address the causes of ocean acidification and increase biodiversity, adaptative capacity and resiliency of coastal communities.

MAIN ACTIVITIES

The OA Alliance supports national, subnational, regional and tribal governments to create action plans that effectively promote solutions that increase biodiversity and advance knowledge into action. It contributes to (1) reducing atmospheric carbon dioxide emissions, the number one cause of ocean acidification; (2) advancing scientific understanding of climate-ocean impacts; (3) reducing local pollutions that exacerbate ocean acidification; (4) protecting the environment and coastal communities from climate-ocean impacts; (5) expanding public awareness; and (6) sustaining international and multi-governmental support for addressing this global problem.

RESULTS & IMPACTS

Maine's Ocean and Coastal Acidification Partnership explores kelp farming as a strategy for remediating OA and improving shellfish cultivation. California's Ocean Science Trust explores the potential co-benefits of restoring and conserving seagrass beds and kelp forests, examining the role seagrass play remediating impacts of coastal acidification. Mook Sea Farm & Taylor Shellfish Farms are exploring adaptation strategies including buffering of seawater to ensure that the oysters & shellfish they grow are able to withstand impacts. State of Oregon will be co-locating oceanographic monitoring alongside existing biological sampling in Marine Reserves.

MITIGATION & ADAPTATION

- Better understand and respond to the threat of ocean acidification and other climate-ocean stressors and impacts;
- Call for emissions reductions and ocean adaptation actions under international climate frameworks;
- Promote a mix of approaches to mitigate anthropogenic carbon emissions and local land-based contributions that exacerbate ocean acidification alongside adaptation strategies that build resilience in the face of future change.

WHAT MAKES IT INNOVATIVE

As the science, research & observed impacts of ocean acidification continue to grow, the OA Alliance supports governments, increasing knowledge exchange and expertise on the substance and process for developing local, regional and national responses in the face of cumulative ocean change.

© Franck GAZZOLA

PROMOTING RESEARCH, DEVELOPING SCIENTIFIC APPROACH AND INNOVATION

Climate change is ocean change. As a result, ocean science is an integral part of addressing the adverse impacts of climate change, the loss of marine life and the degradation of marine and coastal habitats, by delivering timely information about the state of the ocean. Effective ocean action requires sound knowledge and the latest available science to ensure a sustainable future[21].

Ocean science has made great progress over the last century in exploring, describing, understanding and enhancing our ability to predict changes in the ocean system, as well as to define interconnected pathways for sustainable development. Innovative technologies have widely contributed to this progress, as data collection from ocean monitoring and observing systems has allowed scientists to observe modifications of ocean properties. Ocean monitoring and observation are essential to bridging remaining knowledge gaps and supporting evidence-based decisions.

Moreover, new scientific approaches, such as participatory sciences, are now flourishing, while new indicators are also emerging. For instance, public participation in ocean data collection has contributed to acquiring more data for example on sea-level evolution, marine litter, whale tracking and water quality.

In that regard, the UN Decade of Ocean Science for Sustainable Development (2021-2030) provides a common framework to ensure that ocean science can fully support countries' actions to conserve and sustainably use the ocean. There is a need to conduct oceanography differently to meet the societal needs identified for the Decade (i.e., a clean, healthy and resilient, sustainably harvested, safe, predicted and transparent ocean) and get "The Ocean we Need for the Future we Want"[22]. The UN Decade is an opportunity to empower decision-makers and boost capacities, building momentum for the accumulation and open-sharing knowledge to implement ocean-based solutions to climate change and biodiversity loss. The Decade will strengthen the international cooperation needed to develop the scientific research and innovative technologies to better connect people and the ocean.

This second section outlines initiatives that promote research and innovation, therefore developing new scientific approaches and enhancing scientific knowledge. These initiatives contribute to providing ocean science, data and information.

[21] *IOC-UNESCO. (2017). Proposal for an International Decade of Ocean Science for Sustainable Development (2021-2030). available at: https://es.unesco.org/sites/default/files/ioc_gatefold_10years_singlepanels_web.pdf*

[22] *IOC-UNESCO. (2017). Proposal for an International Decade of Ocean Science for Sustainable Development (2021-2030). available at: https://es.unesco.org/sites/default/files/ioc_gatefold_10years_singlepanels_web.pdf*

INTERNATIONAL ATOMIC ENERGY AGENCY (IAEA)

The Ocean Acidification International Coordination Center (OA-ICC)

IAEA International Atomic Energy Agency
Atoms for Peace and Development

Ocean acidification has emerged as one of the 21st century's major global threats to marine ecosystems, and is the specific focus of SDG target 14.3. As world-wide research activities on ocean acidification and related stressors continue to develop, there is a clear need for effective global scientific cooperation. Hub for global ocean acidification activities, the OA-ICC is working to build a strong ocean acidification research community across the globe, providing access to training, tools, resources and opportunities for regional and international networking and collaboration.

Budget:
About 500 k € / year

Funding sources:
Public

Scale:
Global

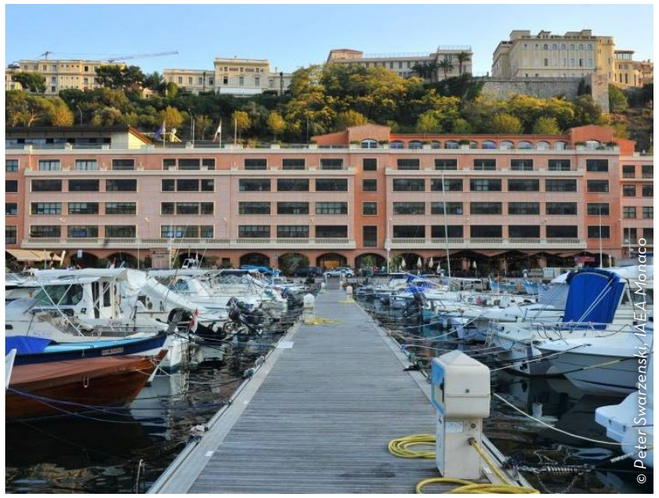
Geographical location:
Global

Partner(s):
Multiple partners including IOC-UNESCO

Project duration:
Since 2012

SDG 12 13 15 17

MITIGATION & ADAPTATION



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OBJECTIVES

The OA-ICC overall objective is to promote international collaboration on ocean acidification, while building and enhancing global capacity to address this issue. Its priorities are to promote and coordinate science, capacity building (and technology transfer) and communication related to ocean acidification. The target audience extends from ocean scientists to policy makers, and can include any group or individuals interested in ocean acidification and Ocean Change.

MAIN ACTIVITIES

The IAEA's OA-ICC organizes training courses for its Member States and provides access to data and resources to advance ocean acidification research. The Centre promotes the development of data portals, standardized methodology and best practices - compiling and centralizing information. The OA-ICC works to raise awareness of the issue among various stakeholders and inform about the role that nuclear and isotopic techniques can play in assessing its impacts. To achieve these objectives, the OA-ICC works with many international partners and supports global and regional ocean acidification networks.

RESULTS & IMPACTS

Most broadly, since its inception the OA-ICC and its partners have reached more than 700 scientists stemming from more than 100 Member State countries through capacity building, communication and science activities .

MITIGATION & ADAPTATION

- Contribute to preserving the ocean's ability to take in 25-30% of the atmospheric CO_2;
- Develop blue carbon as a climate mitigation strategy.

WHAT MAKES IT INNOVATIVE

The OA-ICC is a world renown international project that has attracted sizable and sustained funding and has creatively found ways to engage and bring together partners from around the world on all aspects of ocean acidification and Ocean Change.

DEEP OCEAN STEWARDSHIP INITIATIVE (DOSI)

Building Climate Change into Management of the Deep Sea

This project examines the deep-sea manifestation and impacts of climate change and how this might guide biodiversity conservation and environmental management of the deep ocean under increasing direct human disturbance from resource extraction. This includes the use of climate science and earth system climate projections, coupled circulation-connectivity models and habitat suitability modeling to inform deep-sea strategic planning, impact assessment and monitoring, protected area design, and application of the precautionary approach.

Budget:
30,000 USD

Funding sources:
Philanthropic

Scale:
Global

Geographical location:
International deep sea/seabed

Leading partner(s):
Tetiaroa Society

Other partner organisation(s):
Deep Ocean Observing Strategy, FAO Deep seas group

Project duration:
2017-2020

SDG 13 17

MITIGATION & ADAPTATION

OBJECTIVES

The goal is to (1) understand how climate change will affect the functioning and resilience of deep-sea ecosystems targeted for resource extraction (mining, fishing, oil and gas) and (2) to use this understanding of climate impact to inform management so as to maintain the provision of ecosystem services and promote sustainability of the deep ocean.

MAIN ACTIVITIES

(1) Modeling to address projected change in environment, connectivity and habitat suitability at the seafloor in regions targeted for deep-seabed mining; (2) Workshop bringing together climate modelers, deep-sea biologists, resource and policy experts, to prepare policy briefs and peer-reviewed publication; (3) UN Engagement (side events, interventions, briefs, text critique) with UNFCCC, International Seabed Authority, Biodiversity Beyond National Jurisdiction, UN Ocean Conference; (4) Raised public awareness via (a) National Academies Revelle Talk 2019 and (b) Online Course developed by DOSI for Small Island Developing States in the West Pacific.

RESULTS & IMPACTS

Impacts include: (1) Raised awareness among policy makers; (2) Recognition of climate as a cumulative impact in ISA environmental Guidance; (3) Incorporation of climate issues in brackets in Biodiversity Beyond National Jurisdiction (BBNJ) treaty text; (4) Scientific Policy briefs for the International Seabed Authority and BBNJ treaty; (5) Interventions and side events for BBNJ, International Seabed Authority and UNFCCC (COP 25, Ocean Dialogue) – uptake of climate issues in draft treaty text and seabed mining regulations; (6) FAO technical report on deep sea habitats, fish and fisheries; (7) Peer reviewed publication in Global Change Biology.

MITIGATION & ADAPTATION

- Significantly enhance our understanding of climatic impacts on deep-sea ecosystems;
- Manage the deep sea for climate resilience by protecting the carbon services it provides;

WHAT MAKES IT INNOVATIVE

This initiative brings climate expertise to the world of deep-sea biology, international policy and resource management – necessary for ocean sustainability. It raises concern about effects of resource extraction on biodiversity-based carbon services in the deep sea – heightening growing understanding of the biodiversity-climate nexus.

Promoting research, enhancing scientific knowledge and innovation

UNDER THE POLE

DEEPHOPE

Coral reefs are in immediate danger and their biodiversity is threatened. Compared to shallow reefs, the Mesophotic Coral Ecosystems (MCEs), below 30m and characterized by the presence of light-dependent corals, remain a mystery. DEEPHOPE focused on French Polynesian MCEs between 0 and 172m in depth. The objectives were to characterize MCEs (abundance and diversity), understand adaptation and acclimatization process of corals with depth, and whether deep corals act as a refuge and source of larvae for shallow reefs.

Budget:
Approximately 2 M €

Funding sources:
Public and private

Scale:
Regional

Geographical location:
French Polynesia :
(11 islands)

Leading partner(s):
CRIOBE and CNRS

Other partner organisation(s):
IRD, IAEA, Labex Corail, Observatoire Océanologique de Banyuls sur Mer, University of La Sorbonne, Museum of Tropical Queensland, California Academy of Sciences, Pennsylvania State University

Project duration:
2018 –2021

SDG 13

ADAPTATION

OBJECTIVES

The DEEPHOPE program is addressing several critical scientific goals relevant to MCEs: (1) Identify MCEs in French Polynesia and unravel their unknown coral diversity and abundance; (2) Evaluate the contribution of MCEs to the replenishment of threatened coral populations in shallow reefs; (3) Understand the role of the microbiome in the colonization capacity of corals in the mesophotic zone; (4) get new insights into the coral adaptation and/or acclimatization to deep environments; and (5) develop innovation and raise awareness at the service of better knowledge and conservation of the ocean.

MAIN ACTIVITIES

Main activities include: Expeditions performed by a collaboration between UNDER THE POLE and scientists to discover Polynesian MCEs; More than 900 dives between 0 and 172m on 11 islands of the 5 Polynesian archipelagos to discover and study mesophotic corals; Collection of 6,029 samples of mesophotic corals, including 1,813 samples between 30m and 172m, on 22 different sites; An international scientific collaboration (France, US, Australia, etc.); Scientific and wide public communications on the program results; Raising-awareness in schools of French Polynesia and Brittany.

RESULTS & IMPACTS

With the constitution of the largest collection of mesophotic corals in the world, discovery of coral species and genera never reported for French Polynesia, study of coral biological limit, and finding of high diversity of upper mesophotic areas, DEEPHOPE enables a new vision for the functioning and preservation of coral reef. A paper was published in ISME on the discovery of the deepest photosynthetic coral in the world at 172m (Rouzé H et al. 2021), as well as 1 paper submitted (bleaching with depth), 30 articles in newspapers, 15 web-doc., 1 international documentaries (81 M. spectators), 50 international events. 1500 children were sensitized in Polynesia and Brittany.

ADAPTATION

- Increase the knowledge required to mitigate and build resilience to the effects of climate change in the Pacific Islands through scientific research, communication and awareness-raising;
- Improve preservation and conservation actions by providing new knowledge on areas of key conservation interests and/or of high resilience, e.g. changing the vision of coral reefs from a 2D to a 3D view by integrating depth.

WHAT MAKES IT INNOVATIVE

"Scientifically, the DEEPHOPE project will mark the history of our understanding of coral reefs thanks to the intense program of deep dives led by UNDER THE POLE. It will never be possible to talk about coral reefs again without considering this life in the depths, which can form a lifeboat for shallow reefs.» (Dr L. HÉDOUIN - CRIOBE/ CNRS).

OCÉANOPOLIS

Objectif Plancton

The participative-science programme Objectif Plancton is based on the long-term monitoring of planktonic communities and on a synoptic vision of their distribution in coastal ecosystems. Set up by Océanopolis, this initiative involves people from scientific research, civil society and scientific mediation. Understanding the mechanisms that control the dynamics of coastal planktonic biodiversity is essential for predicting and anticipating the responses of these communities to global changes, and also the impacts on ecosystem services.

Budget:
300 000€

Funding sources:
Private

Scale:
Local

Geographical location:
Brittany, France

Partner(s):
Concarneau Marine Biology Station (MNHN), European Institute for Marine Studies (UBO) and IFREMER

Project duration:
2019-2023

SDG 3, 13

MITIGATION & ADAPTATION


© Pierre-Francois Watras, INTERNEP

OBJECTIVES

The aim of *Objectif Plancton* is to understand the mechanisms underlying the small-scale spatial variability of coastal plankton communities, i.e. why one species and not another is present at a certain place and time of the year. The scientific objectives are to obtain a synoptic view, long-term monitoring and temporal variability of the planktonic community in coastal areas, and to monitor fish larvae and their relationship with plankton composition. To achieve these objectives, the participation of non-scientific citizens (boaters, fishermen, etc.) is essential, as they are the ones who collect at sea the samples necessary for the study.

MAIN ACTIVITIES

The scientific activities of *Objectif Plancton* focus on the diversity and dynamics of planktonic communities on a spatial, seasonal and multi-annual basis, as well as on the functioning of biogeochemical cycles in coastal ecosystems. The data are collected by sea users, who take samples simultaneously at different locations in the same ecosystem, three times a year. *Objectif Plancton* is deployed on three coastal sites: the bays of Brest, Lorient and Concarneau. This programme is also an eco-citizen initiative, based on scientific research and supported by a mediation approach. It contributes to creating new links between science and society.

RESULTS & IMPACTS

Oceanopolis started collecting the relevant data, as well as organizing events for people to take part in sample gathering. The analysis of the *Objectif Plancton* data collected over the last two years is underway. Scientists are beginning to evaluate possible correlations between environmental variables (e.g. currents, salinity, high nutrient concentrations) and high phytoplankton biomasses, or the presence of particular species. As for the diversity of planktonic species, they were able to begin to inventory them and determine which ones predominate in each of the 3 study sites.

MITIGATION & ADAPTATION

- Better understand the various disturbances (natural and anthropogenic) which can lead to the erosion of biodiversity in order to be able to act to mitigate the pressures;
- Better understand the consequences of this erosion on the functioning of marine ecosystems and the services they provide to society;
- Conduct long-term observation to detect changes related to anthropogenic disturbances such as nutrient inputs, climate change or fishing pressure.

WHAT MAKES IT INNOVATIVE

Objectif Plancton is unique! To our knowledge, there is no series of observations and process studies that simultaneously address the issue of small-scale spatial variability and temporal dimension (infra-annual and multi-annual). The aim is to predict changes in coastal ecosystems that feed an economy linked to tourism, aquaculture or fishing.

Promoting research, enhancing scientific knowledge and innovation

TARA OCEAN FOUNDATION & THE FRENCH FACILITY FOR GLOBAL ENVIRONMENT (FFEM)

Ocean Plankton, Climate and Development

Urgent actions are needed to bridge the knowledge gaps and enable data-driven decision-making on marine biodiversity protection at the international level and also to foster international cooperation on marine biodiversity with developing countries. The project therefore aims to strengthen the science-to-policy interface and to foster scientific capacities of Southern countries on the ocean and climate linkages, in the framework of regional and international negotiations on climate, biodiversity and the High Seas.

Budget:
8 600k €

Funding sources:
Public

Scale:
Global

Geographical location:
Multi-countries – Africa, Pacific, South America

Partner(s):
French Ministry of Ecological Transition

Project duration:
2016-2021

SDG 3, 13, 17

MITIGATION & ADAPTATION

© Fondation Tara Océan

OBJECTIVES

The project includes: (1) setting up an international training program on planktonic ecosystem which integrates young researchers and structures new partnerships with developing countries; (2) developing new models and indicators for a better understanding of this ecosystem, including the planktonic organisms, aiming to generate better predictions of climate change impacts and sustainable management of resources; and (3) sharing knowledge on the richness and fragility of this ecosystem for greater consideration into the ocean's governance mechanisms, particularly the negotiating process on marine biodiversity in areas beyond national jurisdiction.

MAIN ACTIVITIES

The Ocean Plankton, Climate and Development project consists of scientific studies (e.g. initiating the development of new models and indicators, and observing the functions, vulnerabilities, adaptation and acclimatization of planktonic ecosystems), capacity-building (e.g. integration of young researchers into the Tara Oceans consortium), governance (e.g. organization of science-to-policy workshops during international ocean-related conferences, publications of policy briefs based on the Tara Oceans results) and awareness-raising activities (e.g. communication material on the importance of planktonic ecosystems).

RESULTS & IMPACTS

6 young researchers (Argentina, Brazil, Chile, Senegal and Togo) have been included and trained to analyze methodologies and new technologies on planktonic ecosystems. They have contributed to the publication of major scientific articles. The results contributed to develop innovative tools for better prediction of fish stocks and identification of high biological important areas in the high seas. The project also developed new research networks with Chile, Brazil and Senegal, and provided recommendations on technological advances, genetic resources, importance of science for governance, capacity building, and sharing knowledge with developing countries.

MITIGATION & ADAPTATION

- Provide the best high-level science on plankton ecosystem functioning and services, for consideration of marine microorganisms climate regulation role in international negotiations;
- Enhance scientific knowledge to contribute to mitigation and adaptation strategies, especially for developing countries;
- Provide ocean governance recommendations to developing countries in order for them to defend best policies at the international level.

WHAT MAKES IT INNOVATIVE

The project is based on the latest technological advances (genomic sequencing, imaging) and goes beyond fundamental research to make it operational and have a global impact on international debates related to climate change and high seas protection. It also makes the connection between the science and the development issues of Southern countries.

1.618 PROGRAMME ESPRIT DE VELOX

Esprit de Velox

Esprit de Velox is a new generation positive-impact exploration and innovation vessel. Its on-board transdisciplinary laboratories strengthen ocean science through a holistic understanding of the ocean within the Earth biosphere. Sailing from polar to tropical zones and coasts to open seas, it will embark a new international and responsible research programme: Destination Ocean. Anticipating the oceanic metamorphoses through multiple human and non-human perspectives, Destination Ocean opens up an "oceanethology" era.

Budget:
102 million €: 2021-2024

Funding sources:
Industrial investments, private and public support

Scale:
Global

Geographical location:
All over the ocean

Partner(s):
None

Project duration:
2014 - 2054

SDG

MITIGATION & ADAPTATION

© JF Vergne / Thibault Saint-Olive

OBJECTIVES

Esprit de Velox offers high contribution to the UN Decade of Ocean Science with first-of-class high seas and margins sailing research vessel, transforming maritime transport paradigm in the meantime. Esprit de Velox is Destination Ocean programme's flagship, promoting sustainable living with the Ocean. It contributes to understand and communicate the Ocean's key role in the climate system and its fragility, find alternative energy balance, promote biodiversity knowledge and preservation, human health and social equity. Destination Ocean will lead open research campaigns with worldwide scientists, innovators, and artists, under the UNESCO flag.

MAIN ACTIVITIES

Destination Ocean emerges within a new, polymorphic map of ocean life, on which a whole generation has been working. It will involve a multidisciplinary community through regular maritime missions over the 2025-2050 period, enabling cross-collaboration between disciplines toward a holistic view of the Ocean. Embodying zero-impact maritime transport, its vessel will provide combined and clean environmental data. The embarked research work is expected to support coastal communities to adapt to climate change, designing solutions to ocean-related risks. Large mediation campaigns will focus on the meantime to raise awareness among the public.

RESULTS & IMPACTS

The design of Research Vessel Esprit de Velox (wind-based propulsion, CO_2-free island grid, recyclable composite structure) is underway. The team has been working to let the ship sail the Ocean in 2024, for its maiden voyage around North Atlantic. Esprit de Velox has also been designing its scientific programme: Destination Ocean (Objectif Océan). It will be developed and enriched on the long-term (on a 40-year period) and in the context of the UN Decade of Ocean Science, on interdisciplinary, international, and holistic bases. Its Scientific, Artistic and Technical Board: The Esprit de Velox Society, is expected to be completed by the end of 2021.

MITIGATION & ADAPTATION

- Carry out research from high seas to the shore (explore, monitor, understand ecosystems);
- Welcome stakeholders on board to interact, promote and defend the Ocean through socio-ecological sustainable solutions;
- Foster new partnerships among ocean scientists from all disciplines, to favour discoveries about the ocean's role in climate regulation and margins processes;
- Encourage cooperation between ocean science and energy/industry transition.

WHAT MAKES IT INNOVATIVE

Esprit de Velox embarks responsible research all over the Ocean on a positive-impact vessel that embodies a discrete exploration. The Destination Ocean research programme promotes a systemic understanding of the Earth biosphere, enhancing new collaborations between natural and social sciences, arts and indigenous knowledge.

Promoting research, enhancing scientific knowledge and innovation

OCÉAN POLAIRE

Polar Pod

The Southern Ocean is the largest ocean data gap at the global scale, due to the remoteness of the area and its inherent energetic environment. Major player in the climate and biodiversity reserve, the Southern Ocean requires our full attention. Accordingly the international scientific community called for in situ measurements. To conduct on-site studies all year round, Océan Polaire has designed the POLAR POD, a revolutionary manned floating laboratory that can withstand the unique and severe on-site conditions.

Budget:
45 M€

Funding sources:
Public and private

Scale:
Global

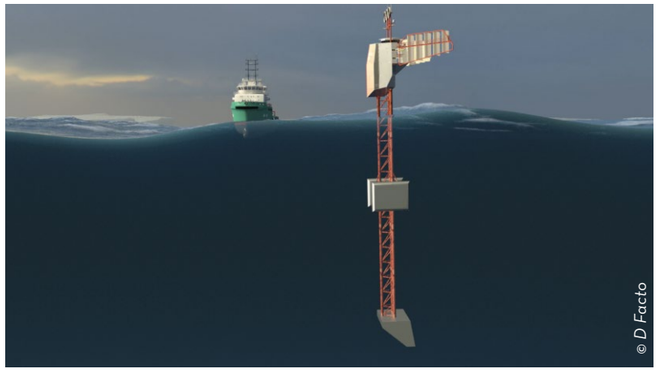
Geographical location:
Southern Ocean

Partner(s):
43 scientific institutions from 12 countries

Project duration:
2010-2026

SDG

MITIGATION



© D Facto

OBJECTIVES

The POLAR POD is inspired by FLIP, the US oceanographic platform, still active after 60 years in the service of research. On the same principle, the POLAR POD will be towed horizontally to the study area and tilted vertically by filling seawater ballast tanks. Driven by the circumpolar current, like a satellite around Antarctica, POLAR POD will allow the acquisition of data and long-term observations that will be transmitted to researchers, oceanographers, climatologists, biologists. This expedition will animate in real time a large international educational project on the Life Sciences of the Earth and the Environment in collaboration with the IUCN.

MAIN ACTIVITIES

The Polar Pod is a research vessel that will help monitor and study: air-sea exchange, census of marine live by acoustic, wave dynamics, eddies of the current, impacts of acidification on plankton, microplastics, ocean floor noise, satellite measures of the ocean, etc. It will make 2 "world tour" between 50° and 55°S within approximately 3 years.

RESULTS & IMPACTS

The POLAR POD is designed, the French State has agreed to finance the construction, and funds were raised to finance the 2023-2026 expedition. The construction will start early 2022.

MITIGATION

- Provide scientific knowledge and data (i.e. 3 years measurements, all year long) of the carbon sinks to improve climate efficiency in the Southern Ocean;
- Provide scientific information on the marine life census to support the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) in managing the krill quotas.

WHAT MAKES IT INNOVATIVE

The architecture of POLAR POD is a new state-of-the-art ecological floating laboratory that can withstand the unique and extreme conditions of the Southern Ocean. Polar POD is certified by Bureau Veritas and by the Central Security Commission of Merchant Marine. Drifting along the Antarctic Circumpolar Current and supplied by renewable energy this platform is a "Zero Emission" vessel.

HYDROGRAPHIC AND OCEANOGRAPHIC SERVICE OF THE FRENCH NAVY (SHOM)

Homonim: Observation and Modelling of Sea-Levels

The Homonim projects broadcasts, monitors and models ocean levels, with the aims to better anticipate coastal risks of storm tides and surges. It provides geographic information and data on marine and coastal areas to improve watch and warning systems.

Budget:
10 200 k€

Funding sources:
Public

Scale:
Subregional

Geographical location:
France (including overseas territories)

Partner(s):
Météo-France and the Ministry of the Environment's General Directorate for Risk Prevention

Project duration:
2012 – 2024

SDG 13

ADAPTATION


© Shom / Yannick Lenouvel

OBJECTIVES

The priorities of the Homonim project are: (1) to develop and continuously improve capabilities of surge and wave models down to local scales; (2) to supply Météo-France with modeling chains suitable for the operational forecast of storm surges and waves and for early-warning system implementation; and (3) to make available up-to-date information for stakeholders involved in anticipation and crisis management and the for general public.

MAIN ACTIVITIES

The main activities conducted under this project cover: the development of hydrodynamic models; studies on parameterization and physical model validation; the development of regional and embedded configurations of surge and coastal wave models from regional to local scales with current/wave coupling; and operational implementation.

RESULTS & IMPACTS

Results include (1) the extension of tide gauge network (+6 stations) with data supply to GLOSS IOC; (2) the improvement of the numerical schemes and bottom friction parameterizations of the surge model that doubled grid resolution on the coast, improved results accuracy (-13.8% reduction of the mean error on storm surge peak height) while maintaining operational skills; (3) the full overhaul of the french domestic operational forecasting capabilities for surge and coastal wave (sub-kilometric to 100m resolution alongshore); (4) the implementation of similar operational capacity on overseas territories; (5) the setup of an operational surge forecast chain.

ADAPTATION

- Better predict and anticipate natural hazards to reduce coastal risks;
- Provide geographic information and data on marine and coastal areas to improve warning systems.

WHAT MAKES IT INNOVATIVE

Homonim adopts an integrated approach from academic developments of models (hydrodynamic and very high resolution digital terrain model) to operational implementation for real time use in an early-warning system for storm surge and storm tide (vigilance vagues-submersion operated by Météo-France).

Promoting research, enhancing scientific knowledge and innovation

MERCATOR OCEAN INTERNATIONAL

EU Copernicus Marine Service Ocean Reporting

The Copernicus Marine Service ocean reporting (CMEMS) led by Mercator Ocean International, in collaboration with more than 150 European science experts delivers a yearly reporting of ocean state, variability and change to a wide audience in three instruments: 1. the peer-reviewed annual Ocean State Report (OSR) published in the Journal of Operational Oceanography, 2. Ocean Monitoring Indicators (OMIs) published on CMEMS portal providing updated global and regional numerical values and synthesized information 3. a summary for policy makers.

Budget:
N/A

Funding sources:
Public

Scale:
Global

Geographical location:
Europe

Partner(s):
More than 30 European Institutions

Project duration:
Since 2016

SDG 9 13 17

MITIGATION & ADAPTATION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OBJECTIVES

The CMEMS OSR brings together science-driven studies in the form of peer-reviewed publications compiled into an annual report. The Ocean Monitoring Indicators framework is a complementary layer of coordination higher up in the value chain to establish a dialogue from science to policy and decision making, foster advancements in science through concerted collaborations, and communicate science-based ocean information to a wide audience. The summary for policy makers is established to provide a synthesized and sound regular status of major ocean change, inform on new science advances and increase awareness on the critical role of the ocean.

MAIN ACTIVITIES

CMEMS produces and shares state-of-the-art and reliable ocean data. This is a prerequisite. Creating a CMEMS ocean reporting consists 1. in coordinating the production of the OSR, of its summary and of OMIs by collaborating with science experts using CMEMS Ocean Data, crossing boundaries of expertise for the blue, green and white ocean at different space and time-scales; and 2. in ensuring to reply to the growing need for marine information into society, economy and into policy or legal commitments such as the 2030 Agenda or the European Green Deal (covering key-areas such as Climate and Environment).

RESULTS & IMPACTS

CMEMS ocean reporting leverages CMEMS operational services and scientific credibility by addressing and responding to policy issues. Mobilizing a community of scientists around Europe to support the dissemination of a unique ocean science-based report is also a precious outcome. Thanks to its peer-review process, the Ocean State Report is used for international assessments. To name a few : IPCC and World Meteorological Organization Statement of the Climate linking to UNFCCC, SDG 14 indicators for Eurostat, Developments for the European Environment Agency, Support to the Marine Strategy Framework Directive.

MITIGATION & ADAPTATION

- Provide scientific information on the ocean's health (e.g. temperature, salinity, currents, water mass, heat exchange, climate variability, sea-level, sea ice) to inform policies and decision-makers.

WHAT MAKES IT INNOVATIVE

CMEMS ocean reporting is a unique scientific instrument providing updated ocean expert information at an annual pace to a wide audience from policy-makers to citizens. CMEMS ocean reporting both provides state-of-the art science evolution and innovation and strengthens ocean literacy.

THE FRENCH NATIONAL CENTRE FOR SCIENTIFIC RESEARCH (CNRS)

Blue Climate Initiative

The Blue Climate Initiative is a multi-year program engaging innovators, community leaders, scientists, investors and global experts to harness research and innovation to accelerate ocean-related strategies to combat climate change while protecting the ocean. In doing so, the Blue Climate Initiative is unlocking solutions on urgent challenges like renewable energy, sustainable food supplies, improved human health, flourishing biodiversity, stewardship of the ocean's resources, and vibrant ocean economies.

Budget:
N/A

Funding sources:
Public and private

Scale:
Global

Geographical location:
Global

Leading partner(s):
Tetiaroa Society

Other partner organisation(s):
6 partners including The Nature Conservancy

Project duration:
2020-2024

SDG 11 13 17

MITIGATION & ADAPTATION

OBJECTIVES

The Blue Climate Initiative accelerates ocean-based strategies to address the climate crisis. Its biodiversity and nature-based solutions program aims to answer the following question: How can innovations in designing, implementing and scaling nature-based solutions help to address climate change and improve ecosystem health? The three main priorities are: (1) A healthy and restored climate; (2) An understood and protected ocean; and (3) Resilient, thriving and equitable communities. In identifying solutions, the Blue Climate Initiative pairs scientific research with bottom-up, community-driven strategies for ocean innovation.

MAIN ACTIVITIES

The Blue Climate Initiative's biodiversity and nature-based solutions program identifies transformational opportunities that could enable marine nature-based solutions to be deployed at a scale that would make a substantive contribution to climate change mitigation and adaptation. The opportunities may be in identifying new types of nature-based solutions, but particularly may be in creating new mechanisms that facilitate the scaling of solutions from local to regional or global. The Initiative's activities include strengthening policy, education and outreach, scientific research, financing and capacity-building.

RESULTS & IMPACTS

The nature-based opportunities identified to date and reflected in a broadly disseminated publication include: (1) Leveraging the data revolution to build resilient reefs in the face of increasing climate change; (2) Supporting Indigenous stewardship; (3) Making the high seas a marine protected area; (4) Change in social norms: creating new narratives and perspectives to foster and mobilize ocean action; (5) Blue carbon ecosystem finance; and (6) Financing coastal risk reduction. The Initiative also issued a Community-Award for Ocean-related Climate Solutions which provides support for science-based and community led programs

MITIGATION & ADAPTATION

- Identify transformational opportunities to enable marine biodiversity conservation initiatives and nature-based solutions to help address climate change and increase ecosystem health;
- Promote contextual opportunities that enable co-benefits for communities;
- Promote opportunities that reflect local values and that are co-produced with local stakeholders;
- Encourage the embedding of justice in the identification and implementation of opportunities.

WHAT MAKES IT INNOVATIVE

The Blue Climate Initiative brings together a diverse community of stakeholders to identify promising ocean-related transformational opportunities and to implement selected opportunities.The Initiative will hold a Blue Climate Summit in 2022 in the heart of the Pacific, bringing together 300+ key stakeholders to take action and help turn the dial.

Promoting research, enhancing scientific knowledge and innovation

FUTURE EARTH

Ocean Knowledge Action Network (KAN)

The Ocean KAN is an international network of ocean practitioners (e.g. academics, stakeholders, businesses, NGOs) with the vision of achieving a healthy, functional, understood and resilient ocean supported by an inclusive global knowledge network providing information and action for the benefit of current and future human communities.

Budget:
Around 200k€/year (2021-2024)

Funding sources:
Public and private

Scale:
Global

Geographical location:
Based in Paris, France

Partner(s):
Scientific Committee on Oceanic Research (SCOR), Intergovernmental Oceanographic Commission of UNESCO (IOC-UNESCO), World Climate Research Programme (WCRP)

Project duration:
2017-2024

SDG 3 13 17

MITIGATION & ADAPTATION

OBJECTIVES

The Ocean KAN brings transdisciplinary research and other knowledge into action for ocean health and prosperity through networked approaches in support of achieving global goals for both human well-being and environmental sustainability. Its main objectives are to: (1) facilitate collaboration among international marine entities; (2) support strategic and inclusive stakeholder engagement; (3) support the development of existing and novel communication and networking tools to inform evidence-based decision making; (4) support partners in adopting and implementing management and policy actions that lead to improved ecosystem health and human health, safety, and welfare.

MAIN ACTIVITIES

The Ocean KAN is supporting solutions-oriented research, engagement with stakeholders from diverse sectors and regions, working with the strong fundamental research and innovative agendas of international marine projects in and beyond Future Earth. Future Earth facilitates transdisciplinary research that can be used by policy-makers, businesses and communities to achieve sustainable interactions of humans with the ocean at large. It works to build scientific capacity to empower researchers and societal partners worldwide to assess the state of the oceanic and coastal domains and improve their management and governance.

RESULTS & IMPACTS

The Ocean KAN partnered in the organization of the Virtual Blue COP in 2019 and the Virtual Blue decade in 2020, and co-sponsored seminars on learning networks. The development team participated in planning, commented on drafts of the implementation plan of the UN Decade of Ocean Science, and helped institute the Early Career Ocean Professionals network and participated in international scientific meetings. It guest edited a volume of Coastal Management Journal focused on ocean action, participated as editorsto the Ocean Solutions section of Frontiers in Marine Science and co-sponsored two National Center for Ecological Analysis and Synthesis working groups.

MITIGATION & ADAPTATION

- Bring networked knowledge to action and solutions to address the most pressing problems for the ocean and communities that rely on it, including climate change;
- Connect networks and develop partnerships to support mitigation and adaptation strategies.

WHAT MAKES IT INNOVATIVE

The Ocean KAN can rely on Future Earth's community, and support from global projects like the Scientific Committee on Oceanic Research, Intergovernmental Oceanographic Commission of UNESCO and World Climate Research Programme to produce new inter- and transdisciplinary knowledge and to transfer science into action. It convenes people globally, from all scientific fields, as well as stakeholders and ocean practitioners.

FRENCH NATIONAL RESEARCH INSTITUTE FOR SUSTAINABLE DEVELOPMENT (IRD)

SOOT-SEA: Impact of Black Carbon in South East Asia

Black carbon is the product of incomplete combustion of fossil fuels, biofuels, biomass and waste, largely contributes to fine particle air pollution and is a major contributor to climate change. An underrated impact of black carbon is related to its introduction in the ocean. The global flux of black carbon to the ocean is massive (2 to 10-fold higher than plastic waste inputs). The program aims at improving black carbon emission inventories in South East Asia, at determining fluxes to the ocean and at understanding how black carbon impacts marine systems.

Budget:
120 k€

Funding sources:
Public

Scale:
Subregional

Geographical location:
South East Asia

Partner(s):
46 partners including the French National Centre for Scientific Research (CNRS)

Project duration:
2018-2025

SDG

MITIGATION


© IRD/Jean-Louis Janeau

OBJECTIVES

The overall goal is to employ a multi-sectoral approach in building the evidence base and enhancing capacity of decision makers in the development of targeted regulations to reduce the emissions of black carbon and mitigate its impacts on climate, health and marine ecosystems. Core objectives include: (1) Structure the development of research on black carbon, produce science-based evidence; (2) Inform the general public and accompany decision makers to translate evidence into effective regulations, measures and appropriate behaviors for black carbon emissions control; (3) Support skill development to strengthen national capacity to run and lead the evidence production.

MAIN ACTIVITIES

Main activities include: (1) Monitoring concentrations, chemical characteristics and fluxes of black carbon in South East Asia's deltas to determine loads to the ocean; (2) Determination of how black carbon interacts with biological-chemical-physical marine processes via experimental approaches using reference and naturally occurring black carbon; (3) Scientific results (8 publications); (4) Outreach of the evidence, actionable policy guidance and raising awareness for policy makers, individuals and communities; (5) Training and empowerment activities for local actors.

RESULTS & IMPACTS

The project developed optical sensors technology for marine and atmospheric black carbon, and produced 8 scientific publications: High black carbon concentrations in South East Asia's coastal waters; Atmospheric and fluvial fluxes controlled by the monsoon regime; Modifies aggregation processes and the fate of marine aggregates; Alters the structure and activity of phytoplankton and bacterial communities; Modifies export and recycling capacities of the surface ocean. The project also raised awareness through organizing an exhibition "Black Carbon: The dark side of human activity", and a side-event at the 8th Asia-Pacific Forum on Sustainable Development.

MITIGATION

- Elevate the black carbon issue into policy and decision-making agenda;
- Raise awareness on the complexities and impacts of the black carbon issues;
- Foster productive dialogue between scientists, policy makers, individuals and communities;
- Encourage actions for reducing black carbon emissions, and co-emitted climate and health pollutants;
- Inform the establishment of an adequate legislative environment for black carbon emissions control.

WHAT MAKES IT INNOVATIVE

Despite massive fluxes to the ocean, black carbon-induced alteration of several biogeochemical marine processes and very long lifetime of black carbon in the ocean, SOOT-SEA is the first initiative linking fine particle air pollution with marine processes and the consequences on marine resources, biogeochemistry and ocean-climate interactions.

Promoting research, enhancing scientific knowledge and innovation

FRENCH NATIONAL INSTITUTE FOR OCEAN SCIENCE (IFREMER)

Fifty years of ecological changes: Regime shifts and drivers in a coastal Mediterranean lagoon during oligotrophication

The project is a 5-decade study explaining the oligotrophication trajectory of Thau lagoon, a Mediterranean coastal lagoon which supports traditional shellfish farming activities. The study aims to determine how the decrease in nutrient inputs resulted in major ecological changes in the lagoon, by analysing five decades of time-series of observations on pelagic and benthic autotrophic communities.

Budget:
N/A

Funding sources:
Public

Scale:
Local

Geographical location:
Thau lagoon,
Occitanie region, France

Partner(s):
MARBEC Laboratory (Montpellier University) and French National Research Institute for Sustainable Development (IRD)

Project duration:
2017-2020

SDG

MITIGATION & ADAPTATION


© Renaud Dupuy de la Grandrive

OBJECTIVES

The study aims to determine how the decrease in nutrient inputs resulted in major ecological changes in Thau lagoon, by analysing five decades of time-series (1970–2018) of observations on pelagic and benthic autotrophic communities. Ifremer hypothesises that the process of oligotrophication has led to ecosystem regime shifts and to changes in the drivers of summer anoxia, making the ecosystem more resistant to climatic stress caused by high summer temperatures.

MAIN ACTIVITIES

Ifremer studied and observed the pelagic (nutrients and phytoplankton in the water column) and benthic (macrophytes and sediment) compartments. Considering anoxia crises as indicators of ecosystem resilience and resistance, Ifremer analysed biological and meteorological data, eutrophication status and shellfish production to identify the triggers of summer anoxia over the 49-year period.

RESULTS & IMPACTS

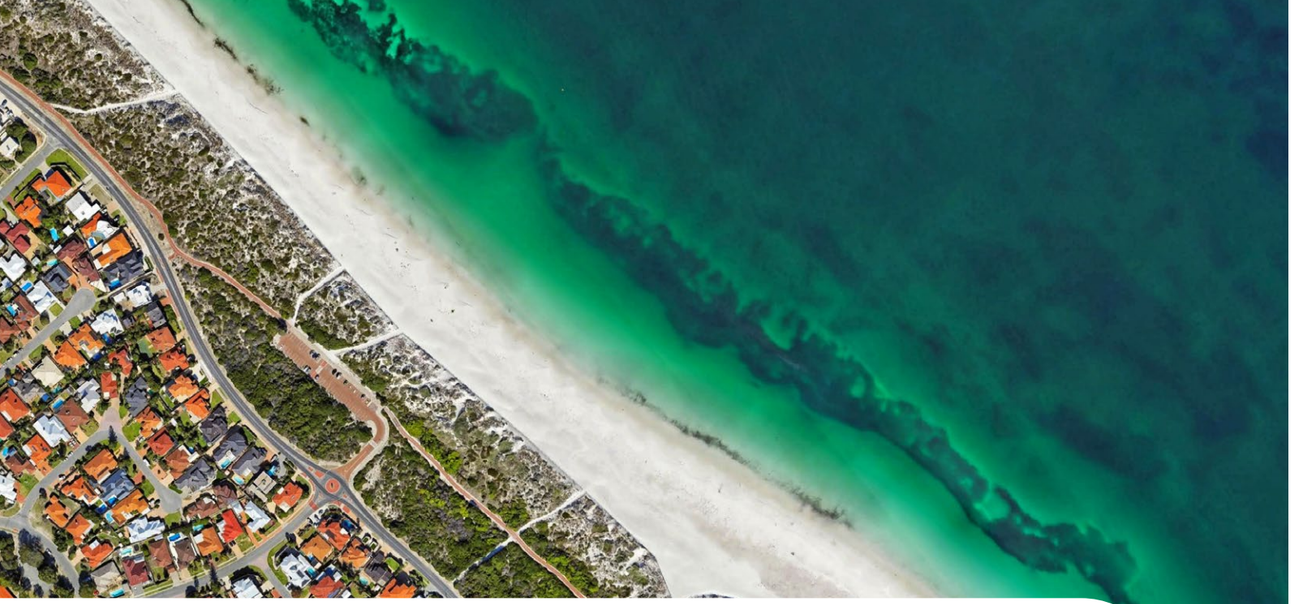
The study highlights that: (1) The decrease in nutrient inputs led to major ecological changes in the pelagic & benthic communities of a Mediterranean coastal lagoon used for shellfish farming; (2) A eutrophic period, a transition phase and a regime shift characterised recovery; (3) The main triggers of summer anoxia were air temperature and eutrophication status; and (4) Oligotrophication has made the ecosystem more resistant to the threat of heat waves.

MITIGATION & ADAPTATION

- Better understand the impacts of oligotrophication on coastal wetlands;
- Better understand how wastewater public policies impact marine ecosystems;
- Demonstrate how changes induced in the marine ecosystems can make them more resilient to climatic stress.

WHAT MAKES IT INNOVATIVE

The use of extensive datasets collected between 1970 and 2018 makes it possible to effectively assess and evaluate the effects of public policies. Ifremer highlights how the improvements of wastewater treatment systems gradually led to oligotrophication of the Thau lagoon.



ENHANCING THE TRANSITION TOWARDS LOW-CARBON AND RESILIENT SOCIETIES

Patricia Espinosa, Executive Secretary of the UNFCCC, recalled at the 2020 Race-to-Zero Dialogue that "it is very clear by now that the deep transformations we need in the world cannot be delivered by governments alone" and that they "require everyone on board[23]." It is more important than ever to reaffirm global ambition to tackle the climate crisis, and to together embark on a race to zero emissions. Civil society actors must continue to join forces, sending governments a resounding signal that businesses, NGOs, cities, regions and investors are united in shifting to a decarbonized economy that is more respectful of Nature.

These actors play a key role in developing solutions to ensure the implementation of sustainable practices in all ocean-based industries that impact the ocean and coasts (i.e. shipping industry, fisheries, ocean energy, coastal tourism). Such practices mainly aim to reduce GHG emissions from ocean-based industries, as well as put an end to the overexploitation of marine resources and to implement ocean-based solutions to transition towards decarbonized societies. This help the ocean to maintain its ability to generate blue growth, boosting the blue economy by providing jobs and livelihoods for millions of people across the world.

In recent years, the ocean has indeed produced US$2.5 trillion in goods and services each year[24], and many ocean-based industries have the potential to outperform the growth of the global economy in terms of additional value and employment. If compared to the world's top 10 economies, the ocean would rank seventh with an annual value of goods and services of US$2.5 trillion[25]. Protecting and restoring coastal and marine ecosystems is therefore crucial to secure these socio-economic services, which is particularly relevant in the context of building back better after the COVID-19 pandemic.

This third section showcases a wide range of initiatives that contribute to reducing human pressures on coastal and marine ecosystems while achieving the decarbonization of societies and territories. Such initiatives play a central role in enhancing resilience for people and nature.

[23] *UNFCCC (2020). UN Race to Zero Dialogues Finale Calls for Newfound Inclusivity. UN Climate Press Release, available at: https://unfccc.int/news/un-race-to-zero-dialogues-finale-calls-for-newfound-inclusivity*

[24] *The High-Level Panel For a Sustainable Economy (2020) Transformations for a Sustainable Ocean Economy: A Vision for Protection, Production and Prosperity. available at: https://oceanpanel.org/ocean-action/transformations.html*

[25] *WWF (2015). Ocean wealth valued at US$24 trillion, but sinking fast. The value of the ocean's riches rivals the size of the world's leading economies. available at: https://wwf.panda.org/wwf_news/?244770/Ocean-wealth-valued-at-US24-trillion-but-sinking-fas*

OCEAN CONSERVANCY
Shores Forward

Shores Forward is an Ocean Conservancy initiative partnering with local government leaders to protect Florida's ocean and coasts. Through this partnership, Ocean Conservancy supports cities' environmental sustainability efforts through expert consulting, engaging with technical and community-led networks, and securing funding for projects. This includes working on carbon mitigation plans, promoting water and energy efficiency, education and awareness, installing renewable energy infrastructure, and more.

Budget:
250,000 USD

Funding sources:
N/A

Scale:
Local

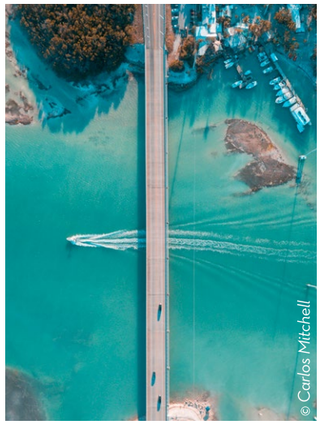
Geographical location:
Florida, USA

Partner(s):
None

Project duration:
Since 2019

SDG

MITIGATION & ADAPTATION



OBJECTIVES

By empowering local government leaders to improve their cities' environmental sustainability, Ocean Conservancy aims to create a wave of momentum at the municipal level that will affect change and inspire ocean-climate action at not just the local level in Florida, but at the state and federal level as well. The main priorities for Shores Forward are: (1) Improve water quality for Florida residents; (2) Prepare for impacts of sea level rise on natural and built coastal environments; (3) Reduce impacts of built environment on natural systems; and (4) Reduce carbon footprint in partner cities.

MAIN ACTIVITIES

Ocean Conservancy works with local governments, as well as other external partners, on the following types of activities: Funding studies on the lifecycle of plastic and other waste found in urban waterways to inform policies that can improve circularity, protect marine wildlife, and improve water quality; Organizing and funding citizen science and monitoring projects that will reduce single-use plastic pollution and in turn protect marine wildlife and reduce businesses' carbon footprint; Funding grade-school environmental education curricula to increase engagement and competency in issues affecting marine wildlife, climate change, and water quality.

RESULTS & IMPACTS

Working with 3 municipal and county governments, impacting over 1.5 million residents; Funded 3 years of environmental education curricula, reaching over 1000 students per year; Hosted expert talks for design professionals to promote low-impact development practices; thousands of attendees with potential reach of over 5 million; Funded a study in the Miami River to assess marine debris and pollution, with the end goal of driving legislative action that increases circular materials management, protects marine wildlife and improves water quality; Worked with partners and local youth to complete a plastic-use survey of local businesses in Miami Beach.

MITIGATION & ADAPTATION

- Build momentum for the protection of seagrass beds and mangrove forests;
- Work with local governments to conserve coastal and marine environments;
- Assist local governments in implementing low-impact development practices;

WHAT MAKES IT INNOVATIVE

Shores Forward is unique in its overall approach of aiming to affect change at the state government level by inspiring authentic and outcomes-driven support from local government leaders for ocean conservation, climate mitigation, sea level rise preparedness, and sustainable growth.

COMMUNAUTÉ D'AGGLOMÉRATION DE LA ROCHELLE

La Rochelle Territoire Zéro Carbone, Blue Carbon axis

La Rochelle coastlines are particularly vulnerable to coastal erosion and sea-level rise, two phenomenons triggered by climate change. To address these vulnerabilities, La Rochelle strives towards carbon neutrality by 2040. To that end, La Rochelle aims to both reduce its emissions (30% of reduction by 2030) and to capture and store CO_2. This includes preserving coastal ecosystems to maximize blue carbon sequestration in the urban community of La Rochelle.

Budget:
3,5 millions €

Funding sources:
Public

Scale:
Local

Geographical location:
Urban community of La Rochelle, France

Leading partner(s):
Urban Community and Town of La Rochelle, University of La Rochelle, Atlantec, Grand

Other partner organisation(s):
12 academic partners

Project duration:
2019-2026

SDG

MITIGATION & ADAPTATION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OBJECTIVES

The overall goal is to protect coastal wetlands so that La Rochelle can increase its carbon storage capacities and achieve carbon neutrality in long term. The project will (1) recognize the value of wetlands; (2) sustainably manage to preserve wetlands' carbon storage potential; and (3) promote innovation to efficiently and artificially store CO_2 in the metropolitan area of La Rochelle (e.g. culture of microalgae on the facades and roofs of buildings).

MAIN ACTIVITIES

La Rochelle assessed the carbon storage potential of coastal wetlands locally. It developed coastal management support tools, enhancing the protection of the coastline and raising awareness, mobilizing citizens and promoting ocean literacy around blue carbon. It also supported research and development to create artificial carbon sinks in town. La Rochelle supported other territories in their transition, sharing best practices and experiences (replicability of the project around of blue carbon).

RESULTS & IMPACTS

The project raised awareness on blue carbon issues (e.g. Climate & Ocean exhibition at La Rochelle's Maritime Museum), and promoted dialogue between key stakeholders (e.g. research centers, local authorities, reserve managers and local associations) and citizens. The project will assess the carbon value of coastal wetlands locally, and enhanced scientific research (e.g. funding research, collecting and analyzing data).

MITIGATION & ADAPTATION

- Develop solutions to increase the carbon storage capacity of coastal ecosystems by restoring and preserving these ecosystems while taking into account the human activities and development of the city.

WHAT MAKES IT INNOVATIVE

The project considers the potential of negative CO_2 emissions of aquatic ecosystems. It also promotes the collaboration between academic researchers and local authorities, bridging the science-policy gap. To achieve carbon neutrality by 2040, the project will integrate different axes: mobility of citizens, building, data, energy consumption, citizen participation, economy.

Enhancing the transition towards sustainable societies and economies

NOUVELLE-AQUITAINE REGIONAL COUNCIL

Coastal and estuarine marshes regional aid regulation

The Nouvelle-Aquitaine region faces coastal threats due to climate change, including sea-level rise, coastal erosion, sea submersion and changes in atmospheric variations. In this context, the Nouvelle- Aquitaine Regional Council is developing climate adaptation strategies such as this regional aid project. The project focuses on local coastal and estuarine marshes, and aims to make these wetland ecosystems climate proof by acting with all relevant stakeholders.

Budget:
450 000€/year

Funding sources:
Public

Scale:
Local

Geographical location:
French Atlantic shorelines, Nouvelle-Aquitaine Region, France

Partner(s):
The French Government, The Gironde Departement Council

Project duration:
2020-2024

SDG

MITIGATION & ADAPTATION


© Région Nouvelle-Aquitaine

OBJECTIVES

The aim of the project is to develop nature-based solutions to adapt to coastal risks. Priorities include avoiding marine submersion, restoring fish stocks and managing coastal zones to both protect marshes and organise leisure activities.

MAIN ACTIVITIES

The Nouvelle-Aquitaine region commits to protecting its coastlines and to adapting to coastal threats by (1) enhancing scientific knowledge on local species and landscapes; (2) improving coastal ecosystems management (e.g. by developing new partnerships); (3) adopt environmental engineering practices; and (4) promote sustainable practices (e.g. water management, shell farming) and behavioral changes.

RESULTS & IMPACTS

The Nouvelle-Aquitaine Region established new strategies to adapt to coastal threats, while considering human impacts and needs. This includes restoring and managing ditches for economical use. The coastal and estuarine marshes aid regulation was officially approved in November, 2020 and is still about to bear more fruits.

MITIGATION & ADAPTATION

- Maintain and preserve coastal marshes;
- Promote economic, recreational and touristic activities with limited impacts on coastal ecosystems;
- Optimize the role of coastal marshes in the prevention of coastal risks, e.g. submersion;
- Promote the sound governance of water-level management.

WHAT MAKES IT INNOVATIVE

The Nouvelle-Aquitaine region benefits from mitigation co-benefits, as it manages and protects blue carbon ecosystems. This aid system targets the coastal and estuarine marshes and aims to support integrated management projects. It switches from a thematic approach of public subsidies into an integrated territorial, socio-ecosystem specific approach.

INSTITUT FRANCE-QUÉBEC MARITIME (IFQM)

ARICO: Co-construction of Adaptation Scenarios to Coastal Risks of Maritime Territories

In a context of climate change and of concentration of human and built stakes on the coasts, the risks of coastal erosion and sea flooding are constantly increasing, both on the French and Quebec coasts. Interdisciplinary and partnership research between scientists is required to overcome these challenges. This Franco-Quebec research project focuses on the co-construction between researchers and societal actors of socio-ecological-economic scenarios of adaptation to these risks.

Budget:
757 108 €

Funding sources:
Public funding

Scale:
Global

Geographical location:
Brittany region, France and Bas-Saint-Laurent region, Canada

Leading partner(s):
University of Brest (UBO) and University of Quebec at Rimouski

Other partner organisation(s):
5 partners

Project duration:
2020-2023

SDG

MITIGATION & ADAPTATION


Institut France Québec Maritime

OBJECTIVES

The overall goal of the project is to better understand and reinforce the adaptive capacity of coastal populations and territories subject to coastal risks by co-constructing, with the stakeholders, scenarios for the adaptation of these coastal territories to climate change. One of the original features of the project is to be based on a triple exchange, (1) between two territories, France and Quebec, (2) between two disciplinary sectors, natural sciences and human and social sciences, (3) and between several fields of knowledge, (i.e. management professionals and inhabitants).

MAIN ACTIVITIES

The IFQM and its partners will address, in collaboration with the professionals of coastal risk managements, three interlocked levels of the problem: (1) understand the global vulnerability of coastal territories, through a study of the underlying natural and social dynamics; (2) analyse public policies, social dynamics and the use of management tools on the two territories (France and Quebec); (3) characterize and analyse the adaptive capacity and the resilience of coastal communities in on-the-ground-workshops; and (4) co-construct of socio-ecological-economic scenarios for the adaptation of coastal territories and communities.

RESULTS & IMPACTS

Despite the COVID-crisis delaying the work, two international and interdisciplinary workshops took place in October 2020 and March 2021, and PhD and master students started working on the project. The expected results are multiple. In addition to the development of adaptation scenarios, several tools will be realized, including vulnerability indicators, digital data platforms, timelines and story maps, serious games to be transferred to other sites.

MITIGATION & ADAPTATION

- Co-construct with field actors (professionals and residents) adaptation scenarios for the coastal territories and communities.

WHAT MAKES IT INNOVATIVE

An openness to methodologies of other disciplines and sectors and increased collaboration are the basis of a resolutely interdisciplinary and intersectoral approach to our work.

Enhancing the transition towards sustainable societies and economies

CONSERVATOIRE DU LITTORAL

ADAPTO: Towards adaptative coastal management

Adapto project, supported by LIFE EU Program, explores solutions to the impacts of climate change on the French coasts by advocating an adaptive coastal management. Experimental approaches are implemented on 10 pilot sites by using a frame of reference and analyzing the context of each region (risk management, landscape, economy, social perception, etc.) and by implementing tools (3D modelling, landscape analysis, etc.), so to build adaptation projects at territorial scale with local stakeholders (local authorities, managers, users).

Budget:
5 269 061€

Funding sources:
Public and private

Scale:
Global

Geographical location:
France
(including overseas territories)

Leading partner(s):
BRGM

Other partner organisation(s):
EU Life Program, French Water Agencies, OFB, Total Foundation, Fondation de France, ENSP, French MNHN, UNCPIE, UBO, ULCO, EPHE, ULR

Project duration:
2017 - 2022

SDG

ADAPTATION


© F. Larrey / Conservatoire du littoral

OBJECTIVES

Adapto aims to (1) Provide a better understanding of the dynamic nature of the coastline and the need to adapt to it (2) Create methodological tools allowing to initiate, support and assess nature-based adaptation solutions in coastal areas (3) Develop knowledge about these solutions and their acknowledgment at all levels (4) Define the role of natural environments in the organization of an effective land-sea interface in relation to adaptation to climate change and (5) Allow the state of the art to progress through concrete actions in various environmental contexts representative of the diversity of ecosystems and coastal areas in Europe.

MAIN ACTIVITIES

Different kind of actions are planned: (1) Experimentation of adaptative soft management process and methods on pilot sites: scientific and technical studies and monitoring, meeting with local stakeholders for project designing through scenarii, implementation works (renaturation, relocation, restoration); (2) Pedagogy and communication: on-site animations, educational actions towards schoolchildren; (3) Capitalisation and experience-sharing: national and international workshops,fields visits in France or Europe, website and social medias, newsletter, publications on pilot sites, etc.

RESULTS & IMPACTS

Results vary from one site to the other. In general, main achievements include: developing decision-support tools, raising awareness among school children, analyzing users' social perception, developing an ecological quality indicator, mapping coastal natural habitats and studying the projection of coastlines. Since the 10 pilot sites cover most of the European coastal environments (low and sandy Atlantic coasts, polderised low Atlantic coasts, Mediterranean barrier beaches, Mediterranean salt marshes, mangroves), it will be possible to replicate the ADAPTO process and methods in other similar French or foreign sites.

ADAPTATION

- Build with local stakeholders various scenarios integrating the impacts of climate change on the coast (e.g. sea level rise and the increasing frequency of extreme weather events);
- Implement the chosen solution on the field, ADAPTO will give demonstrative examples highlighting the interest and feasibility of an adaptative soft management of coastline facing climate change issues.

WHAT MAKES IT INNOVATIVE

The 10 pilot sites are representative of the main issues of French coastline. ADAPTO offers an interdisciplinary approach (economic, socio ecological, biodiversity...) through various tools to convince about the interest of adaptative soft management and facilitate decision-making with local stakeholders, for a shared vision of the future of a site.

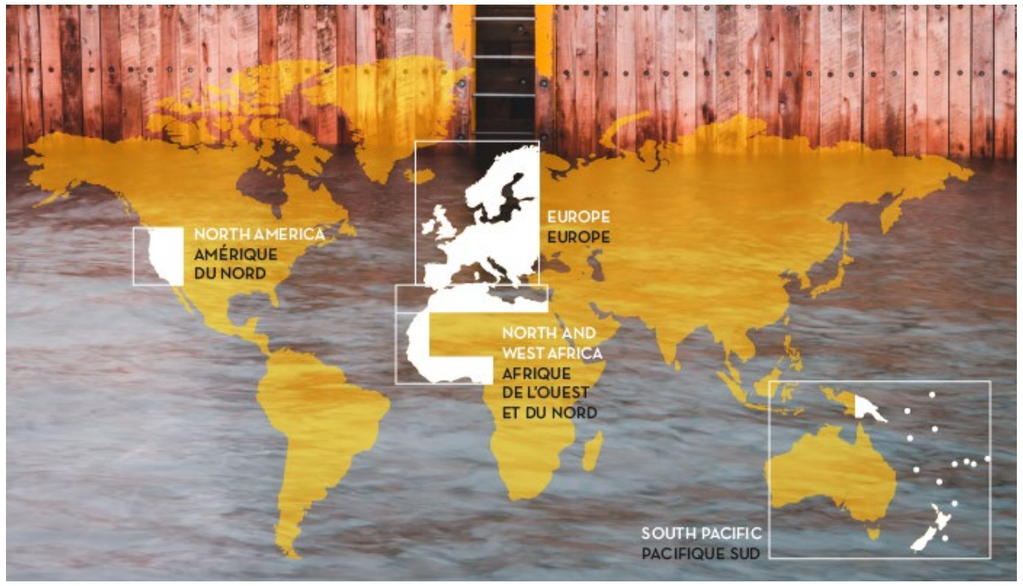
SEA'TIES: Sharing solutions with coastal cities to tackle sea level rise

ADAPTING CITIES TO CHANGING COASTLINES

The Intergovernmental Panel on Climate Change (IPCC) Special Report on the Ocean and Cryosphere in a Changing Climate, published in 2019, states that if greenhouse gas emissions are not drastically reduced, sea level could rise by more than a metre by 2100. Associated extreme weather events could become more frequent and severe, and are projected to occur at least once a year compared to once a century historically. Worldwide, shoreline erosion and submersion, alongside other impacts induced by sea level rise, are already occurring, posing critical threats to people, infrastructures, economies and ecosystems. Adapting coastal cities and territories to these changes is paramount.

A COLLABORATIVE INITIATIVE TO DESIGN SOLUTIONS TO SEA-LEVEL RISE

In response to this pressing challenge, the Ocean & Climate Platform launched Sea'ties. Rooted in science and aimed at elected representatives, administrators and all stakeholders involved, Sea'ties is an international initiative with the objective to facilitate the development of public policies and the implementation of adaptation solutions for coastal cities threatened by sea-level rise. The initiative will compile and disseminate scientific knowledge as well as provide a forum for the exchange of information and experience, to foster the emergence of good practices. Its action is deployed in 5 regions: Europe, North Africa, West Africa, the West Coast of the United States and the Pacific.



© Pok-rie

Sea'ties partners with a wide range of cities and territories, and is therefore enriched by a diversity of climatic, geographic, social, economic and political contexts. The initiative primarily focuses on medium-sized cities. Indeed, although they have fewer financial resources than megalopolises, medium-sized cities can be more flexible, which makes them a particularly fertile testing ground for the design and implementation of adaptation solutions. Sea'ties will draw from worldwide experiences and concrete returns of action to produce recommendations enabling the implementation of two types of solutions, intertwined and complementary: technical solutions, aiming at directly reducing risks (technologies such as defensive work, nature-based solutions, accommodation solutions and managed retreat), alongside solutions related to sharing knowledge and developing a risk culture (through education and awareness campaigns as well as financial and regulating tools).

A VISION FOR SUSTAINABLE SOLUTIONS

To sustainably adapt cities to sea-level rise, Sea'ties promotes the combination of different solutions tailored to the specific context of each territory.

Beyond technical solutions, cooperation, dialogue and the mobilisation of all stakeholders – civil society, scientists, businesses and elected representatives, are essential to achieve appropriate and equitable adaptation to sea-level rise.

- Through the development of a digital tool, the diversity of solutions already implemented across the globe will be collected and promoted to inspire decision-makers, planners and administrators to boost action.

- Based on a multidisciplinary scientific approach, the latest research findings will be synthesized and disseminated to highlight the main challenges related to socio-economic governance and the knowledge gaps in data production.

- In each region, workshops will be held to reinforce cooperation between all stakeholders and address the needs for cross-sector collaboration, community engagement and sharing knowledge, lessons learnt and good practices.

- Sea'ties will advocate for the integration of adaptation to sea-level rise into public policy and provide recommendations informed by science and practical experience.

PARTNERS

FINANCIAL SUPPORT

WPD OFFSHORE FRANCE

Fécamp windfarms

With a global capacity of about 500 MW (71 turbines) the Fecamp wind farm is located within a EU Natura2000 area, 13 km off the Normandy coast, in the English Channel water. It aims at producing wind-based renewable energy, while limiting the impacts on marine biodiversity. To that end, the implementation area was chosen to minimize the effects on biodiversity and specifically birds. It will produce low carbon footprint energy for the use of 770,000 people.

Budget:
1.6 b€

Funding sources:
N/A

Scale:
Local

Geographical location:
Off the coast of Normandy, French Territorial Waters of the English Channel

Leading partner(s):
EDF-RE, EnBridge

Other partner organisation(s):
11 partners including FNE Normandie, Normandy Region and Normandy Chamber of Commerce

Project duration:
2007 - 2048

SDG

MITIGATION


© wpd

OBJECTIVES

The overall goal is to produce clean energy, with a limited impact on biodiversity (e.g. no oil spilling, no water discharge). In collaboration with local stakeholders, the priority in building up the project was to minimize the impacts of the windfarm on biodiversity, landscape and fisheries.

MAIN ACTIVITIES

wpd conducted environmental surveys (e.g. using radar, uw microphones, boat, plane, GPS tagging, scientific fishing, benthos sampling). It selected an area of less constraint on biodiversity. wpd also modeled the wind farm effects on waves and current, on underwater noise, and adapted their technology to minimize these effects as much as possible.

RESULTS & IMPACTS

wpd and its partners won the tender in 2011. The project has been designed thanks to the analysis of environmental surveys and consultation with local stakeholders. The exact implantation region was subsequently chosen.

MITIGATION

- Develop marine renewable energy (MRE), with the aim of mitigating our reliance on nuclear power plants.

WHAT MAKES IT INNOVATIVE

The project was designed in close public concertation, including fishermen. It was also supported by NGOs at local and regional levels, and took into consideration local needs and landscapes. The project is unique in the sense that it was close concerted with local stakeholders.

Enhancing the transition towards sustainable societies and economies

FRANCE NATURE ENVIRONNEMENT (FNE)

Eoloscope offshore

FNE advocates for a more thorough consideration of environmental issues and a reinforced dialogue between NGOs and offshore wind farm project leaders. Eoloscope offshore supplies citizens with a booklet of information on the challenges of offshore wind energy, existing regulations and the different stages of an offshore wind project. In addition, it includes a multi-criteria analysis grid to identify best practices and points of improvement in the establishment of an offshore wind project.

Budget:
100 000 €

Funding sources:
N/A

Scale:
Local

Geographical location:
France

Partner(s):
Multiple partners

Project duration:
2019 - 2021

SDG

MITIGATION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OBJECTIVES

The goal of the Eoloscope offshore tool is to move towards the implementation of exemplary offshore wind farms and to combine strong citizen participation and support with a high level of consideration for biodiversity and the environment. Therefore this tool aims at deepening citizens' knowledge and facilitating dialogue between associations, territorial actors, and economic actors.

MAIN ACTIVITIES

FNE mobilised its members and experts to produce a toolkit with both a booklet and a multi-criteria analysis grid. The first version of Eoloscope offshore has been presented to local NGOs and state institutions as well as private companies working on MRE. It is part of FNE's awareness campaign to help citizen decision making regarding wind farms. The first version of the Eoloscope offshore is available on the FNE website and printed editions of the tool have also been distributed locally.

RESULTS & IMPACTS

The Eoloscope offshore helped NGOs to position themselves during a public debate concerning a wind farm project in Brittany ("Floating wind turbine in the South of Brittany"). Thanks to this tool, citizens improved their technical skills, and made their own assessment of the project's impacts. The toolkit facilitated the democratization of the decision making process, and promoted citizen participation, by developing dialogue between relevant stakeholders.

MITIGATION

- Develop effective tools to promote and support the deployment of offshore wind farms, producing renewable energy while protecting marine biodiversity.

WHAT MAKES IT INNOVATIVE

This initiative facilitates the dialogue between associations, territorial actors and economic actors. In addition, the tool makes information about wind farm project implementation and sustainability available to citizens and other relevant actors.

CONSULT'OCEAN

Fishing and Marine Renewable Energy

The project answers the following question: how can fisheries and MRE-related actors overcome their differences to coexist and address together climate change and biodiversity loss? The project adopts a holistic approach for people from different sea-based sectors to join forces and coordinate to achieve common goals. It enhances coordination and cooperation at the local level.

Budget:
Confidential

Funding sources:
Private and public

Scale:
Global

Geographical location:
Atlantic Ocean and Mediterranean Sea

Partner(s):
EnBW Valeco

Project duration:
2020-2023

SDG

MITIGATION


© Sarah Lelong

OBJECTIVES

The objective is to provide cohabitation opportunities for MRE companies and fishermen. The project aims to develop innovative solutions to local issues and disagreements between the two types of users. It goes beyond maritime spatial planning tools, with the objective to deepen the existing dialogue - while achieving the relevant SDG.

MAIN ACTIVITIES

Main activities include: (1) Identifying and analyzing the representations of each stakeholder; (2) Facilitating exchanges including by sharing views; (3) Sharing available knowledge on climate and biodiversity with each stakeholder; (4) Finding areas of agreement and disagreement; (5) Identifying relevant solutions to be developed in subsequent collaborative projects; (6) Producing common tools for all, including to describe climate and biodiversity issues in terms of MRE and fisheries; (7) Disseminating project outcomes.

RESULTS & IMPACTS

At this stage, a cartography of fishing techniques and companies has been developed and a reflection on the positioning of the different actors was launched. The aim is to find ways of including fishermen in offshore wind energy projects. Planned areas of work: Map the actors of the fishing industry; Analyze the data; Organize exchanges between the different actors; Share environmental knowledge; Research the evolution of the fishery to include wind farms.

MITIGATION

- Develop renewable sources of energy to mitigate climate change, in accordance with the decree related to the multi-year energy programming (PPE) published in April 2020;
- Enhance collaboration between the fishing industry and marine renewable energy (MRE) to boost their compatibility, thus proposing solutions to move towards sustainable development.

WHAT MAKES IT INNOVATIVE

Floating wind turbines are an innovative technology in France. First farms are at a development stage. In addition, these farms consider fishing opportunities in their construction.

Enhancing the transition towards sustainable societies and economies

PLANÈTE MER

PELA-Méd: Fishermen Committed to the Future of the Mediterranean Sea

PELA Méd is a local pilot development program run for and by fishermen. It aims to help them upskill so they can transition towards sustainable fishing and respond to the economic and environmental issues faced by fisheries in the Var region as listed below: Improving fishing stocks, in particular for target species potentially impacted by climate change; Sharing knowledge of overfished species and the impact of fishing; Fighting against IUU fishing, either undeclared or unregulated; Creating economically viable models for fisheries.

Budget:
442k€

Funding sources:
Private and public

Scale:
Local

Geographical location:
Department of Var, France

Leading partner(s):
Departmental Committee of Maritime Fisheries and Marine Farming – Var region

Other partner organisation(s):
18 partners including IFREMER

Project duration:
2018-2022

SDG

ADAPTATION


© Planète Mer - L. Debas

OBJECTIVES

The key objective of PELA-Méd program is to offer, build and test management and knowledge-sharing tools for fishermen in order to achieve a level of fishing which is sustainable from both a socio-economic and ecological perspective and deliver an economic return for fisheries. Being present on site and working in collaboration with all stakeholders, PELA-Méd's ambition is to: (1) Evaluate fishing stocks across target species; (2) Implement a shared and flexible management of fishing stocks based on co-management principles; and (3) Improve fishing monitoring and checks.

MAIN ACTIVITIES

The main activities in relation to each objective are: (1) Knowledge: define sampling protocols and strategies, collect data (to be done by fishermen) and analyze it, share scientific publications and results; (2) Shared management: cooperative workshops, co-construction of a new program of fishing governance in the region, shared and flexible management (decisions taken jointly by fishermen, scientists, administrators of these protected areas and NGOs involved with the co-management group); (3) Monitoring: deploy 4 full time sworn guards – hiring, training (compulsory and specific to the territory) and certification.

RESULTS & IMPACTS

The PELA-Méd program managed to: Involve local professional fishermen in the pilot committee (11 prud'homies out of 13 committee members); Take an initiation trip for a delegation of 10 fishermen from 9 prud'homies; Evaluate 2 species (edible urchin and red mullet) with the strong involvement of fishermen; Draft a bio-economic study about the economic dependence of fisheries on species and jobs; Involve state services, local government members, protected area administrators and fishermen in the project; organize a seminar on the implementation of sworn guards in the Mediterranean Sea.

ADAPTATION

- Provide new narratives and arguments to fisheries and its stakeholders in fishing practices;
- Enable fishermen to adapt their techniques in the context of climate change (e.g. fishing seasons, spawning season, fluctuation of the spawning and fish stocks);
- Improve ecosystem resilience by adapting fishing to the fluctuation of fish resources;
- Contribute to protecting marine biodiversity in the Port-Cros National Park's and its neighboring area.

WHAT MAKES IT INNOVATIVE

Involving an NGO as a mediator is innovative to avoid conflicts between stakeholders. Additionally, the sworn guards project is a societal innovation as it is a first in the Mediterranean Sea. This initiative clearly incentivizes fishermen to take part in the sustainable management of their activities. This bottom-up approach is also innovative.

OUR FISH

Frontiers in Marine Science Research Topic: How Overfishing Handicaps Resilience of Marine Resources Under Climate Change

Our Fish

In the context of fish stock depletion, Our Fish is working to end overfishing and restore a healthy ocean ecosystem. Our Fish engages with stakeholders and decision-makers on the adverse effects of overfishing, as well as on the opportunities related to sustainable fishing practices, including mitigation and adaptation to climate change components. This advocacy work is conducted at the European level.

Budget:
50,000 €

Funding sources:
Private

Scale:
Regional

Geographical location:
Europe

Partner(s):
University of British Columbia

Project duration:
2020-2021

SDG 12 13

MITIGATION & ADAPTATION


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OBJECTIVES

The overall goal is to reframe ending EU overfishing as decisive action on the biodiversity and climate emergency. In that regard, this project has two main objectives: (1) Produce a new series of published scientific papers on the potential benefits of sustainable fisheries to climate mitigation and adaptation; (2) Provide important information to policy-makers, NGOs, industry and governments at a critical stage in the development of actions to address the climate and biodiversity crises by providing specific data on the climate impact of ending overfishing.

MAIN ACTIVITIES

Our Fish is working with scientists from across the world to publish a series of scientific papers that investigate how sustainable fisheries management contributes to climate mitigation and adaptation. This pioneering science has been presented during a symposium with 3 webinars and a workshop. The resulting scientific papers will be published in an online journal that is freely available. Our Fish mainly conducts advocacy and communication work, including by organizing media and advocacy meetings.

RESULTS & IMPACTS

The series of scientific papers will include at least 10 new papers that explore how fisheries management can benefit climate mitigation and adaptation. These will be published by the end of 2021, and will include a biodiversity and climate checklist in accordance with the EU Green Deal. A Symposium presenting the initial findings, was attended by over 900 people, including a workshop that involved policymakers from six different countries and the EU. Our Fish's work has initiated the education of policymakers and decisionmakers to the importance of a healthy ocean to climate action, which is resulting in more policy documents highlighting this issue.

MITIGATION & ADAPTATION

- Increase public and political understanding of how to manage fisheries to improve mitigation and adaptation solutions to climate change;
- Facilitate the introduction of EU policies and processes to implement these solutions.

WHAT MAKES IT INNOVATIVE

This initiative is drafting new research papers, explaining and quantifying the climate benefits of sustainable fisheries. It is also driving the development of EU policies to put an end to overfishing and its adverse effects on climate and biodiversity.

Moving towards sustainable and climate-smart fishing practices

During the 20th century, humans increasingly exploited the living resources of the ocean. Today, the world's fish stocks are under considerable pressure, with 33% of the global fish stocks being overexploited[26]. This is a major concern, not only for future global food security, but also for the social and economic well-being of the coastal communities that rely on fish consumption. Close to 3.3 billion people depend on aquatic resources for sustenance, and millions depend on the fishing sector for economic and social benefits[27]. In addition to overexploitation, the growing impacts of climate change further threaten fish stocks[28].

In response to these increasing threats, stakeholders from leading governments and from civil society have been drawing pathways to reconcile exploitation and conservation, therefore strengthening the resilience of ecosystems. Innovative and more respectful fishing practices are emerging, especially through ecosystem approaches, which widely contributes to developing climate-smart fisheries. Climate-smart fisheries aim to improve efficiency in the use of natural resources to produce fish and aquatic foods, in order to respect fish stocks and protect ecosystems. They ensure the maintenance of aquatic systems and therefore allow coastal and marine ecosystems to continue contributing to sustainable development goals. Climate-smart fisheries also offer effective ways to reduce the vulnerability of the fishing sector and enhance climate adaptation.

Internationally agreed targets and goals have been adopted to further encourage the adoption of sustainable and climate-smart fishing practices, including by intensifying efforts to eradicate illegal, unreported and unregulated (IUU) fishing and eliminating subsidies that contribute to overfishing[29]. In line with this, the targets 14.4 and 14.6 of Sustainable Development Goal (SDG) 14 - Life below water, respectively call for the end of overfishing and for the ban of harmful subsidies.

[26] *FAO (2018). The State of World Fisheries and Aquaculture, available at http://www.fao.org/documents/card/fr/c/I9540EN/*

[27] *FAO (2020). The State of World Fisheries and Aquaculture, available at http://www.fao.org/3/ca9229en/online/ca9229en.html*

[28] *IPCC (2019). Special Report on the Ocean and Cryosphere in a Changing Climate, available at https://www.ipcc.ch/srocc/*

[29] *Ocean & Climate Platform (2021). Policy brief, Impacts of fishing and climate change on life below water: what challenges for the future? available at https://ocean-climate.org/wp-content/uploads/2021/02/Policy-brief-English-version-2.pdf*

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THE OCEAN FOUNDATION

SeaGreen Sargassum Insetting

The SeaGreen project utilizes large-scale sargassum strandings for the production of compost for regenerative agriculture to generate carbon credits. The recent annual inundation of sargassum in the Caribbean is severely disrupting coastal tourism, the fishing industry, and endangering coastal ecosystems including seagrass meadows, mangrove forests, and coral reefs. The approach involves removing harmful sargassum and converting it into compost to promote soil building and food security while preserving existing blue carbon sinks.

Budget:
US$300,000 per year

Funding sources:
Private and philanthropic

Scale:
Regional

Geographical location:
Dominican Republic and St. Kitts and Nevis

Leading partner(s):
Grogenics, SOS Carbon

Other partner organisation(s):
4 other partners

Project duration:
Since 2019

SDG

MITIGATION & ADAPTATION


© Grogenics

OBJECTIVES

(1) Work with tourist resorts and coastal communities to unlock the potential of sargassum-based agricultural products to mitigate climate change through the generation of carbon credits while fostering sustainable economic development and local food production; (2) Support scientific and industrial research on the environmental, economic, and social benefits of utilizing nuisance sargassum as agriculture-enhancing products; (3) Coordinate training workshops and other learning activities related to the responsible harvest and transformation of sargassum into compost, mulch, and other environmentally-friendly products for use in organic agriculture.

MAIN ACTIVITIES

The focus of the SeaGreen project is to provide sargassum-based organic compost and bio intensive agricultural training to smallholder, women farmers and commercial growers throughout the Caribbean. Carbon insetting is a method for sequestering and storing carbon in a way that reduces a company's carbon footprint while also enhancing its value chain. Using sargassum seaweed as an organic agricultural input allows tourist resorts to keep beaches clean for guests while also building soils and increasing local food production. The high value, organic produce in turn can be sold back to resorts, which promotes sustainable economic development.

RESULTS & IMPACTS

In 2020, the pilot project provided impressive results: 100 tonnes of sargassum harvested, 100 tonnes recycled organic waste from resorts in Punta Cana, 150 tonnes of compost produced, 14 farmers in Miches, two gardens in Punta Cana, the development of a new low impact sargassum harvesting technique, soil regeneration, the introduction of bio-intensive farming to local communities, and the training of many farmers and operators. The project sequestered about 198.4 tonnes CO2e in 2020 through avoided landfill emissions (i.e. sargassum was composted rather than being hauled to the landfill), and is establishing a new pilot site in St. Kitts and Nevis.

MITIGATION & ADAPTATION

- Avoid landfill emissions and increase cleanup activity;
- Support soil-building and eliminate the need for petroleum-based synthetic fertilizers;
- Prevent the degradation of coastal blue carbon sinks and enhance coastal resilience; .

WHAT MAKES IT INNOVATIVE

Currently, most tourist resorts in the Caribbean are removing nuisance sargassum at great cost and shipping it to landfills. The SeaGreen approach, "carbon insetting," allows resorts to pursue carbon neutrality goals while also contributing to their value chain by creating new markets for high-value, organic produce that tourists increasingly demand.

Enhancing the transition towards sustainable societies and economies

PAUL RICARD OCEANOGRAPHIC INSTITUTE (IOPR)

NAIADE: New Innovative Feed for Sustainable & Environment-friendly Aquaculture

While aquaculture is used as an alternative in the face of the pressure exerted by industrial fishing on fisheries resources, it makes use of products derived from the intensive fishmeal industry. Farmed fishes are mainly fed on small pelagic fishes transformed into meal. For the purpose of sustainable development and the preservation of fish stocks, it is today necessary to develop different ways of feeding farmed fishes. This project was created to develop a sustainable alternative based on insect proteins to put an end to the vicious circle of overfishing and stock depletion, whilst also reusing food and agricultural waste in a circular economy approach.

Budget:
500k€

Funding sources:
Public and private

Scale:
Local

Geographical location:
The Embiez Island, Var, France

Partner(s):
9 partners including the CNRS, Pernod Ricard France, Fondation Veolia

Project duration:
2018- 2023

SDG

MITIGATION & ADAPTATION


© Hervé Fabre

OBJECTIVES

The main aim of the project is to develop a new feed for marine aquaculture based on sustainable protein foodstuffs, which would make it possible to reduce the pressure on wild fish stocks and reserve them for human consumption. This will involve assessing the adaptation of fishes to a new alimentary bolus from the physiological and morphological points of view, and analysing their growth rate in comparison with a classic feed constituted of fishmeal. Priorities are: (1) the production of a traceable feed; (2) the production of sustainable farmed fishes; and (3) the replicability of the model and development of local supply circuits.

MAIN ACTIVITIES

There are four phases. Phase 1: Test various feed compositions (experimental phase) to test several feed compositions by varying the percentage of proteins; Phase 2: Establish circular economy loops (soldier fly production, waste recycling, feed production, outlet for aquaculture fish feed); Phase 3: Establish a network of local actors and producers for the composition of the feed; Phase 4: Reflect on the implementation of a traceability sign for the food (quality label); Phase 5: Produce farmed fish and analysis of nutritional qualities and economic analysis of the costs of production.

RESULTS & IMPACTS

Since the beginning, with Phase 1 from 2018 to 2020, the following milestones have been achieved: (1) the structuration of a group of experts, actors and professionals on the matter; (2) the elaboration and testing of a first aquaculture feed using mealworms; (3) the hire of an aquaculture engineer at the Institute to strengthen the team; and (4) the construction of a marine station, with a wing dedicated to researching and teaching those aquaculture practices.

MITIGATION & ADAPTATION

- Cut the emissions related to the industrial fishing (for the fish flour) and transport of the production;
- Protect the wild fish stocks, thus enhancing the ocean's capture capabilities;
- Allow the aquaculture not to rely on wild fish stocks, volatile due to climate change, meteorological events (Nino/nina) and overfishing.

WHAT MAKES IT INNOVATIVE

The project develops low-carbon, low-tech and high efficiency aquaculture proposing insect proteins as fish feeds. It provides an opportunity to enhance collaboration and cooperation with diverse stakeholders, including through the creation of a regional center of relevant skills and expertise.

ARMATEURS DE FRANCE

The Blue Charter

In 2003, the French shipowner's association created its Blue Charter, the concrete illustration of its long-standing efforts in favour of high-quality, safe shipping that is respectful of people and the environment. Since then, French shipowners have illustrated their desire to go even further by introducing new commitments to the Charter that reflect their ambition. In 2020, the Blue Charter was incorporated into Armateurs de France's articles of association, making membership of both the organisation and the Charter inseparable.

Budget:
N/A

Funding sources:
N/A

Scale:
Global

Geographical location:
Based in Paris, France

Partner(s):
All members of Armateurs de France

Project duration:
Since 2003

SDG

MITIGATION

OBJECTIVES

The Blue Charter has three main priorities: (1) Placing people at the heart of companies' concerns, (2) Acting to protect the environment and (3) Maintaining the highest level of safety.

MAIN ACTIVITIES

The Blue Charter provides many options for action, including: vessels atmospheric emissions and underwater noise reduction; speed and conduct optimization; fight against marine mammals' collision and the transfer of invasive species; promote the introduction of technologies with a limited environmental impact of maritime transports; actively contribute to discussions with marine environment associations; but also, apply rules of corporate governance consistent with safety requirements and support crew safety training throughout their careers.

RESULTS & IMPACTS

All members of the association agreed to comply to the Charter, and to provide transparent information on the condition for its application. Every year, Armateurs de France rewards a member who has distinguished himself on the three priorities of the Blue Charter with the Blue Charter Trophy. In addition, the Blue Charter invites its shipping company members to participate in other projects showcasing their commitment such as the Green Marine Europe Label in which Armateurs de France and its members are very invested. For the first time in 2020, Green Marine Europe has awarded the label to six French shipowners.

MITIGATION

- Contribute to shipping regulatory developments at national, european and international levels;
- Represent and promote very active French shipowners on environmental issues in order to create momentum for action within the international shipping community;
- Create green alternatives for the shipping sector (LNG, hydrogen, wind, etc.);
- Participate in projects to reduce pollution from ships (QWIO project, GME label, SAILS charter, etc.).

WHAT MAKES IT INNOVATIVE

Armateurs de France is the first French professional organization which has included its sustainable development commitments in its articles, making membership of both the organization and the Charter inseparable. It is therefore an incentive to be proactive and to go beyond regulation (on the environment, safety and social aspects).

Enhancing the transition towards sustainable societies and economies

FRENCH MARITIME CLUSTER

Coalition for the Eco-Energy Transition of Maritime Industries

The global Climate goals by 2050 demand technological, economical and organisational ruptures for the whole logistic and mobility chain. The eco-energy transition is based on new energy models: energy mix & technologies; energy efficiency; while protecting biodiversity. There is a need for a cross-industry approach, working together to define a common based science approach on Life-Cycle Assessment (LCA) of these new energy models. The Coalition will then mutualize R&D and projects and synchronize roadmaps to reach these goals.

Budget:
850k€

Funding sources:
Private and public

Scale:
Local

Geographical location:
France

Leading partner(s):
French Ministry of the Sea, ADEME, ECOSYS Group

Other partner organisation(s):
37 partners including IFREMER, Météo France and SHOM

Project duration:
2020-2021

SDG

MITIGATION & ADAPTATION

OBJECTIVES

The Coalition aims to define a shared vision of the new energy models to achieve "decarbonization & 0 emission" 2050 Goals. This is based on a global vision of sea, coastal and port activities, and the connections with shore activities and territories challenges. Thus, the Coalition has decided to use new methods and tools, and created a digital platform with 3 dimensions: information; decision making; collaboration. This French initiative has been launched in order to contribute to european and international Initiatives and to propose the T2EM Platform.

MAIN ACTIVITIES

The Coalition has defined 5 workstreams: (1) Declining the climate goals for the different maritime and port activities with associated indicators; (2) Referencing solutions industries and validating new energy models with dedicated tools; (3) Facilitating financing of solutions from public and private sources; (4) Proposing solutions to public stakeholders at the national, European and international levels; (5) Developing the Digital Platform. In 2021-2022 the Coalition will announce: the global overview of the new energy models challenges; an academic chair to mutualize studies; a Lab to synchronize R&D and accelerate projects; a common dynamic based on the T2EM Platform.

RESULTS & IMPACTS

Launched in 2019, the Coalition now gathers 13 companies, 10 federations, 2 competitiveness poles and several scientific organisations. Since then, the Coalition assessed the potential of energy solutions, and developed a solutions' repository. All the information was gathered and aggregated in the first version of the "T2EM Platform". The Platform was developed by the Coalition, and hosts the database and the first decision-making tools. The Coalition also created working groups to delve deeper into specific issues.

MITIGATION & ADAPTATION

- Help the maritime (i.e. sea, coastal, port) stakeholders to reduce their impacts on biodiversity through the development of new energy models;
- Develop a new mix of solutions to mitigate climate change, transforming stakeholders' assets and operations to reach the global Climate Goals by 2050.

WHAT MAKES IT INNOVATIVE

The French Maritime Cluster is developing digital tools to support and synchronize the main efforts from both public and private stakeholders, and tools to simulate and approve the solutions. The next step would be a european and international dimension of this Platform.

SURFRIDER FOUNDATION EUROPE

Green Marine Europe

Green Marine Europe is a voluntary environmental certification program that helps shipowners to inform their partners and reduce their environmental footprint, through the evaluation of several criteria (Greenhouse gas, SOx and NOx emissions, underwater noise, waste management, ship dismantling, etc). It was launched in April 2020 by Surfrider Foundation Europe, in partnership with Green Marine in Canada, thereby creating a mechanism that supports them in improving their environmental performance on a European scale.

Budget:
90k€

Funding sources:
Private and public

Scale:
Subregional

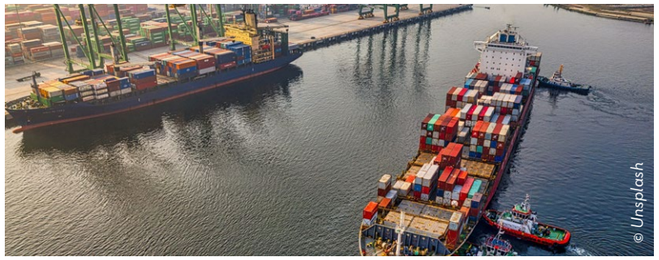
Geographical location:
Europe

Partner(s):
Green Marine
(Alliance Verte)

Project duration:
2020-2023

SDG

MITIGATION & ADAPTATION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OBJECTIVES

The overall goal is to support shipowners towards a green transition, by communicating on their better environmental practices going beyond the existing regulation. To be certified, candidates must annually measure their environmental performance using the program's self-assessment guides, then submit their results to an external verification that is carried out by an independent verifier accredited by Green Marine Europe, as well as agree to publish their individual results. The label also involves all the actors of the maritime supply-chain, by working with shipyards, shippers, terminal operators, ports and technology solutions' providers.

MAIN ACTIVITIES

In the frame of Green Marine Europe, Surfrider Foundation monitors the regulation related to shipping issues, in order to implement it in the certification requirements. It also organizes and facilitates the steering, advisory committees and all the governance bodies of the label. Surfrider Foundation trains the verifiers that evaluate shipowners and runs the recruitment of new candidates, referring to 14 indicators. Finally, it organizes the reveal event and certifies the laureates every year.

RESULTS & IMPACTS

The Green Marine Europe label counts more than 150 participants in total (i.e. shipowners, ports, terminal and shipyards), and shipowners have to improve their performance from year to year. In 2020, the label certified 6 shipowners for the first year: Corsica Linea, Brittany Ferries, La Méridionale, Socatra, Genavir-Ifremer and Orange Marine. More than 150 people followed the event online for this reveal event.

MITIGATION & ADAPTATION

- Anticipate new environmental legislations for the shipping industry;
- Promote the reduction of GHG emissions from ships and ports;
- Reduce the risk of introducing and propagating aquatic invasive organisms and pathogens;
- Promote the reduction of marine pollution (e.g. cargo residues, ship recycling);
- Promote the reduction of impacts on marine biodiversity (e.g. underwater noise).

WHAT MAKES IT INNOVATIVE

The Green Marine Europe label is the only certification program that covers every type of pollution of a fleet, from atmospheric emissions to ship dismantling. It is also the only program interested in tackling underwater noise issues. Green Marine Europe tries also to reduce marine pollution with a global approach with the whole supply-chain.

Enhancing the transition towards sustainable societies and economies

THE INTERNATIONAL FUND FOR ANIMAL WELFARE (IFAW)

Blue speeds for shipping

Ship strikes, underwater noise and GHG emissions from the 60,000+ commercial vessels that ply the global ocean pose a serious conservation and welfare threat to whales, other marine species and habitats around the world. IFAW advocates for reduced source levels of noise from commercial shipping with governments and within the IMO. IFAW is also engaging directly with the shipping industry to encourage technological advances in ship design and maintenance, and the adoption of operational practices such as slow steaming and rerouting measures.

Budget:
Confidential

Funding sources:
N/A

Scale:
Regional

Geographical location:
Europe

Partner(s):
None

Project duration:
2019-2024

SDG

MITIGATION & ADAPTATION


© IFAW

OBJECTIVES

IFAW's overall goal is that mandatory regulations are adopted to halt the increasing risks from ship strikes, underwater noise and GHG emissions. The three major objectives are to: (1) Increase global regulation of ocean noise, ship strikes and GHG emissions from commercial shipping through the creation, adoption and implementation of voluntary and mandatory policies; (2) Support and drive efforts to identify at-risk whale populations/areas and to adopt ship strike risk reduction measures; and (3) Increase public awareness of the solutions available to address the impacts of shipping on marine life.

MAIN ACTIVITIES

Main activities mainly include advocacy and awareness-raising work, such as: IMO consultative status and attendance at relevant committee meetings, shipping company and shipping association outreach, ports outreach, regional and local government engagement, and raising awareness about underwater noise and ship strikes.

RESULTS & IMPACTS

IFAW has managed to engage shipping companies and governments on the issues of noise and ship strikes and associated GHG emission benefits, as well as to increase public and supporter awareness of these issues and solutions available. In relation to ocean noise reduction, IFAW also contributed to the Emmy-award winning documentary "Sonic Sea".

MITIGATION & ADAPTATION

- Mitigate the noise and GHG emissions from ships;
- Reduce ship strikes, therefore protecting marine biodiversity;
- Promote the evolution and adaptation of shipping practices,

WHAT MAKES IT INNOVATIVE

IFAW's project addresses 3 major threats to the marine environment with a straightforward and readily actionable solution: shipping speed reduction. IFAW is in a unique position amongst NGOs as it has observer status with IMO and is considered as the "go-to" organisation on cetacean & shipping interactions.

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RAISING AWARENESS, MOBILIZING CITIZENS AND PROMOTING OCEAN LITERACY

Stopping the loss of marine biodiversity and preserving the regulating role of the ocean in the climate system will require transformative change in lifestyles and behaviours. To that end, the entire society must adopt more sustainable production and consumption practices. Only well-informed citizens will make this transformative change possible. As recalled by Sylvia Earle "the greatest threat to the ocean, and thus to ourselves, is ignorance"[13] and, admittedly, the vast majority of people are not aware of how daily lives are directly and indirectly dependent on the ocean, and vice versa.

For that reason, it is essential to further share ocean knowledge within societies and boost stakeholders' experience of coastal and marine ecosystems (e.g. aquariums, exhibitions, school trips). That is the role of several actors: research institutes, foundations, museums, associations and aquariums, who act as mediators with the great public, thus bridging the gap between science and society.

On that front, ocean literacy, i.e. the understanding of the ocean and our relationship with it, allows society to understand critical issues associated with ocean-related topics and challenges (e.g. climate change, biodiversity loss, health, energy transition, food security). Awareness-raising and educational activities provide stakeholders the necessary knowledge to better consider the ocean, hence responding to growing societal demands and needs for accessible and reliable information.

Such activities place primary importance on the cultural services provided by the ocean (i.e. recreational, aesthetic, artistic, religious and spiritual dimensions), promoting its related values, meanings, practices and knowledge. In many parts of the world, the ocean already plays a central role in shaping cultural beliefs and identities. This singular relationship between human and sea, which greatly contributes to protecting the ocean and its resources, must be preserved and strengthened.

This final section presents initiatives deployed to inform and educate both the general public and other relevant stakeholders, such as decision-makers, on ocean challenges, therefore supporting transformative change and the adoption of more sustainable practices, lifestyles and behaviours.

[13] *F. Santoro et al. (eds). 2017. Ocean Literacy for All - A toolkit, IOC/UNESCO & UNESCO Venice Office, Paris (IOC Manuals and Guides, 80)*

UNIVERSITY OF BREST (UBO)

BLUE DiplomaSEA

Université de Bretagne Occidentale

Since 2018, the United Nations have been conducting negotiations for a treaty on conservation in the high seas known as BBNJ (Biodiversity Beyond National Jurisdiction). In line with this, the University of Brest developed a serious game that aims to train stakeholders in charge of implementing the future BBNJ treaty and to raise awareness among citizens about high seas challenges. The game adopts a systemic approach to ocean sustainability.

Budget:
61 000 €

Funding sources:
Public and private

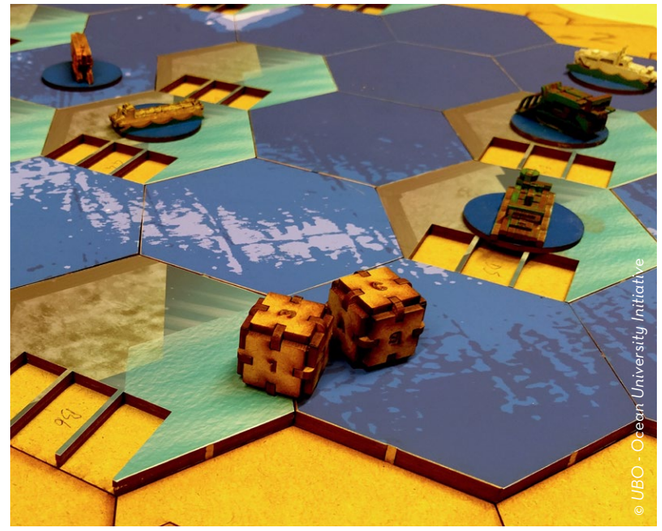
Scale:
Global

Geographical location:
Based in Brest, Brittany, France

Partner(s):
Game in Society, EESAB, Ifremer, Nausicaá, Sailing Hirondelle, Consult'Océan, Atelier Canopé 29

Project duration:
Since 2020

SDG



© UBO - Ocean University Initiative

OBJECTIVES

BLUE DiplomaSEA is a serious game. The overall goal is to offer a capacity building tool to the experts that will implement the future BBNJ treaty and to post-graduate students in marine and coastal science. The objectives of the game are to: (1) Dive into the stakes of protecting marine biodiversity in the high seas; (2) Feel the challenges related to international governance (e.g. social justice, geopolitical and cross sectoral coordination); (3) Provide a space for negotiation; (4) Develop transversal skills (e.g. cooperation, dialogue, mutual understanding).

MAIN ACTIVITIES

The game is to be played between 5 and 15 participants endorsing various roles at play in high seas: fisheries, maritime transport, deepsea mining, NGOs, science, etc. Players take decisions based on a predefined set of actions in a series of rounds. Each action impacts the three pillars of sustainable development. The overall objective is to build a balanced use and conservation of the high seas through negotiation. Following the playing session (2 to 3 hours), a 1-hour debriefing session is recommended for the participants to better understand the stakes of international governance in the high seas.

RESULTS & IMPACTS

Before designing the game, the University organized design-thinking workshops with scientists, mediators and game-designers. The University has created a first prototype and tested it with students. The prototype will be finalized and a digital version will be developed. The simulation game BLUE DiplomaSEA is still under development, and the University expects it to be ready by 2022. The University of Brest has created a first prototype for a board version. It will be available in an open source version by summer 2021. A digital version will be developed in the future.

WHAT MAKES IT INNOVATIVE

This tool provides a playful way to train students and practitioners to the high seas challenges.

ETHIC OCEAN

Species Guide for seafood buyers

Ethic Ocean

The Species Guide for seafood buyers presents the main species of fish, molluscs, crustaceans and algae that are consumed in France, Belgium and Switzerland, and establishes purchasing recommendations for professionals who buy and sell seafood and want to ensure a sustainable supply. The Guide advocates for sustainable seafood supply, and low-carbon fishing practices to adapt to marine life depletion and to the effects of climate change.

Budget:
30 k€

Funding sources:
Public and private

Scale:
Subregional

Geographical location:
France, Belgium and Switzerland

Partner(s):
None

Project duration:
Since 2008
(Annual update, based on scientific datas)

SDG 12


© Alain Fourcy IN-FINITUM

OBJECTIVES

The Species Guide for seafood buyers presents the main species of fish, molluscs, crustaceans and algae that are consumed in France, Belgium and Switzerland, and establishes purchasing recommendations for professionals who buy and sell seafood and want to ensure a sustainable supply. The Guide advocates for sustainable seafood supply, and low-carbon fishing practices to adapt to marine life depletion and to the effects of climate change.

MAIN ACTIVITIES

Marine resources are not unlimited. We know about their fragility because of environmental changes and fishing pressure. 34.2% of stocks are overexploited in the world, fishing techniques that have a major impact on ecosystems remain, and illegal fishing practices persist. The objective of this Guide is to help professionals in the fishing and aquaculture sector (fish wholesalers, importers, fishmongers, supermarket buyers, chefs, etc.) to obtain sustainable seafood supplies in order to fight against the dramatic decline of marine resources.

RESULTS & IMPACTS

This Guide is seen as a key tool among the seafood industry and it helps the seafood buyers to change their practices (chefs and restaurants, catering sector, cooking schools, fishmongers, retailers, suppliers...) to improve the sustainability of the seafood they buy for their clients. About 1.000 guides are published every year and around 5.000 users through online tools.

WHAT MAKES IT INNOVATIVE

The Species Guide is seen as the key tool to help seafood buyers to implement a sustainable seafood policy, and is designed to analyse the entire production chain.

Raising awareness, mobilizing citizens and promoting ocean literacy

WORLD OCEAN NETWORK

Mr.Goodfish

world ocean network

Mr.Goodfish is a programme on the sustainable consumption of seafood products, launched under the umbrella of the World Ocean Network, by three aquariums: Nausicaa - Centre de la Mer, in France, the Acquario di Genova in Italy and the Aquarium Finisterrae in Spain. Mr.Goodfish provides information tools (e.g. mobile app) designed to help seafood professionals and consumers choose the "right fish". Experts recommend a list of seafood products that can be purchased by consumers.

Budget:
318 443€/year (2021)

Funding sources:
Public

Scale:
Subregional

Geographical location:
France, Italy, Spain, Monaco

Leading partner(s):
Nausicaa, the National Sea Center (France), Acquario Di Genova (Italy) and Aquarium Finisterrae (Spain)

Other partner organisation(s):
Prince Albert II of Monaco Foundation

Project duration:
Since 2010

SDG 12


© Nausicaá

OBJECTIVES

More than 59% of fish stocks are fully fished, 34% are overfished and more than 6% are underfished. Mr.Goodfish therefore aims to promote fish consumption from fully fish stocks and underfished stocks to reduce the pressure on the overfished stocks. Following Mr.Goodfish's advice and purchasing a species at least once a year could save 18 000 tons of threatened species. The priority is that the fish industry and consumers join forces to save the economy of fishery.

MAIN ACTIVITIES

Mr.Goodfish publishes recommendations to promote sustainable consumption of seafood products based on the status of fish stocks, the size and season. The recommendations are established quarterly by an expert committee that brings together the main fishing industry stakeholders: scientists, fishers, wholesalers, processors, fishmongers, restaurateurs, distributors and consumer associations. They meet every 3 months to provide specific recommendations for each of the following regions: Channel and North Sea, Brittany and Atlantic and Mediterranean Sea. Mr.Goodfish creates specific tools adapted to each professional group to promote its recommendations.

RESULTS & IMPACTS

Mr.Goodfish provides independent scientific advice to promote seafood sales while respecting the environment, and identifies products as soon as they are put up to auction. Mr.Goodfish provides communication tools to promote sustainable species on their menus and stalls. It promotes seasonal products and helps to highlight species unknown to the general public. Mr.Goodfish helps consumers choose their fish by providing recommendations via the website and social media. Consumers choose seasonal seafood products available on Mr.Goodfish's website and mobile app. Today, more than 2,500 professionals have joined the Mr.Goodfish programme.

WHAT MAKES IT INNOVATIVE

Mr.Goodfish aims to promote sustainable alternatives for seafood products to both professionals and the general public, raising awareness among the entire seafood value chain, from seafood producers to consumers.

INSTITUT MARIN DU SEAQUARIUM

ReSeaclon: fishermen and territory against marine litter

The ReSeaclons project was born from the meeting of Triveo and the Seaquarium Marine Institute. Catalyst of marine conservation projects, the Seaquarium Marine Institute seized the opportunity to collaborate with Triveo, a recycling company, on its new technology to reduce marine litter in its region. The TRIVEO technology, which is still under development, aims to collect plastic waste from marine environments to recycle it into small objects (compression and friction processes). The ReSeaclons project therefore aims to answer the following question: how to collect marine plastics from the sea, and to do it sustainably?

Budget:
55k€ (Pilot project-18 months), 6k€ /year

Funding sources:
Public and private

Scale:
Local

Geographical location:
Grau du Roi, Gard, France

Leading partner(s):
Seaquarium
(Grau du Roi's aquarium)

Other partner organisation(s):
Local authorities, Local fishermen, Industrial Partner (TRIVEO)

Project duration:
Since 2018

SDG


© B. Verdeille/Institut Marin Seaquarium

OBJECTIVES

The ReSeaClons project aims to assess the feasibility of developing a waste collection and treatment chain, with the objective of protecting marine environments at the local level. The main priorities are to consider maritime spatial planning issues (including the involvement of fishermen), assess human and material costs, test and improve the Triveo-technology, and to do market research. Priorities also include raising awareness on marine litter issues to the general public to change human behaviours.

MAIN ACTIVITIES

The Seaquarium Marine Institute deals with collection management (e.g. logistics, collection, storage and sorting) and raising awareness activities. It works on 4 collection sites that were identified with four key stakeholders: (1) fishermen; (2) local authorities; (3) the Cleaner Blue eco-barge; and (4) local NGOs. The Seaquarium Marine Institute assesses the environmental, technical and societal impacts and progress of the ReSeaclons project, using circular economy principles and models.

RESULTS & IMPACTS

The Triveo engineers further refined the Triveo-technology, bringing technological solutions to the existing issues. Fishermen got very much involved in the project, collecting the plastic stuck in the nets on a daily basis. The collective effort proved to be effective, providing an opportunity to enhance the dialogue across sectors and actors. Citizens also took part in the project, mainly through beach cleaning activities (e.g. 1.6 tonnes of plastics collected in April 2019). Artists and scientists also joined the project. The Seaquarium Marine Institute is receiving demand for new projects on local fisheries and marine litter.

WHAT MAKES IT INNOVATIVE

The project involves all local stakeholders: authorities, fishermens, NGOs, industry representatives, artists; joining forces to achieve common goals. TRIVEO also brings in new innovative technology that will soon be translated into the ReSeaclons project.

Raising awareness, mobilizing citizens and promoting ocean literacy

EXPÉDITION MED

Plastic Free Mediterranean Sea: Exhibitions for Education

The project «Plastic Free Mediterranean Sea - Exhibitions for Education» is an environmental awareness program, carried out by Expédition MED together with three partner countries: Algeria, Morocco and Italy. These travelling exhibitions will trace the sources, origins and impacts of plastic waste, while presenting sustainable and adapted alternative solutions to the general public in the Mediterranean Region.

Budget:
300 K€

Funding sources:
Public and private

Scale:
Regional

Geographical location:
Mediterranean Region
(i.e. Algeria, Morocco, Italy)

Partner(s):
8 partners including ADEME International

Project duration:
2020 - 2022

SDG


© Abdelkrim GHAB

OBJECTIVES

The overall goal is to disseminate knowledge on a large scale around the issues of plastic pollution to Mediterranean populations. Expédition MED's objective is to create travelling educational and scientific exhibitions on the issue of pollution, identifying the origin of the waste in order to target the sources of emissions and to support the implementation of sustainable solutions, therefore changing human behavior. The exhibition also provides an opportunity to strengthen ties with partner countries, enhancing cooperation through concrete and joint actions.

MAIN ACTIVITIES

Expédition MED carries raising awareness activities, disseminating knowledge through itinerant exhibitions jointly organized with Algeria, Morocco and Italy. Main activities therefore are creating educational scientific exhibitions. Other activities also include beach cleaning. Once waste is collected, it is then analyzed to produce comparable data. The data will subsequently be presented in the exhibitions, as well as in scientific publications.This program involves local populations in the protection of the environment through collaborative science.

RESULTS & IMPACTS

Expédition MED is creating partnerships in Algeria, Morocco and Italy with the help of local NGOs. Our French itinerant exhibition will be adapted to the culture and needs of each country. Local stakeholders will be called upon during beach cleanup campaigns. Marine litter results will be promoted in scientific journals and will be used to orient actions for the implementation of sustainable and adapted solutions (common, adapted). We will monitor the exhibitions hosted by cities of each country (number, type of visitors). Additionally, a perception survey will be set up to measure the impact of exhibitions on the public.

WHAT MAKES IT INNOVATIVE

Expédition MED is conducting joint actions with key partners to build a large-scale awareness project. These itinerant exhibitions will inform and raise awareness at a very large scale, changing human behavior in several Mediterranean countries to stop plastic pollution including in the Mediterranean Sea.

AQUARIUM TROPICAL DE LA PORTE DORÉE

Ocean Festival («Fête de l'océan»)

The Aquarium Tropical organises an Ocean Festival (scientific and artistic workshops, thematic tours, shows for children, concerts) in close collaboration with key partners from the conservation and education communities every year. The Ocean Festival aims to promote scientific knowledge and raise awareness among the general public, showing visitors and participants the diversity, richness, beauty but also fragility of oceanic biodiversity.

Budget:
about 50 000 € /year

Funding sources:
Public

Scale:
Regional

Geographical location:
Paris, France

Partner(s):
The French National Museum of Natural History (MNHN), Ifremer, theatre companies

Project duration:
3 days every year since 2017

SDG 4 12 13

© Gabriel Picot - EPPDD

OBJECTIVES

The overall goal of the Aquarium Tropical is to show the richness of ocean biodiversity, while alerting visitors on the threats it faces and showcasing initiatives to protect marine environments. The Aquarium's priorities are: to reach to a wide audience (general public and schoolchildren); to develop a diversified cultural program that is playful and adapted to all ages (e.g. scientific and artistic workshops, concerts, theater); to show the variety of actors involved in the study and preservation of ocean biodiversity; and to propose ways for the public to contribute individually to its protection.

MAIN ACTIVITIES

The Aquarium Tropical will broadcast the "SPLUJ" sound-show, created by Teatr Piba and Ifremer, to immerse the audience in the deep sea through an audio show in the dark. The young public will be able to listen to the show «Good fishing bad pickaxe», on sustainable fishing. Scientific speakers will guide small groups of visitors throughout the aquarium to teach them about the different on-site ecosystems (e.g. seahorses, marine mammals, alligators, predators of Amazonia, cichlids of Madagascar, electric fishes, coral reefs, mangroves). Exceptional backstage visits of the Aquarium will also be proposed.

RESULTS & IMPACTS

More than 25,000 people were able to enjoy the activities offered during the Ocean Festival at the Tropical Aquarium between 2017 and 2019. In 2020 the 4th edition was broadcast online due to the pandemic. It brought together more than 20,000 people during 2 broadcasts of 2 hours each.

WHAT MAKES IT INNOVATIVE

The Ocean Festival is the only annual event dedicated to the ocean in Paris. Parisians can understand why and how to protect the ocean. The Aquarium showcases species conservation programs and raises awareness to the general public, thus gaining the attention and interest of the audience for the protection of ocean ecosystems.

Raising awareness, mobilizing citizens and promoting ocean literacy

TOUR DES DEUX AMÉRIQUES SOLIDAIRE EN VOILIER

T2A Expedition

The expedition consists of sailing along the American coast to (1) conduct scientific research on the ocean, climate and biodiversity, and related interactions; and (2) share scientific knowledge on these issues in each leg of the expedition. The expedition will raise awareness on causes, effects and available solutions among the general public (including school children) and local authorities and representatives.

Budget:
1,185k€

Funding sources:
Private

Scale:
Global

Geographical location:
South America, Central America, North America, Caribbean, France, Morocco, Canary Islands, Cape Verde, Antarctica, Arctic, Greenland

Partner(s):
10 partners including the Phenomer Laboratory (Ifremer) and the Locean Laboratory of Oceanography and Climatology

Project duration:
2022 - 2026

SDG 4 12 13


© Unsplash

OBJECTIVES

The overall goal is to change mindsets and behaviors regarding the ocean, climate and marine biodiversity. The expedition has three main objectives: (1) Reduce overconsumption of seafood wherever it is economically possible; (2) Adapt to the effects of climate change and reduce related risks; (3) Transform human behaviour to adopt a sustainable and responsible way of life (e.g reduction in the fossil fuel consumption, adoption of clean energies, waste management, plastic recycling, coastal protection)

MAIN ACTIVITIES

The expedition conducts awareness-raising and educative activities, including: organisation of conferences for the general public (400 attendees expected), schools and local media, planning and facilitation of events, and production of documentaries, videos, and illustrated books. Some artists are joining the expedition. It also leads scientific research activities, such as: participatory science research (e.g., temperature, shoreline and salinity measurements, and samples), making databases available to the scientific community (e.g. videos to assess the evolution of the 20-meter zone) and conducting interviews of people living along the coast.

RESULTS & IMPACTS

The association conveyed approximately 15 conferences on «Ocean and climate: your future depends on it». The expedition was seen by hundreds of people people through the media and three major trade fairs. 100 sailors and 39 divers who will take turns on board have been recruited, and training cruises were set up in the Mediterranean Sea to allow around a hundred people to discover life on board the vessel.

WHAT MAKES IT INNOVATIVE

The expedition aims to spread ocean knowledge, enabling people to anticipate the consequences of climate change and biodiversity loss, allowing them to adapt their behaviour accordingly.

NEOGRAPHIC DIGITAL

Blue Box: The first immersive nomadic & engaged experiences

Blue Box is an innovative room of 48 m2 containing panoramic video projection, 3D sound, body interaction and hologram. It can be easily implanted via its mountable/dismountable structure to democratize culture by bringing it to the public. The first exhibition «Memory of the Future» aims to raise awareness and engage players on a global and urgent subject, global warming and the impact of rising sea level. It will encourage them to act on their behavior and thus, on an individual scale, on the future of our planet.

Budget:
200 000 €

Funding sources:
Public and private

Scale:
Global

Geographical location:
Based in Lilles, France

Partner(s):
Surfrider Foundation Europe, Maud Fontenoy Foundation, Ocean & Climate Platform

Project duration:
Started in 2019 - Launch in 2021

SDG 4 9 13

© Maxime Verdelet - MV Perspectiviste

OBJECTIVES

The objective of the Blue Box is to democratize culture by bringing it to the public in an innovative form combining cognitive sciences, art and new technologies, to anchor a truly positive experience in memory. Being committed to the preservation of the oceans and the environment, the first exhibition, «Memory of the Future», aims to plant a seed in the public's mind to give them the motivation to act on their behavior and thus, on an individual scale, on the future of our planet.

MAIN ACTIVITIES

Neographic Digital conducts awareness-raising activities through the Blue Box project. Its research focuses on the combination of innovative levers from the cognitive sciences to optimize the impact of content and messages. It proposes a new narration, an innovative pedagogy, accessible to the greatest number and respecting the health rules related to the Covid 19.

RESULTS & IMPACTS

Neographic Digital designed an innovative tool to promote behavioral change to the general public, and developed its first exhibition "Memory of the Future". The team is working in partnership with several organizations, including Maud Fontenoy Foundation and Surfrider Foundation Europe. Neographic Digital also volunteers time to protect the ocean through awareness-raising action and events.

WHAT MAKES IT INNOVATIVE

Blue Box is the first mobile immersive experience, and is the result of the coming-together of expertise in the fields of interactive design and video production. Moreover, it combines technological and pedagogical levers never before harmonized. Research and development is also a large part of this project, which is open to new perspectives such as the potential integration of olfactory.

Raising awareness, mobilizing citizens and promoting ocean literacy

NAUSICAÁ

«In The Eye Of The Climate» exhibit

In July 2020, Nausicaá opened its door to the public for its new exhibition, "In the Eye of the Climate". From the shores of France to the South African coastline, the public discovers life in the era of global warming and the solutions offered by the Ocean. A spectacular immersive film (3D virtual image - projection on a surface of 430 m2) concludes the exhibition: it allows the visitor to experience dramatic climatic events before witnessing the positive initiatives that have been undertaken at all level of the society to limit climate change.

Budget:
800 k€

Funding sources:
Semi-public

Scale:
Local

Geographical location:
Boulogne-sur-Mer, Hauts de France Region, France

Partner(s):
Meteo France, Tara Ocean Foundation, French National Museum of Natural History (MNHN)

Project duration:
2020 - 2022

SDG 4 12 13


© Nausicaá

OBJECTIVES

The overall goal is to raise awareness on ocean and climate issues through an exhibition combining aquariums, settings, informative panels, digital experiences and a great immersive spectacle made of virtual images. Visitors discover marine ecosystems, biodiversity reserves (e.g. penguins), and the essential role played by the ocean in climate regulation. Visitors also understand the solutions that exist for preserving the environment and living in a more ecological way, becoming players and taking up challenges.

MAIN ACTIVITIES

Nausicaá mainly conducts awareness-raising activities. The «In the Eye of Climate» exhibit allows the visitors to understand ocean and climate issues (climate regulation, climate impact and ocean based solutions). Nausicaá also proposes solutions to the visitors for coping with these upheavals and limiting climate change. The ocean and climate awareness effort is also supported on internet, social medias and by the production of educational tools for schools and the organization of events and conferences throughout 2021 in Nausicaá.

RESULTS & IMPACTS

More than 50 000 people visited the exhibit. The exhibit was mentioned in the press 84 times (print, radio, TV and web). There were more than 9 000 website visits on pages with ocean and climate content (approximately 2 minutes spent per page).

WHAT MAKES IT INNOVATIVE

The use of immersive mapping film technology to raise awareness on climate issues is innovative: 430 sq.m. of projections in 3D from the floor to the walls and an aural immersion to experience the effects and challenges of global warming.

The Roadmap to Oceans and Climate Action

The Roadmap to Oceans and Climate Action (ROCA) is a global multi-stakeholder initiative involving governments, international agencies, NGOs, scientific institutions, private sector entities, and subnational authorities to advance the ocean and climate agenda (especially in the UNFCCC, the UN Ocean Conference, and in other United Nations fora), and at the national level in all countries. ROCA was launched at the UNFCCC COP 22 in Marrakechs, Morocco. The ROCA works to implement the Strategic Action Roadmap on Oceans and Climate: 2016-2021, first discussed at the Oceans Day at COP 21 in Paris 2015.

ROCA is led by the Global Ocean Forum, Intergovernmental Oceanographic Commission of UNESCO, Ocean Policy Research Institute of the Sasakawa Peace Foundation, Japan, and the Oceano Azul Foundation, Portugal.

The Roadmap presents recommendations in six major areas which ROCA aims to advance: 1. Central role of the ocean in regulating climate; 2. Mitigation; 3. Adaptation and Blue Economy; 4. Displacement; 5. Financing; and 6. Capacity development, for implementation in 2016 through 2021.

The ROCA initiative aims to promote the application of Blue Economy approaches with emphasis on low-carbon solutions and economic benefits to developing countries and Small Island Developing States (following SDG target 14.7). The Assessing Progress on Ocean and Climate Action reports cover developments in fostering the low carbon Blue Economy, for example, initiatives that focus on: (1) advancing the development of marine renewable energy; and (2) addressing potential threats and dangers to the blue economy sector from climate change and environmental challenges and increasing climate resilience through Blue Economy.

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INSTITUT FRANÇAIS DE LA MER (IFM)
AND INNOVATIONS BLEUES

The Ocean: a global common

The Ocean as Common initiatives advocates for improved international ocean governance, promoting the principle of the ocean as a global common and supporting key stakeholders in implementing on-the-ground action. It calls for behavioral change within societies to protect the ocean and its resources.

Budget:
100 - 500 k€/an

Funding sources:
N/A

Scale:
Global

Geographical location:
Worldwide

Partner(s):
Ocean as Common (OAC)

Project duration:
2018-2025

SDG 13 CLIMATE ACTION 16 PEACE, JUSTICE AND STRONG INSTITUTIONS

© Benoit Stichelbaut/Formatives Network

OBJECTIVES

The objective is to promote a renewed vision of the Ocean as a source of benefits for all humanity for which each person, individually and collectively, is responsible, and to urge every person, every community, every State and the international community to act accordingly.

MAIN ACTIVITIES

Ocean as Common conducts awareness-raising activities. It mobilizes international and national decision-makers to strengthen international ocean governance, and engage with NGOs, companies and the general public to change human behaviour and further protect the ocean. The Ocean as Common initiative also raises funds to support stakeholders in implementing concrete action.

RESULTS & IMPACTS

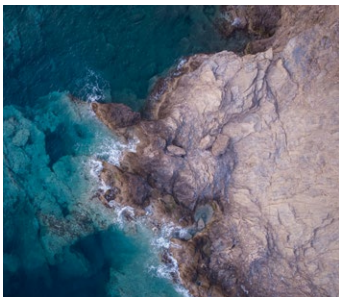
In 2019, Emmanuel Macron, President of France, has declared that the «Ocean as a global common» is a key pillarof the French maritime strategy. In addition to its call for the ocean, the Ocean as Common initiative also implemented several awareness-raising programmes, including the Swim for the ocean and Blue Friday campaigns.

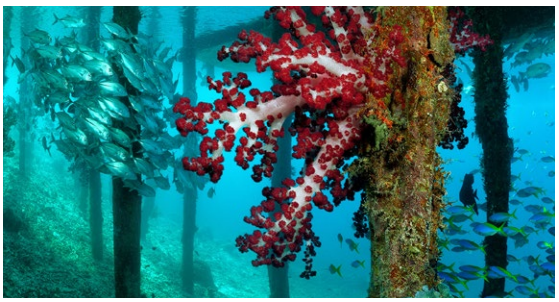
WHAT MAKES IT INNOVATIVE

The Ocean As Common project calls for a renewed vision of the Ocean, beyond the usual notions of appropriation and sharing, as well as those of freedom and sovereignty. It reminds us that the uniqueness of the waters requires a global vision and that if the Ocean is a benefit for all, we can all act for its good state, wherever we are.

ocean-climate.org







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