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NAUTILOS

Policy Briefs

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DEC	Websites, patents, filing, etc.	
DEM	Demonstrator	
O	Other	

Dissemination level		
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CO	Confidential, only for members of the consortium (including the Commission Services)	

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NAUTILOS - New Approach to Underwater Technologies for Innovative, Low-cost Ocean observation is an H2020 project funded under the Future of Seas and Oceans Flagship Initiative, coordinated by the National Research Council of Italy (CNR, Consiglio Nazionale delle Ricerche). It brings together a group of 21 entities from 11 European countries with multidisciplinary expertise ranging from ocean instrumentation development and integration, ocean sensing and sampling instrumentation, data processing, modelling and control, operational oceanography and biology and ecosystems and biogeochemistry such, water and climate change science, technological marine applications and research infrastructures.

NAUTILOS will fill-in marine observation and modelling gaps for chemical, biological and deep ocean physics variables through the development of a new generation of cost-effective sensors and samplers, the integration of the aforementioned technologies within observing platforms and their deployment in large-scale demonstrations in European seas. The fundamental aim of the project will be to complement and expand current European observation tools and services, to obtain a collection of data at a much higher spatial resolution, temporal regularity and length than currently available at the European scale, and to further enable and democratise the monitoring of the marine environment to both traditional and non-traditional data users.

NAUTILOS is one of two projects included in the EU's efforts to support of the European Strategy for Plastics in a Circular Economy by supporting the demonstration of new and innovative technologies to measure the Essential Ocean Variables (EOV).

More information on the project can be found at: <https://www.nautilus-h2020.eu>.

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TABLE OF CONTENTS

ACKNOWLEDGEMENT	4
COPYRIGHT	4
TABLE OF CONTENTS	5
EXECUTIVE SUMMARY.....	6
LIST OF ACRONYMS AND ABBREVIATIONS.....	7
I. INTRODUCTION	8
II. POLICY BRIEF 1 - EMPOWERING CITIZENS THROUGH OCEAN KNOWLEDGE CO-PRODUCTION	9
1. Recommendations	9
1.1. Stimulate businesses and organizations to support and participate in citizen science initiatives.....	9
1.2. Promote the integration of citizen science data into policymaking by improving data management and quality assurance systems.....	9
1.3. Foster a culture of ocean literacy by providing education and training opportunities for citizens to better understand and engage with ocean issues.	9
III. POLICY BRIEF 2 - SUPPORTING OCEAN OBSERVATIONS TO ADDRESS CLIMATE CHANGE	11
2. Recommendations	11
2.1. The Importance of Ocean Observation in a Changing Climate	11
2.2. The Need for Ongoing and Better Support for Ocean Observation	11
2.3. The Importance of Closing Data and Knowledge Gaps	11
2.4. The Need for a Balance Between Action and Observation	12
IV. POLICY BRIEF 3 - BEYOND CLIMATE CHANGE, SUSTAINED OBSERVATION IN SUPPORT OF THE BLUE ECONOMY	13
3. Recommendations	13
3.1. Promote the integration of ocean observation data into decision-making processes to support the sustainable management of ocean resources and the Blue Economy.....	13
3.2. Encourage public-private partnerships to support sustained ocean observation efforts and the Blue Growth.....	13
3.3. Foster international collaboration and coordination to support long-term ocean observation efforts, sharing best practices and technology developments.....	14
V. CONCLUSIONS	15
VI. APPENDIX 1: REFERENCES AND RELATED DOCUMENTS.....	16
VII. APPENDIX 2: POLICY BRIEFS PRINTED VERSIONS.....	17

EXECUTIVE SUMMARY

Deliverable 10.3 builds on NAUTILOS project's policy foundation from Deliverable 10.5, presenting three policy briefs targeting different stages. The first brief emphasizes citizen science for marine observation, enhancing sustainability. The second underscores ocean observation's role in understanding climate change, urging ongoing support and integration. The third highlights ocean observation's economic importance and sustainable resource management through international cooperation.

Two briefs were shared at Ocean Race Grand Finale, reaching policymakers. The final brief's public launch during Nautilus' final conference aims to broaden its impact. NAUTILOS seeks to advance ocean knowledge, sustainability, and policy engagement for responsible global ocean governance.

LIST OF ACRONYMS AND ABBREVIATIONS

Abbreviation	Definition
EMODnet	European Marine Observation and Data Network
EMSO-Eric	European Multidisciplinary Seafloor and water column Observatory - European Research Infrastructure Consortium
EOV	Essential Ocean Variable
EU	European Union
EUROGOOS	European component of the Global Ocean Observing System of the Intergovernmental Oceanographic Commission of UNESCO
JERICO-RI	Joint European Research Infrastructure for Coastal Observatories – Research Infrastructure
NAUTILOS	New Approach to Underwater Technologies for Innovative, Low-cost Ocean observation

I. INTRODUCTION

Deliverable 10.3 builds upon the foundation laid by Deliverable 10.5, which outlines the strategic policy agenda for the NAUTILOS project and establishes communication priorities aimed at policymakers. As part of the project, three policy briefs have been developed to disseminate valuable insights and recommendations to decision-makers at different phases of the project.

The first policy brief, "Empowering Citizens Through Ocean Knowledge Co-production," advocates for the active support of citizen science initiatives. By doing so, policymakers can democratize marine observation science and foster a new type of self-driven, sustainable, and cost-efficient observatory concept.

The second policy brief, "Supporting Ocean Observations to Address Climate Change," underscores the critical role of ocean observation in understanding the earth system, particularly in the context of climate change. The brief calls for ongoing and better support for integrated ocean observation, urging funding and policy that enables permanent or semi-permanent ocean observing programs and infrastructure. It also emphasizes the need for integration between EU initiatives and public-funded projects.

The third policy brief, "Beyond Climate Change, Sustained Observation in Support of the Blue Economy," highlights that ocean observation goes beyond addressing climate change; it also plays a crucial role in supporting economic activities in the ocean. The brief emphasizes the importance of understanding the environment and developing ecological models to sustainably manage fishery resources. It calls for informed international policies and protocols to protect and sustainably exploit newly accessible areas of the ocean, ensuring maximum returns with minimal impact.

Two of these policy briefs were successfully disseminated during the Ocean Race Grand Finale (outcomes of this event will be reported on deliverable 10.6, due in the third trimester of 2023) in Genova in June 2023, effectively reaching policymakers and key stakeholders. The last policy brief will be launched to the public during Nautilus' final Conference, further amplifying its impact and engagement with the broader community.

The NAUTILOS project aims to contribute significantly to the advancement of ocean knowledge, sustainable practices, and citizen involvement in shaping effective policies for the benefit of our planet and its future generations. Through strategic communication and dissemination, NAUTILOS endeavours to create lasting positive change and promote responsible ocean governance worldwide.

II. POLICY BRIEF 1 - EMPOWERING CITIZENS THROUGH OCEAN KNOWLEDGE CO-PRODUCTION

The ocean plays a significant role in the Earth's system, and understanding its importance is crucial for ensuring sustainable management and exploitation. Apart from mitigating climate change, continual observation of the ocean will promote economic activities and assist in developing comprehensive ecological models. This, in turn, will enable informed decisions and actions for the sustainable management of resources. However, ocean observation should not be a task for experts and scientists alone. Today, the possibility to use consumer and readily available technologies allow for the direct involvement of common citizens in the Big Data acquisition process also in the oceanographic field, as well as raising awareness of related issues at the same time.

Citizen science is a form of scientific collaboration where members of the public participate in scientific research projects, providing data and observations that can be analysed by researchers. By supporting citizen science initiatives, policymakers can democratize marine observation science, creating a new type of self-driven, sustainable, and cost-efficient observatory concept and, at the same time, allowing for informed decisions to be made based on the best available information.

1. RECOMMENDATIONS

- 1.1. Stimulate businesses and organizations to support and participate in citizen science initiatives.

Promoting and supporting citizen science initiatives through capacity building is key to engaging businesses and organizations in ocean observation efforts. By offering training, workshops, and educational opportunities, businesses and organizations can see the benefits of supporting these initiatives and invest more in their success. This not only provides more resources, but also builds a community of knowledgeable and committed citizens. These businesses can also benefit from increased visibility and recognition. Providing opportunities for professional development is crucial for promoting citizen science initiatives and engaging companies in ocean observation efforts.

- 1.2. Promote the integration of citizen science data into policymaking by improving data management and quality assurance systems.

Incorporating citizen science data into policymaking is essential for sustainable management of ocean resources and democratization of the decision-making process. To ensure the accuracy and reliability of data collected through citizen science initiatives, improvements in systems for data management and quality assurance are necessary. This can be achieved through protocols for data management, quality control processes, and open digital platforms for easy access to data by researchers and policymakers. Integrating citizen science data into policymaking leads to informed decisions based on the best available information and empowers citizens to play a role in ocean stewardship.

- 1.3. Foster a culture of ocean literacy by providing education and training opportunities for citizens to better understand and engage with ocean issues.

Promoting ocean literacy is crucial in advancing ocean observation and empowering citizens with ocean knowledge. Policymakers can facilitate this by providing educational opportunities, such as workshops, courses, and programs that cover different aspects of ocean science. These programs

should be engaging and accessible, using hands-on activities, field trips, and interactive presentations. By investing in education and training, policymakers can raise public awareness of ocean issues, fostering informed and engaged citizens. By raising awareness of the significance of ocean observation, more efforts can be directed towards sustainable management of ocean resources, leading to better decision-making and reliable data availability.

Overall, promoting ocean observation and empowering citizens with ocean knowledge can be achieved through a multi-pronged approach that involves encouraging and supporting citizen science initiatives, motivating businesses and organizations to participate, integrating citizen science data into policymaking, and fostering a culture of ocean literacy through education and training opportunities. By taking these steps, the public can play an active role in ocean stewardship, and informed decisions can be made based on the best available information.

III. POLICY BRIEF 2 - SUPPORTING OCEAN OBSERVATIONS TO ADDRESS CLIMATE CHANGE

Although the political and scientific discourse surrounding the ocean's relationship with climate change has pivoted towards actionable solutions, it remains imperative that ocean observation persists. Dynamic science and earth observation require an ongoing collection of data to extract knowledge about trends and patterns in the environment and understanding the Earth's system. Monitoring and observing the oceans are essential to comprehend their state, dynamics, properties, and their impact on the Earth's climate. However, a one-time collection of information is not sufficient to understand the effects of climate change, whose rapidity of occurrence requires continuous and sustained observations. Hence, it is imperative to maintain and increase the efforts of ocean observation to stay up to date with the changes taking place. Slowing down ocean observation efforts is not an option, and we must prioritize the long-term monitoring and collection of data to stay informed about the state of our oceans. This policy brief highlights the importance of ocean observations and the need for continued support.

2. RECOMMENDATIONS

2.1. The Importance of Ocean Observation in a Changing Climate

The ocean and climate are changing rapidly and unpredictably, and we can only begin to understand the extent and impact of these changes with permanent or very long-term monitoring data. Despite advances in science and earth observation, data sets are not always of excellent quality, and once data is collected, it represents just one specific time in history. Therefore, ocean observation efforts must continue in order to maintain a comprehensive understanding of the ocean as we face climate change, to have an appreciation of how dynamics vary over time.

2.2. The Need for Ongoing and Better Support for Ocean Observation

Ocean observation is critical in understanding the Earth's system, particularly in the face of climate change. Therefore, it is essential that ocean observation and scientific research continue in parallel to better guide and evaluate the actions taken. A call for action is being made for ongoing and improved support for integrated ocean observation through funding and policy enabling for continuous ocean observing programs and infrastructure. There is a need for integration between EU initiatives (e.g., EMSO-Eric, EMODnet, JERICO-RI, EUROGOOS, etc) and publicly funded projects.

2.3. The Importance of Closing Data and Knowledge Gaps

NAUTILOS has identified critical data gaps from in situ observations and deep ocean research. Closing these gaps requires more extensive and strategic investment in the ocean observation network. The use of new and innovative technologies, such as autonomous data collection systems, will be essential in achieving these goals. A call for action is being made for greater efforts and support to close the knowledge gaps in ocean observation, develop new observational sites, and leverage innovative technologies. Incorporating the latest advancements in software and hardware technologies, such as IoT, pattern recognition, and sensing, can lead to significant improvements in ocean monitoring. By expanding and optimizing the communication capabilities between oceanographic measurement instruments, we can further enhance the accuracy and efficiency of our observations.

2.4. The Need for a Balance Between Action and Observation

Conversation at the political level and at the science-policy interface has started to turn towards the actions needed to deal with the ocean and climate rather than the knowledge needed to understand it. While this is a positive step in the right direction, it is important to note that action cannot replace, and should not exclude, observation. Indeed, actions should be based on acquired knowledge and continuous observation of the changing ocean conditions. Now is not the time to slow down ocean observation efforts. Excellent data sets are vital to obtaining new knowledge about trends and patterns in the environment, and continuous or very long-term monitoring data is necessary to fully understand the extent and impact of the changes occurring in the ocean and climate.

The ocean is a critical component of the Earth's system, and its improved comprehension is essential in the face of climate change. The measurement of Essential Ocean Variables (EOVs) is necessary to maintain a thorough understanding of the ocean and its role in the Earth's climate. There is a need for ongoing and robust support for ocean observation, closure of data and knowledge gaps, and a balance between action and observation. The ocean and climate are changing rapidly and unpredictably, and long-term monitoring is essential to fully understand the extent and impact of these changes.

IV. POLICY BRIEF 3 - BEYOND CLIMATE CHANGE, SUSTAINED OBSERVATION IN SUPPORT OF THE BLUE ECONOMY

Ocean observation is crucial in supporting economic activities related to the ocean, such as providing valuable data on resources like food, minerals, and energy. This data can support sustainable management practices and ensure the continued availability of these resources for future generations. The development of new technologies and industries related to ocean monitoring and energy, like wave and tidal energy, can be driven by sustained observation, which provides a comprehensive understanding of ocean conditions and processes.

Projects like NAUTILOS help address the impact of climate change on the ocean, marine resources and linked economic activities. The impact of climate change on coastal communities and ocean infrastructure can be mitigated by providing data and information on the effects of climate change, enabling informed decision-making and the development of strategies to address the impact. At the same time, the blue economy sectors suffer from data limitations that are needed for marine spatial planning and sustainable management of ocean resources.

3. RECOMMENDATIONS

- 3.1. Promote the integration of ocean observation data into decision-making processes to support the sustainable management of ocean resources and the Blue Economy.

Ocean observation data is a valuable source of information for decision makers in various sectors, including marine protected areas, fishing reserves, and ocean-based industries. To effectively use this data, policymakers should support clear processes for data collection, management, and dissemination. This will guarantee that the data is trustworthy, accurate and available to decision makers.

It is well known that abundance and spatio-temporal distribution of commercial marine species are influenced by environmental factors. Therefore, it is crucial to identify their relationships and include environmental parameters in ecological modelling and stock assessments, thus taking into account climate change or local environmental variations when designing or evaluating management strategies.

By integrating ocean observation data into decision-making processes, policymakers can ensure the sustainable management of ocean resources and support the growth of the Blue Economy. This aligns economic, social, and environmental interests and contributes to sustainable development.

- 3.2. Encourage public-private partnerships to support sustained ocean observation efforts and the Blue Growth.

Partnerships between government agencies, academic institutions, non-profit organizations, and private sector businesses are crucial for promoting ocean observation and advancing the Blue Economy. These partnerships can bring together a range of resources, expertise, and perspectives to achieve common goals.

Effective partnerships require clear objectives, shared decision-making processes, and effective communication strategies. By fostering public-private partnerships, policymakers can ensure that a wide range of stakeholders are supporting ocean observation and the Blue Growth, driving innovation, increasing the scale of efforts, and providing data and insights for sustainable ocean resource management.

3.3. Foster international collaboration and coordination to support long-term ocean observation efforts, sharing best practices and technology developments.

International collaboration and coordination are crucial in supporting sustained ocean observation efforts and the Blue Economy. This can help to ensure that the most advanced technology and best practices are shared across borders, leading to more effective and efficient ocean observation efforts. Additionally, international collaboration can support the development of common standards and protocols for ocean observation, providing grounds for data collection, analysis and reporting in a consistent and transparent way.

Finally, international collaboration can also provide opportunities for capacity building, technology transfer, and the sharing of financial and technical resources in countries that may otherwise lack the resources to establish such programs on their own.

Sustained ocean observation plays a vital role in supporting economic activities in the ocean and ensuring the sustainable management of ocean resources. Integration of ocean observation data into decision-making processes, public-private partnerships, and international collaboration and coordination are crucial in advancing the Blue Economy and mitigating the impact of climate change on the ocean. Policymakers can support these efforts by providing regular funding, regulatory support, and transparent governance structures for effective and efficient use of resources. By promoting sustained ocean observation efforts and fostering partnerships, policymakers can contribute to continued availability of ocean resources for future generations and consequently, to sustainable development.

V. CONCLUSIONS

This collection of policy briefs, produced by the NAUTILOS consortium, delves into various dimensions of ocean observation and its far-reaching implications for shaping policy and fostering sustainable practices. The significance of ocean observation is vital, serving as a cornerstone in comprehending the intricate workings of our planet's systems. It stands as a foundation for making well-informed decisions, planning sustainable management of resources, and early addressing global challenges. The oceans, a dynamic and complex ecosystem, carry a profound influence, steering climate patterns, propelling weather phenomena, maintaining temperature equilibrium, and nurturing a diverse array of life forms. Through continuous monitoring and deep comprehension of these wide realms, we gain invaluable insights into the profound impacts of climate change, paving the way for the formulation of effective strategies to respond its impacts. Furthermore, ocean observation emerges as a potent tool that not only presents us with knowledge but also grants the capacity to cautiously tap into the vast potential of the blue economy. This dual role ensures the safeguarding of marine resources while concurrently catalysing innovation within expanding industries. As humanity routes through an era characterised by unprecedented environmental transformations, the continuous accumulation of oceanic data forges a profound nexus connecting scientific insight, policy formulation, and active public engagement. This convergence pushes us towards a future that is more resilient, sustainable, and harmonious for both our planet and its diverse populations.

Policy Brief 1: Empowering Citizens Through Ocean Knowledge Co-production

This brief emphasises the significance of citizen involvement in ocean observation through citizen science initiatives. By democratizing marine observation science, policymakers can create a sustainable and cost-efficient observatory concept. The recommendations suggest stimulating businesses to support citizen science, integrating citizen science data into policymaking, and promoting ocean literacy through education and training. This approach enables citizens to contribute directly to data collection and decision-making, fostering a more comprehensive understanding of ocean ecosystems.

Policy Brief 2: Supporting Ocean Observations to Address Climate Change

This brief underscores the ongoing need for ocean observation in understanding climate change. It advocates for continuous support, integration of EU initiatives, and closing data and knowledge gaps. The recommendations stress the importance of maintaining a balance between action and observation, as informed actions are based on acquired knowledge. Continuous and long-term monitoring is essential to comprehend the impact of changing ocean conditions and climate on the Earth's system.

Policy Brief 3: Beyond Climate Change, Sustained Observation in Support of the Blue Economy

The third brief highlights the role of ocean observation in supporting economic activities within the blue economy. Sustained observation provides valuable data for sustainable management of ocean resources, marine spatial planning, and the growth of ocean-related industries. The recommendations focus on integrating ocean observation data into decision-making processes and encouraging public-private partnerships to support sustainable ocean observation and blue growth.

VI. APPENDIX 1: REFERENCES AND RELATED DOCUMENTS

ID	Reference or Related Document	Source or Link/Location
1	D10.5 - Strategic Policy Agenda	https://www.nautilus-h2020.eu/results/deliverables/
2	D10.6 - Report on communication activities at key events	NA

VII. APPENDIX 2: POLICY BRIEFS PRINTED VERSIONS

Policy Brief 1: Empowering Citizens Through Ocean Knowledge Co-production



EMPOWERING CITIZENS THROUGH OCEAN KNOWLEDGE CO-PRODUCTION

Policy Brief
#1

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Promote the integration of citizen science data into policymaking by improving data management and quality assurance systems.

Incorporating citizen science data into policymaking is essential for sustainable management of ocean resources and democratization of the decision-making process. To ensure the accuracy and reliability of data collected through citizen science initiatives, improvements in systems for data management and quality assurance are necessary. This can be achieved through protocols for data management, quality control processes, and open digital platforms for easy access to data by researchers and policymakers. Integrating citizen science data into policymaking leads to informed decisions based on the best available information and empowers citizens to play a role in ocean stewardship.



Foster a culture of ocean literacy by providing education and training opportunities for citizens to better understand and engage with ocean issues.

Promoting ocean literacy is crucial in advancing ocean observation and empowering citizens with ocean knowledge. Policymakers can facilitate this by providing educational opportunities, such as workshops, courses, and programs that cover different aspects of ocean science. These programs should be engaging and accessible, using hands-on activities, field trips, and interactive presentations. By investing in education and training, policymakers can raise public awareness of ocean issues, fostering informed and engaged citizens. By raising awareness of the significance of ocean observation, more efforts can be directed towards sustainable management of ocean resources, leading to better decision-making and reliable data availability.

The ocean plays a significant role in the Earth's system, and understanding its importance is crucial for ensuring sustainable management and exploitation. Apart from mitigating climate change, continual observation of the ocean will promote economic activities and assist in developing comprehensive ecological models. This, in turn, will enable informed decisions and actions for the sustainable management of resources. However, ocean observation should not be a task for experts and scientists alone. Today, the possibility to use consumer and readily available technologies allow for the direct involvement of common citizens in the Big Data acquisition process also in the oceanographic field, as well as raising awareness of related issues at the same time. Citizen science is a form of scientific collaboration where members of the public participate in scientific research projects, providing data and observations that can be analyzed by researchers. By supporting citizen science initiatives, policymakers can democratize marine observation science, creating a new type of self-driven, sustainable, and cost-efficient observatory concept and, at the same time, allowing for informed decisions to be made based on the best available information.

Recommendations

Stimulate businesses and organizations to support and participate in citizen science initiatives.

Promoting and supporting citizen science initiatives through capacity building is key to engaging businesses and organizations in ocean observation efforts. By offering training, workshops, and educational opportunities, businesses and organizations can see the benefits of supporting these initiatives and invest more in their success. This not only provides more resources, but also builds a community of knowledgeable and committed citizens. These businesses can also benefit from increased visibility and recognition. Providing opportunities for professional development is crucial for promoting citizen science initiatives and engaging companies in ocean observation efforts.



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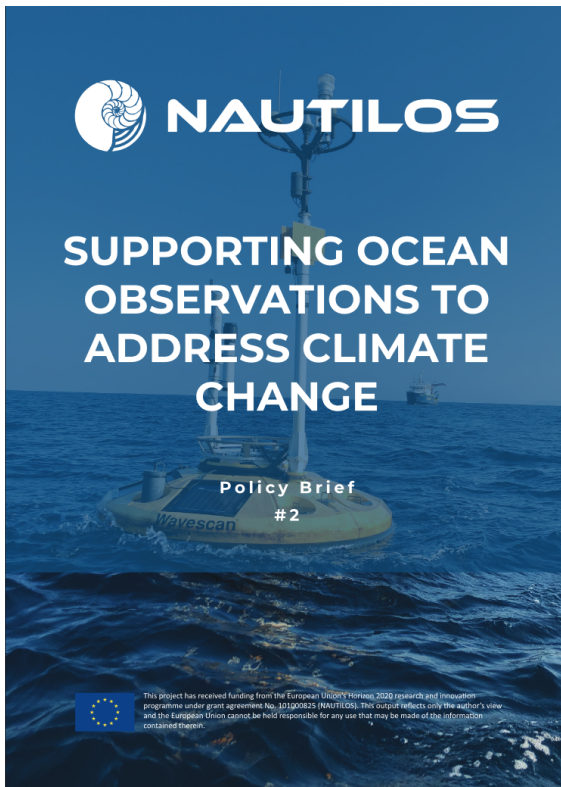









Policy Brief 2: Supporting Ocean Observations to Address Climate Change



NAUTILOS

SUPPORTING OCEAN OBSERVATIONS TO ADDRESS CLIMATE CHANGE

Policy Brief #2

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Although the political and scientific discourse surrounding the ocean's relationship with climate change has pivoted towards actionable solutions, it remains imperative that ocean observation persists. Dynamic science and earth observation require an ongoing collection of data to extract knowledge about trends and patterns in the environment and understanding the Earth's system. Monitoring and observing the oceans are essential to comprehend their state, dynamics, properties, and their impact on the Earth's climate. However, a one-time collection of information is not sufficient to understand the effects of climate change, whose rapidity of occurrence requires continuous and sustained observations. Hence, it is imperative to maintain and increase the efforts of ocean observation to stay up to date with the changes taking place. Slowing down ocean observation efforts is not an option, and we must prioritize the long-term monitoring and collection of data to stay informed about the state of our oceans. This policy brief highlights the importance of ocean observations and the need for continued support.

Recommendations

The Importance of Ocean Observation in a Changing Climate

The ocean and climate are changing rapidly and unpredictably, and we can only begin to understand the extent and impact of these changes with permanent or very long-term monitoring data. Despite advances in science and earth observation, data sets are not always of excellent quality, and once data is collected, it represents just one specific time in history. Therefore, ocean observation efforts must continue in order to maintain a comprehensive understanding of the ocean as we face climate change, to have an appreciation of how dynamics vary over time.

The Need for Ongoing and Better Support for Ocean Observation

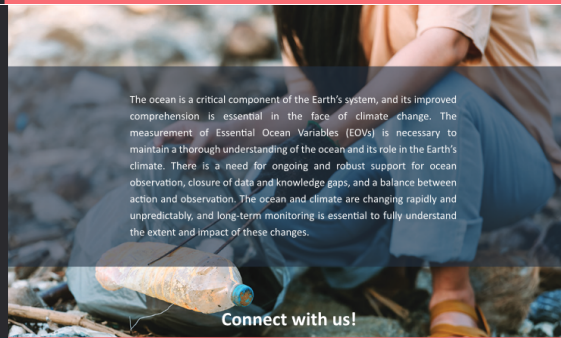
Ocean observation is critical in understanding the Earth's system, particularly in the face of climate change. Therefore, it is essential that ocean observation and scientific research continue in parallel to better guide and evaluate the actions taken. A call for action is being made for ongoing and improved support for integrated ocean observation through funding and policy enabling for continuous ocean observing programs and infrastructure. There is a need for integration between EU initiatives (e.g., EMSO-Eric, EMODnet, JERICO-RI, EUROGOOS, etc) and publicly funded projects.

The Importance of Closing Data and Knowledge Gaps

NAUTILOS has identified critical data gaps from in situ observations and deep ocean research. Closing these gaps requires more extensive and strategic investment in the ocean observation network. The use of new and innovative technologies, such as autonomous data collection systems, will be essential in achieving these goals. A call for action is being made for greater efforts and support to close the knowledge gaps in ocean observation, develop new observational sites, and leverage innovative technologies. Incorporating the latest advancements in software and hardware technologies, such as IoT, pattern recognition, and sensing, can lead to significant improvements in ocean monitoring. By expanding and optimizing the communication capabilities between oceanographic measurement instruments, we can further enhance the accuracy and efficiency of our observations.

The Need for a Balance Between Action and Observation

Conversation at the political level and at the science-policy interface has started to turn towards the actions needed to deal with the ocean and climate rather than the knowledge needed to understand it. While this is a positive step in the right direction, it is important to note that action cannot replace, and should not exclude, observation. Indeed actions should be based on acquired knowledge and continuous observation of the changing ocean conditions. Now is not the time to slow down ocean observation efforts. Excellent data sets are vital to obtaining new knowledge about trends and patterns in the environment, and continuous or very long-term monitoring data is necessary to fully understand the extent and impact of the changes occurring in the ocean and climate.



The ocean is a critical component of the Earth's system, and its improved comprehension is essential in the face of climate change. The measurement of Essential Ocean Variables (EOVs) is necessary to maintain a thorough understanding of the ocean and its role in the Earth's climate. There is a need for ongoing and robust support for ocean observation, closure of data and knowledge gaps, and a balance between action and observation. The ocean and climate are changing rapidly and unpredictably, and long-term monitoring is essential to fully understand the extent and impact of these changes.

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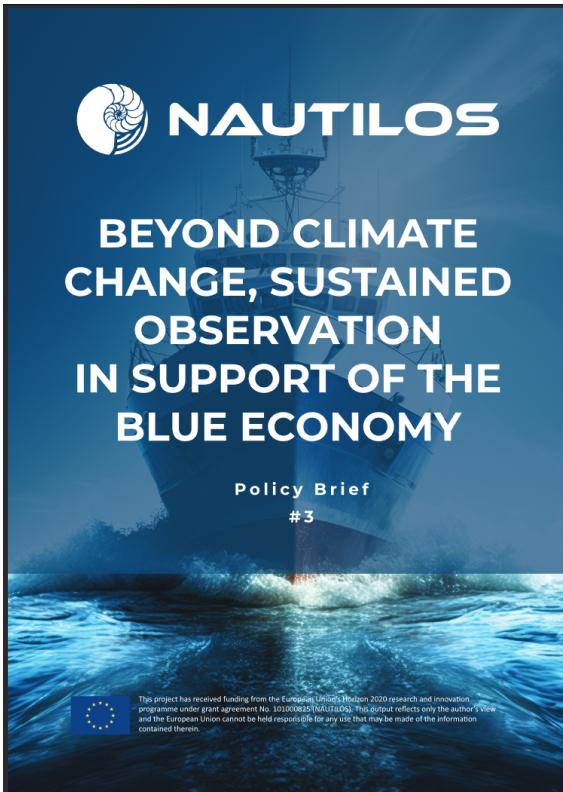


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Policy Brief 3: Beyond Climate Change, Sustained Observation in Support of the Blue Economy



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BEYOND CLIMATE CHANGE, SUSTAINED OBSERVATION IN SUPPORT OF THE BLUE ECONOMY

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Encourage public-private partnerships to support sustained ocean observation efforts and the Blue Growth.

Partnerships between government agencies, academic institutions, non-profit organizations, and private sector businesses are crucial for promoting ocean observation and advancing the Blue Economy. These partnerships can bring together a range of resources, expertise, and perspectives to achieve common goals.

Effective partnerships require clear objectives, shared decision-making processes, and effective communication strategies. By fostering public-private partnerships, policymakers can ensure that a wide range of stakeholders are supporting ocean observation and the Blue Growth, driving innovation, increasing the scale of efforts, and providing data and insights for sustainable ocean resource management.

Foster international collaboration and coordination to support long-term ocean observation efforts, sharing best practices and technology developments.

International collaboration and coordination are crucial in supporting sustained ocean observation efforts and the Blue Economy. This can help to ensure that the most advanced technology and best practices are shared across borders, leading to more effective and efficient ocean observation efforts.

Additionally, international collaboration can support the development of common standards and protocols for ocean observation, providing grounds for data collection, analysis and reporting in a consistent and transparent way.

Finally, international collaboration can also provide opportunities for capacity building, technology transfer, and the sharing of financial and technical resources in countries that may otherwise lack the resources to establish such programs on their own.



Ocean observation is crucial in supporting economic activities related to the ocean, such as providing valuable data on resources like food, minerals, and energy. This data can support sustainable management practices and ensure the continued availability of these resources for future generations. The development of new technologies and industries related to ocean monitoring and energy, like wave and tidal energy, can be driven by sustained observation, which provides a comprehensive understanding of ocean conditions and processes.

Projects like NAUTILOS help address the impact of climate change on the ocean, marine resources and linked economic activities. The impact of climate change on coastal communities and ocean infrastructure can be mitigated by providing data and information on the effects of climate change, enabling informed decision-making and the development of strategies to address the impact. At the same time, the blue economy sectors suffer from data limitations that are needed for marine spatial planning and sustainable management of ocean resources.

Recommendations

Promote the integration of ocean observation data into decision-making processes to support the sustainable management of ocean resources and the Blue Economy.





Ocean observation data is a valuable source of information for decision makers in various sectors, including marine protected areas, fishing reserves, and ocean-based industries. To effectively use this data, policymakers should support clear processes for data collection, management, and dissemination. This will guarantee that the data is trustworthy, accurate and available to decision makers.

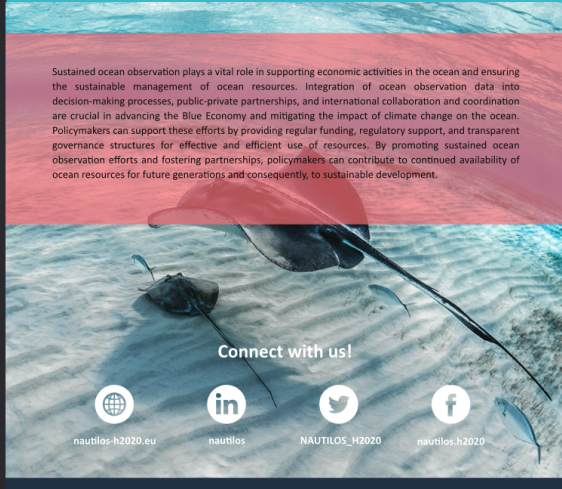
It is well known that abundance and spatio-temporal distribution of commercial marine species are influenced by environmental factors. Therefore it is crucial to identify their relationships and include environmental parameters in ecological modeling and stock assessments, thus taking into account climate change or local environmental variations when designing or evaluating management strategies.

By integrating ocean observation data into decision-making processes, policymakers can ensure the sustainable management of ocean resources and support the growth of the Blue Economy. This aligns economic, social, and environmental interests and contributes to sustainable development.

Sustained ocean observation plays a vital role in supporting economic activities in the ocean and ensuring the sustainable management of ocean resources. Integration of ocean observation data into decision-making processes, public-private partnerships, and international collaboration and coordination are crucial in advancing the Blue Economy and mitigating the impact of climate change on the ocean. Policymakers can support these efforts by providing regular funding, regulatory support, and transparent governance structures for effective and efficient use of resources. By promoting sustained ocean observation efforts and fostering partnerships, policymakers can contribute to continued availability of ocean resources for future generations and consequently, to sustainable development.

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