

# Co-designing the Science We Need for the Ocean We Want

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**Guidance and  
Recommendations  
for Collaborative  
Approaches to  
Designing &  
Implementing  
Decade Actions**



The United Nations  
Decade of Ocean Science  
for Sustainable Development  
**2021-2030**



**2021** United Nations Decade  
**2030** of Ocean Science  
for Sustainable Development



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Published in 2021 by the United Nations Educational,  
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For bibliographic purposes, this publication should be cited as follows:  
IOC-UNESCO. 2021.

*Co-designing the Science We Need for the Ocean We Want: Guidance  
and Recommendations for Collaborative Approaches to Designing &  
Implementing Decade Actions.* Paris, UNESCO. (The Ocean Decade  
Series, 29).

Cover: © IOC/UNESCO

Graphic design: UNESCO

IOC/2021/ODS/29

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## Acknowledgements

The Intergovernmental Oceanographic Commission of UNESCO (IOC-UNESCO) gratefully acknowledges the Government of Sweden, the International Science Council, as well as many individuals and institutions from the scientific community, governments, UN entities, NGOs, private sector and donors that contributed valuable insight and input towards development of the report 'Co-designing the Science We Need for the Ocean We Want: Guidance and Recommendations for Collaborative Approaches to Designing & Implementing Decade Actions'.



“ The Implementation Plan of the UN Decade of Ocean Science for Sustainable Development (the Ocean Decade) calls for ‘transformative science’ and a ‘revolution in how that science is produced, used and disseminated’.



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## Introduction

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The Implementation Plan of the UN Decade of Ocean Science for Sustainable Development (the Ocean Decade) calls for ‘transformative science’ and a ‘revolution in how that science is produced, used and disseminated’. The solutions-oriented nature of the Ocean Decade creates the conditions for this revolution because it provides a convening framework to foster the partnerships and develop the scientific knowledge needed to catalyse transformative ocean science solutions for sustainable development, connecting people and our ocean.

While there is widespread enthusiasm to engage in this collaborative venture, there is a need to build capacity and common understanding in how to create co-designed solutions that could bring about the desired transformation in ocean management.

This discussion note **‘Co-designing the Science We Need for the Ocean We Want: Guidance and Recommendations for Collaborative Approaches to Designing & Implementing Decade Actions’** aims to address this in a holistic manner. It was inspired by discussions held during a series of global and regional webinars in late 2020 that brought together 2,100 individuals from around the world to bring to life the notion of collaborative, co-designed science and identify the key obstacles, challenges and opportunities.

The note offers a solid starting point for stakeholders on the: what, why and how they can join efforts to co-design salient, credible and legitimate ocean knowledge solutions which deliver on the Ocean Decade’s vision of ‘the science we need for the ocean we want’.



# The foundations of co-designed transformative science

**Transformative science**, in the context of the Ocean Decade, can be described as science that changes the current trajectory of ocean decline – ‘the ocean we have’ – and brings us towards a thriving and sustainable ocean – ‘the ocean we want’ – by 2030.

The Ocean Decade Implementation Plan identifies key elements of transformative science. That is, for ocean science to be truly transformative, it must be inter alia **inclusive and co-designed in a multi-stakeholder environment**.

## TRANSFORMATIVE OCEAN SCIENCE

The notion of transformation is central to the Ocean Decade. The Decade, both in terms of action and outcomes, needs to move beyond business as usual to a true revolution in ocean science. The different ways in which the transformative nature of the Ocean Decade will manifest include the promotion and facilitation of ocean science that:

- uses the 2030 Agenda as a central framework to identify and address the most pressing societal questions related to Sustainable Development Goal (SDG) 14 and related SDGs;
- is co-designed and co-delivered in a multi-stakeholder environment to be relevant and responsive across the entire value-chain, from knowledge generation to applications and services to use of science for solutions;
- is solutions-focused and contributes to a wide variety of potential solutions including policy, decision-making, management or governance frameworks, or technology development and innovation;
- where needed, is big, audacious, forward-looking and spans geographies;
- reaches across disciplines and actively integrates natural and social science disciplines;
- embraces local and indigenous knowledge as a key knowledge source;
- is transformative because of who is doing it or where it is being done, including in both less developed and developed countries;
- strives for generational, gender and geographic diversity in all its manifestations;
- is communicated in forms that are widely understood across society and that trigger excitement about the ocean and behaviour change; and
- is shared openly and available for re-use.

**CO-DESIGN** can be seen as a process that will enable transformative science throughout the Ocean Decade. For it to be successful, it must embrace the following elements.

1. **Involve all concerned stakeholders**, i.e., researchers together with practitioners from public, private, and civic sectors, as well as decision-makers and other ocean knowledge generators and holders and knowledge users.

The level of engagement for different stakeholders will vary. This is not a matter of better or worse, but a matter of what is most appropriate, useful and feasible. Knowledge generators and users bring forward different knowledges, voices, strengths and capacities to the entire co-design process and ensure that the outcome is relevant and adapted to priority needs.

2. **Engage all stakeholders throughout all stages** of knowledge creation, implementation and dissemination, no matter the level of engagement.

**Co-design can be broken down into three key stages:**

**STAGE 1: Co-identification** – initiates the process by identifying the needs of a knowledge user ('the science we need') and incorporating these into the identification of the research question and the design of the research process from the outset. That is, knowledge generators and users work together to identify the knowledge gaps and jointly frame and refine the research questions to be answered.

**STAGE 2: Co-production** – where through an iterative and collaborative process involving diverse types of expertise, knowledge, and actors, research partners work to answer the identified research questions, fill knowledge gaps, and produce context-specific knowledge and pathways towards a sustainable future. The depth of engagement of knowledge users in this process can vary from match-making to collaborating to co-producing.

**STAGE 3: Co-delivery/Co-dissemination** – where knowledge generators and users collectively ensure that the generated knowledge is delivered to target audiences, disseminated in a timely fashion, in user-friendly formats via accessible platforms and is interpreted and used as intended by knowledge users, including decision makers.

3. **Build on pre-existing relationships, networks and shared experiences** while remaining open, inclusive and welcoming to new voices.



'Knowledge generators' or 'knowledge holders' are not always the 'researchers' or 'scientists'.

'Knowledge users' are not always the 'decision-makers' or 'practitioners'.

All stakeholders offer important knowledge as well as concerns, values, aspirations and experiences which will serve as valuable contributions to co-designed solutions-oriented research



**The concept of 'co-design' embraces 'transdisciplinary research'**

**Transdisciplinary research** is a core element of the co-design process. Ocean sustainability is a complex problem that no single discipline, nor even science alone, can adequately understand or address. For successful co-design of innovative science, knowledge from all relevant scientific disciplines (including physical, natural, social and human) will need to be integrated with diverse other types of knowledge holders, i.e., researchers together with practitioners from public, private, and civic sectors, as well as decision-makers and other ocean knowledge holders and users. This will allow for identification of knowledge gaps, defining of solutions-oriented research questions, generation of desired knowledge and use of that knowledge.

## COLLABORATIVE CO-DESIGNED RESEARCH IN ACTION

### Leading Integrated Research for Agenda 2030 in Africa

The LIRA 2030 programme (Leading Integrated Research for Agenda 2030 in Africa) was launched in 2016 to foster scientific contributions from Africa to the implementation of the 2030 Agenda for Sustainable Development, especially in the urban context. It is run by the International Science Council together with its Regional Office for Africa and in strong partnership with the Network of African Science Academies (NASAC). The programme is supported by the Swedish International Development Cooperation Agency (Sida) and will run until December 2021.

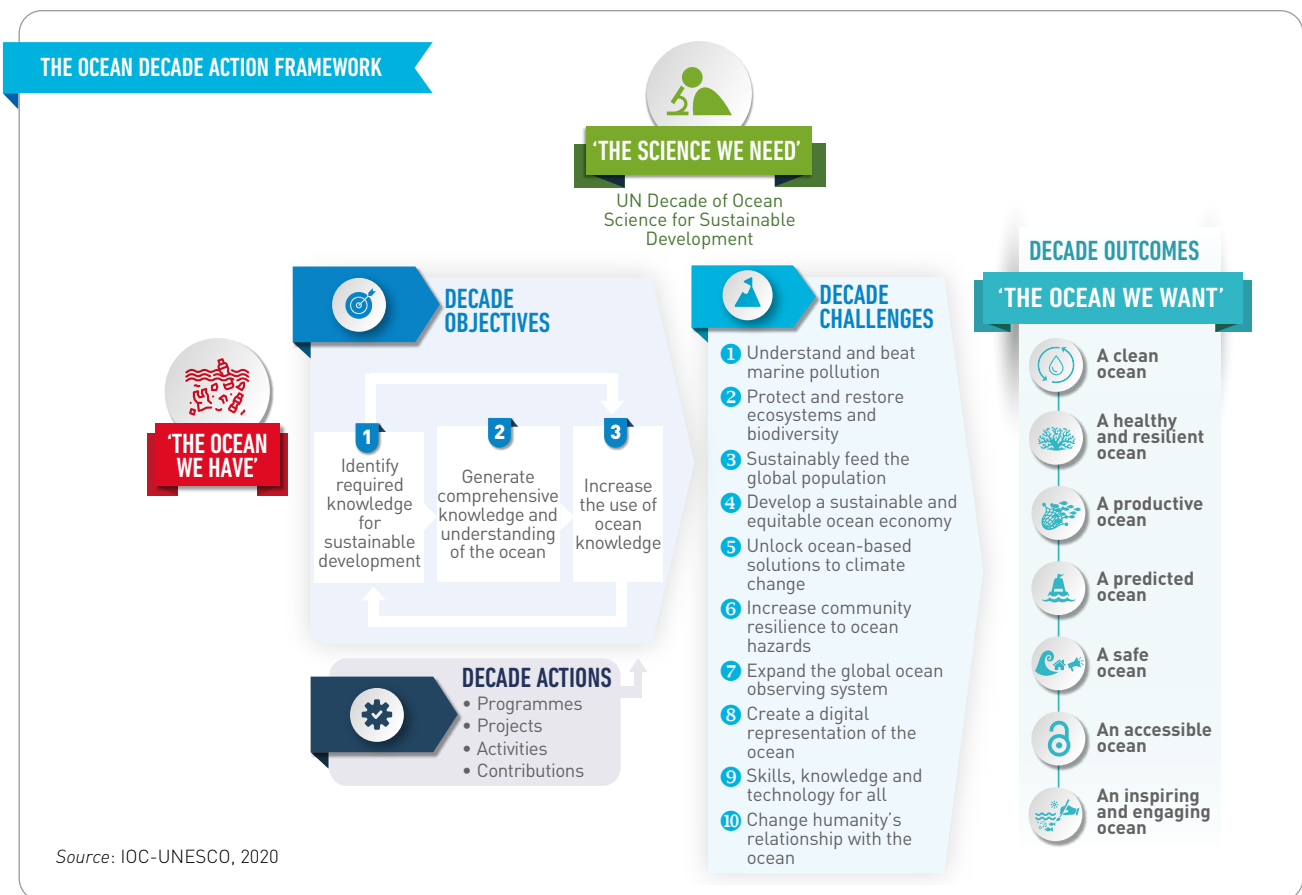
The five-year research funding programme promotes transdisciplinary research and seeks to increase the production and use of solution-oriented, contextualized and policy-relevant knowledge on sustainable development in cities across Africa.

Since its inception, the LIRA programme has supported African early career scientists to lead 28 collaborative research projects that explore new approaches to re-thinking urban futures in Africa, in partnership with local authorities, communities, industry and government. The LIRA 2030 programme supports its participants not only through collaborative research grants, but also through training workshops on integrated research, annual research forums providing opportunities for scientific exchanges and South-South and North-South research collaboration and leadership and career advancement.

# Co-design and the Ocean Decade Action Framework

The Implementation Plan lays out an action-oriented framework (the **Ocean Decade Action Framework**, Figure 1) that articulates how transformative science carried out by diverse actors will contribute to sustainable development solutions through the Ocean Decade. The Plan outlines ten **Decade Challenges**, representing the most immediate and pressing needs of the Decade, which will guide stakeholders as they come together to co-design and co-deliver a wide range of **Decade Actions** (programs, projects, activities or contributions) that will be implemented over the next ten years to meet three **Decade Objectives**.

“ The Implementation Plan outlines ten Decade Challenges, representing the most immediate and pressing needs of the Decade, which will guide stakeholders as they come together to co-design and co-deliver a wide range of Decade Actions.





The following figure illustrates how each of the Decade Objectives relates to and reflects an aspect of transformative and collaborative and co-designed science.

**LINKAGES BETWEEN OCEAN DECADE OBJECTIVES, ELEMENTS OF TRANSFORMATIVE OCEAN SCIENCE AND CO-DESIGN**

CORRESPONDENCES BETWEEN OCEAN DECADE OBJECTIVES, TRANSFORMATIVE OCEAN SCIENCE, CO-DESIGN & CAPACITIES

**DECADE OBJECTIVES**

**OBJECTIVE 1:** Identify required knowledge for sustainable development, and increase the capacity of ocean science to deliver needed ocean data and information.

**OBJECTIVE 2:** Build capacity and generate comprehensive knowledge and understanding of the ocean including human interactions, and interactions with the atmosphere, cryosphere and the land sea interface.

**OBJECTIVE 3:** Increase the use of ocean knowledge and understanding, and develop capacity to contribute to sustainable development solutions.

**TRANSFORMATIVE SCIENCE**

**ELEMENT 1:** Generate comprehensive & solutions-oriented knowledge (even and full geographic coverage, of the coastal and deep ocean, elucidating the interactions of oceans with other Earth systems, and solutions-oriented)

**ELEMENT 2:** Produce co-designed & transdisciplinary knowledge (collaborating and integrating across scientific disciplines (physical, natural, social and humanistic), sectors of society, and different knowledge systems)

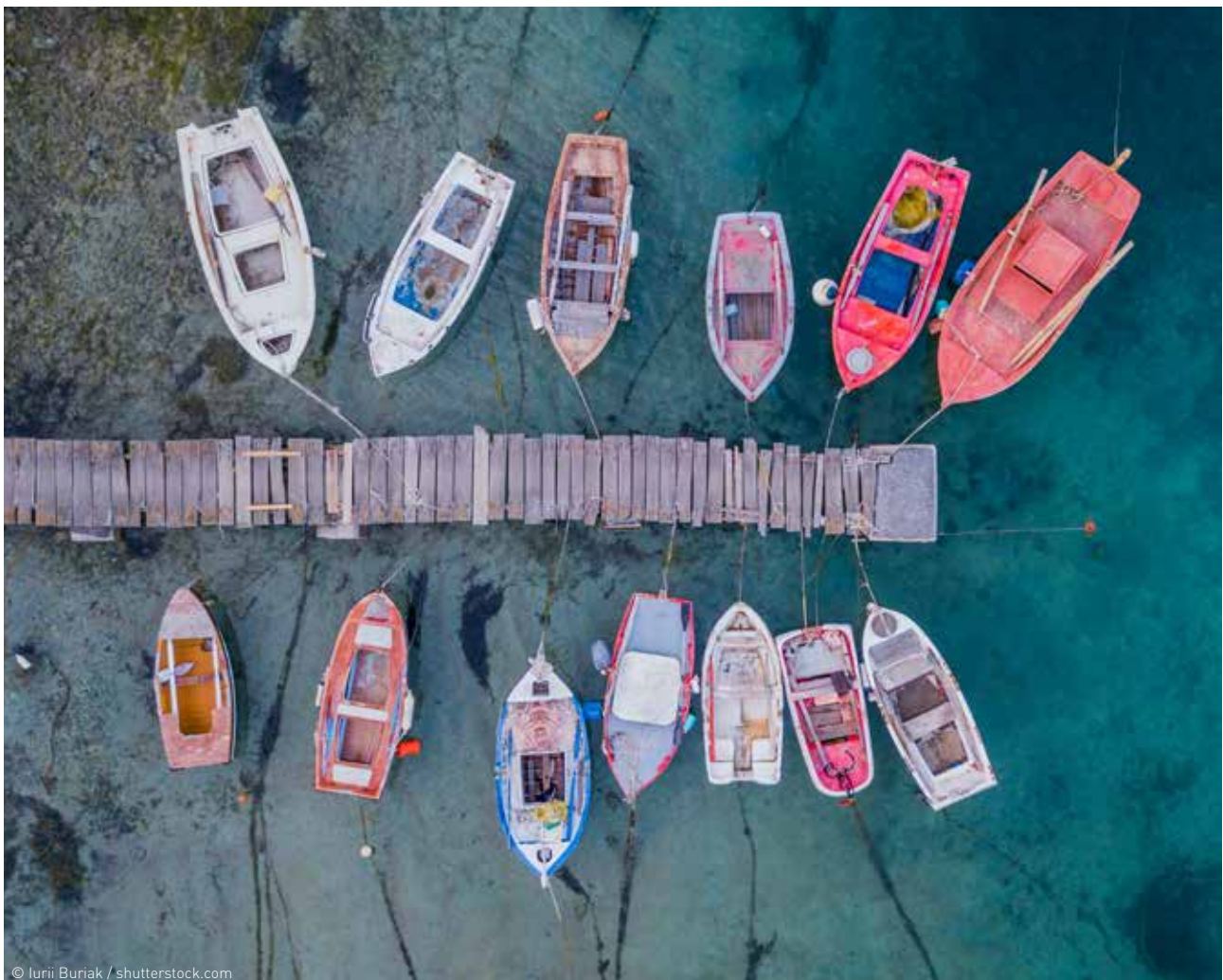
**ELEMENT 3:** Make knowledge accessible & used (addressing inequities and inadequacies in data availability, access, reach and use of ocean knowledge through timely and widespread dissemination and improved motivation and capabilities)

**COLLABORATION & CO-DESIGN**

**STAGE 1: CO-DESIGN**

**STAGE 2: CO-PRODUCTION**

**STAGE 3: CO-DISSEMINATION**



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# Why is co-designed science needed?

Although the upfront commitment needed to engage all stakeholders to create transformative science solutions may seem daunting, bringing all relevant stakeholders together for the co-design and co-delivery of Decade Actions will help deliver ocean science which:

- ▶ Strengthens the ability of ocean science to offer solutions of direct relevance for sustainable development, by creating a paradigm shift (from 'the science we want to the science we need') in the generation of qualitative and quantitative ocean knowledge. This will inform the development of varied solutions that differ in their form and scale to best respond to local, national and regional contexts to contribute to the 2030 Agenda for Sustainable Development.
- ▶ Enhances the overall uptake of scientific information and reinforces the science-policy interface by building trust and sustainable partnerships between generators and users of knowledge. The more deeply users are involved in identifying the problems to be solved and the solutions to be developed, the better fit and the more empowered they will feel using this knowledge. This will catalyse the human behaviour change required for the successful implementation of such solutions.
- ▶ Has the potential to inform funders of the benefits of mobilizing more sustainably funded science by convincing all participating stakeholders (governments, decision makers, funders, scientists and society at large) that the world requires a transformational and adequately resourced campaign to mainstream ocean science:
  - By better involving these stakeholders in the identification of knowledge gaps/scientific/

related resource needs and encouraging them to align funding and support strategies with identified priorities. Funders and research institutions are demanding greater public benefit and accountability from researchers.

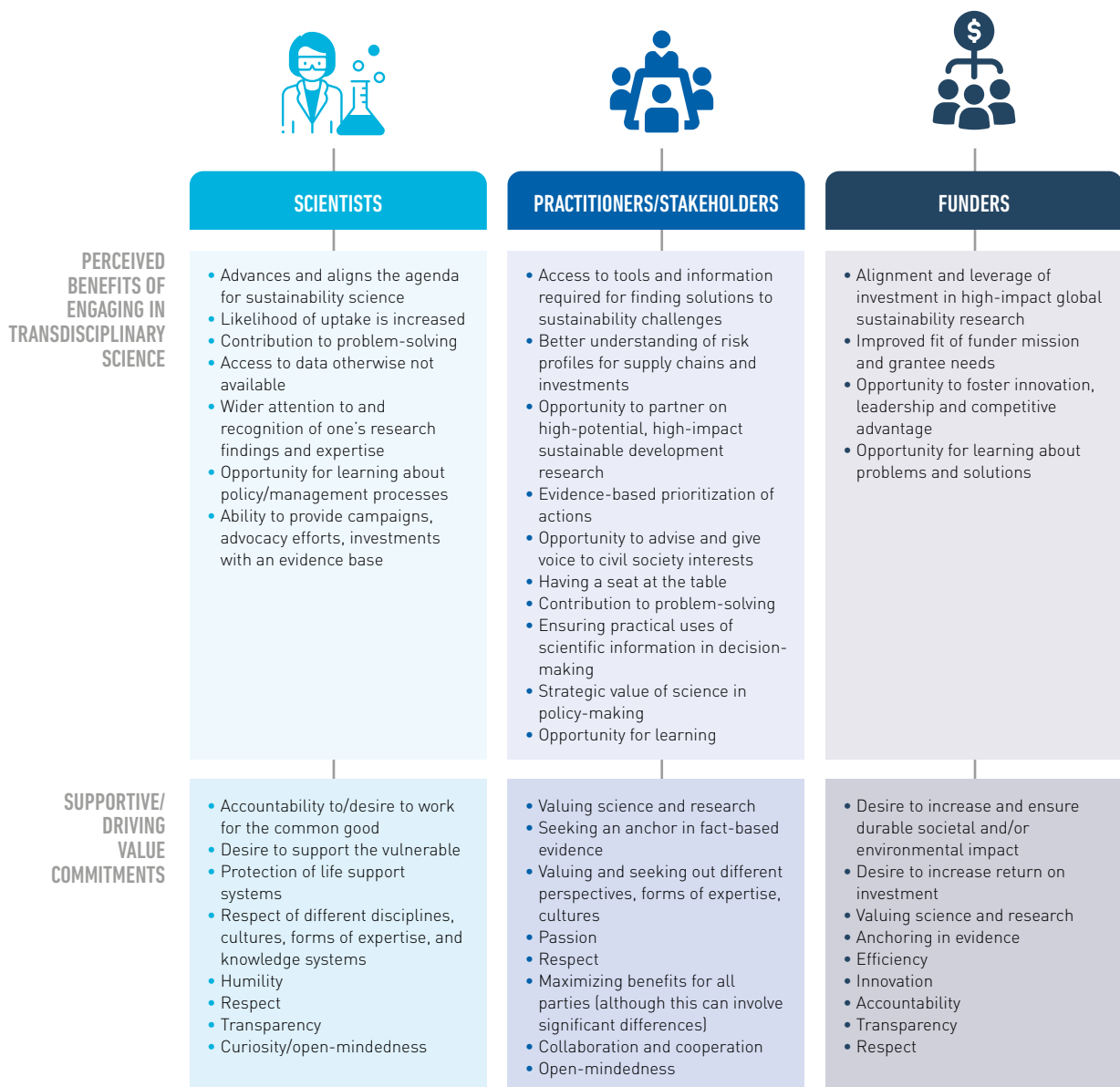
- By connecting resource providers with proponents of Decade Actions, avoiding financial overlap and creating potential synergies.
- ▶ Enables stakeholders to work across geographies, including Small Island Developing States, Least

Developed Countries and Land-locked Developing Countries to share knowledge and experiences leading to improved capacity for all.

- ▶ Promotes inclusive and equitable ocean science to achieve gender and generational balance so that no one is left behind.

This figure illustrates how each of the stakeholder categories (scientists, practitioners/stakeholders and funders) could benefit from the co-design process.

### BENEFITS FOR SCIENTISTS AND NON-SCIENTIFIC STAKEHOLDERS PARTICIPATING IN CO-DESIGNED ACTIONS





# Bringing co-designed Actions to life

Stakeholders of Decade Actions are encouraged to adopt the following approaches as they come together to co-design and co-deliver their respective Actions:

- ▶ Begin the co-design process by **identifying the needs of knowledge users**.
- ▶ Wherever possible, **build on pre-existing relationships, networks and shared experiences** while keeping networks open, inclusive and welcoming to new voices.
- ▶ Place primary emphasis on **engaging knowledge generators and users in an inclusive transdisciplinary manner**, i.e., different disciplines, generations and sectors, rather than on the final desired products.
- ▶ Build and sustain capacity to conduct transformative transdisciplinary work by **identifying baseline inequalities in regions or sectors** and working to address these inequalities through Decade Actions.
- ▶ **Seek institutional stability** to sustain projects over the long term, **build capacity** in anchor institutions, **develop lasting platforms** for continued interaction amongst stakeholders, and manage the complexity of transdisciplinary research problems.
- ▶ **Design for learning** with initiatives implementing activities over time, where one builds on the other, and future efforts learn from past efforts through deliberate monitoring, evaluation and adaptive learning.





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## Commonly experienced challenges and constraints in doing co-design

Commonly experienced challenges and constraints in doing co-design are widely reported in the literature and were highlighted during the Ocean Decade regional planning workshops and virtual sessions on co-design. Lack of skills, experience and appreciation of the need for transdisciplinary engagement is a common concern or barrier that scientists, practitioners/stakeholders and funders face across all regions.

There are also more specific obstacles described below depending on the stakeholder.

### **Common concerns/barriers faced by Scientists:**

- ▶ Frustration when policy-relevant science is not used (or misused).
- ▶ Commitment to other duties and priorities.
- ▶ Biases against “soft” (often social science) disciplines and other types of knowledge (e.g., local and indigenous).

### **Common concerns/barriers faced by Practitioners/ Stakeholders:**

- ▶ Generation of irrelevant information, e.g., not usable for decision-making or policy process (the ‘science we want’ rather than the ‘science we need’).
- ▶ Proprietary data restrictions versus the value of public knowledge.
- ▶ Governance and other procedural restrictions, that are perceived as limiting full participation e.g. in global policy processes

### **Common concerns/barriers related to funding:**

- ▶ Changing government priorities.
- ▶ Matching the priorities of funders with stakeholders.
- ▶ Lack of sustainable funding.
- ▶ Funding streams are often narrow and not diversified or aligned, thereby limiting synergies.



The regional sessions held in late 2020 highlighted series of challenges faced across many regions of the world in the co-design process:

- ▶ Lack of transparency and trust amongst stakeholders.
- ▶ Inaccessible data and lack of a shared data platform.
- ▶ Gender inequalities limit female access to research and formal decision-making processes.
- ▶ Poor respect for traditional/indigenous knowledge and challenges faced in incorporating such knowledge into research projects.
- ▶ Low interest amongst youth to enter ocean sciences.
- ▶ Lack of ocean literacy undermines the ability of decision-makers/stakeholders to participate.
- ▶ Poor commitment to long-term sustainable financing.
- ▶ Pervasive need to work in multiple languages.
- ▶ Major disparities in capacity and scientific infrastructure between countries.
- ▶ Complex political circumstances resulting in challenges for cross-national coordination.

## What does it take to make co-design work well?

What allows knowledge generators and users to overcome or minimize the potential risks of collaboration while maximizing the potential benefits? Many researchers have overcome these challenges creatively. Institutional changes and funding incentives can be particularly helpful. The following box highlights some of the key success factors for ensuring co-design works.

### KEY SUCCESS FACTORS FOR CO-DESIGN

Decade Actions will require the following factors to enable the co-design of solutions-oriented actions including:

- **Adequate and sustained funding.**
- **Place-based or regional institutions** which are able to stabilize transdisciplinary interactions which aim to address complex ocean challenges.
- **Professional and institutional standards, norms, and incentives** which break away from traditional disciplinary and governance silos.
- **Adequate project management, engagement, and interpersonal skills**, i.e., those working collaboratively are aware that a range of interrelated “soft” skills (e.g., willingness and ability to communicate and seek understanding across differences, networking, flexibility, relationship and trust building) must be built and fine-tuned so that transdisciplinary efforts are satisfying, beneficial and successful for all involved.



# How will the Ocean Decade facilitate co-design?

## Global Stakeholder Forum: a global platform for convening Communities of Practice and co-designing Decade Actions

The Global Stakeholder Forum will serve as the key engagement mechanism for Ocean Decade stakeholders as they come together to co-design and co-deliver Decade Actions. The Forum will:

- ▶ Serve as a digital platform for stakeholders to create new ideas, knowledge-based solutions and partnerships which contribute to the vision and mission of the Decade.
- ▶ Offer virtual and physical elements which convene different Communities of Practice around the ten Decade Challenges and around common geographic areas.

Communities of Practice can be thought of as networks or ecosystems of partners that will evolve



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over time in response to the needs of Decade partners. Communities of Practice will evolve over time but initially they will be (1) thematic – i.e. based loosely around the Ocean Decade Challenges and (2) geographic – i.e. based around the major ocean basins, sub-basins or seas. Communities of Practice will facilitate the co-design process by bringing together stakeholders working on similar themes or in similar geographies so they can communicate, collaborate and work together.

- ▶ Broadcast funding and partnership opportunities, training events, meetings, conferences and requests for inputs to the Decade.
- ▶ Offer dedicated sessions (technical working groups, co-design workshops, training initiatives for co-design approaches) at international and regional fora. It will also offer opportunities for capacity development and other initiatives (e.g., project incubators).





### **National Decade Committees and Regional Taskforces: national and regional platforms for facilitating co-design**

As part of the Global Stakeholder Forum, voluntary, national and regional, multi-stakeholder entities and platforms, i.e., National Decade Committees and Regional Stakeholder Platforms, will identify, co-design, implement and support Decade Actions to fulfil the Ocean Decade Challenges. These committees and groups can play a role in facilitating co-design approaches, in convening and engaging multiple and diverse stakeholders, identifying national or regional and thematic science and capacity-development priorities and ensuring alignment with ongoing and planned national and regional initiatives.

### **Co-Design Training on OceanTeacher Global Academy: building capacity for co-design**

The Decade Coordination Unit is working with its partner the International Science Council (ISC) to develop a tailored training programme on co-design. This programme which will be available in early 2022 will be hosted on the OceanTeacher Global Academy.

### **Incubation of Decade Actions: resources for facilitating co-design**

The Decade Coordination Unit is mobilizing resources to ensure that diverse partners who may not typically cross paths can come together to engage in co-design processes, with the aim of incubating new Decade Actions. With an initial focus on Africa, Asia, the Pacific and the Caribbean, the Decade Coordination Unit is actively seeking new partners to support this essential step in the co-design process.

**For further information**

visit our website : [oceansdecade.org](https://oceansdecade.org)

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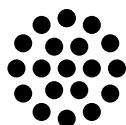
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