

WG Number: WG-7

Targeted Societal Outcome 7: How to achieve - An inspiring and engaging ocean where society understands and values the ocean in relation to human wellbeing, ecosystem services, and sustainable development

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Ocean Decade Definition of the Outcome:

The Southern Ocean plays an important role in global climate systems, yet remains a remote place for most people, experienced vicariously by those living far away. In order to inspire behavioural change and ensure the effectiveness of solutions developed under the Decade there needs to be a step change in society's relationship with the ocean. This can be achieved through ocean literacy approaches, formal and informal educational and awareness raising tools, and through measures to ensure equitable physical access to the ocean. Together these approaches will build a significantly broader understanding of the environmental, economic, social, and cultural values of the ocean by society; highlight the plurality of roles that the Southern Ocean plays in underpinning human health, wellbeing and sustainable development; and emphasise the intrinsic values associated with the Southern Ocean and its associated marine ecosystems. Key priority areas include recognizing the values of the Southern Ocean; promoting appreciation of global climate connections; building an inclusive Antarctic Region; engaging the Southern Ocean industry in knowledge production; fostering cultural connections with Antarctica; supporting ocean education; and highlighting the Southern Ocean across policy agendas. This outcome will highlight the ocean as a place of wonder and inspiration, thus also influencing the next generation of scientists, policy makers, government officials, managers, global citizens and innovators.

Research challenges (purely scientific)

- **Challenge R1:** Understand what role knowledge of the Southern Ocean and its connections to human and planetary wellbeing play in achieving a sustainable socio-ecological future.
 - Develop and facilitate research projects and programmes that examine
 - (a) the status of knowledge of subsets of global societies about the Southern Ocean and dependent ecosystems as well as its central role for global planetary health, and
 - (b) the linkages between knowledge about these regions and pro-environmental decision-making and behaviour.
- **Challenge R2:** *Explore how Antarctica is valued and engaged in different ways.*
 - Recognise types of rational use (tourism, transport, fishing) as focal areas for research on human engagement with and management of the place. Strengthening knowledge integration that can be incorporated into strengthened regulatory and management practices.
- **Challenge R3:** Assess the role of education in achieving a sustainable socio-ecological future.
 - **Develop innovative education and training systems that integrate different knowledge sources and will contribute to building the skills needed for sustainability, enhanced participation of society and strengthened public understanding and awareness of the value of Polar Regions WG-6 Priority 2*
 - **Facilitate transnational cooperation and complementarity Theme-3*
- **Challenge R4:** Establish best ways of engaging with students, public, stake-and-rights holders and researchers, drawing on expertise from scholars specializing in the science of science communication in order to enhance participation from broad groups.
 - Draw on evidence-based findings to prioritise activities that lead to long term impact)
 - Use participatory techniques such as scenario analysis to improve understanding and illustrate the added value of using evidence-based knowledge for decision-making
- **Challenge R5:** Develop stronger linkages between researchers, industry, and policy and decision-makers in international and national governments, non-governmental bodies, and governmental organizations to contribute to co-design of projects and facilitate co-production of new knowledge about the Southern Ocean region.

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| <ul style="list-style-type: none"> ○ <i>Logistical and technical challenges (funding, infrastructure, data accessibility, etc.)</i> |
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- **Challenge L1:** Identify the time, effort and logistical requirements that come with learning to effectively communicate between natural sciences, social sciences, arts and humanities and actively provide support to facilitate this inter-disciplinary engagement.
 - Consider who gets to ask the research questions, who they are for, who benefits, and why?
 - **Challenge L2:** Promote meaningful recognition of the agency of non-human life forms and the ethical obligations of humans in this regard.
 - Recognise the ethical dilemma posed by an anthropocentric approach to researching, valuing and utilising the Southern Ocean and Antarctica and acknowledge the agency of non-human life forms and the importance of respecting their rights as well as humanity's adverse impacts on their habitats - in the past, present and future.
 - **Challenge L3: [Encourage/Enthuze/ Foster]** Emphasize the role of young people of all backgrounds as the inheritors of the changing planet.
 - **Challenge L4:** Identify demographic groups and knowledge systems that are being missed out of key conversations and take action to address these in meaningful and respectful ways.
 - **Challenge L5:** Build on current and develop further collaborative opportunities for engaging with global tour operators, tourists, and guides in the Antarctic region.
 - Expand the role of tourism in citizen science and as platforms of opportunity
 - Expand concept of the “Antarctic Ambassadors” within context of wider polar community, emphasising joint ownership of the IAATO-led campaign
 - Ascertain how successful the current engagement is, noting that many tourists are very well engaged with the region before/when and after visiting Antarctica and the Southern Ocean
 - Promote the continuity of education and outreach opportunities in conjunction with commercial operators in the Southern Ocean
 - Engage with tour operators to make Antarctic tourism as sustainable as possible thus inspiring industry in other parts of the world
 - **Challenge L6:** Actively support Arts to engage with the Southern Ocean region.
 - Channel the arts' ability to challenge and inspire a diverse range of audiences
 - Incorporate arts into science strategies at a National level
 - **Challenge L7:** Secure funding for communication and engagement issues related to the Southern Ocean, in order to increase the quality of engagement.

- **Challenge L8:** Develop Decision Support Tools (DSTs) to support informed decision-making related to Southern Ocean challenges.
 - Key challenges for the implementation of DSTs include the logistics of operating and maintaining the continuous delivery of information
 - Ensure DSTs draw on the wide range of disciplinary expertise available across the Southern Ocean research community
 - Acknowledge existing expertise in Southern-Ocean and Antarctic-related decision-making, in particular the knowledge and experience held by the Antarctic Treaty System and CCAMLR, as well as organisations such as COMNAP, SCAR and IAATO.

- *Uptake challenges (effective communication between **stakeholders**, engaging the public,)*
- **Challenge U1:** Improve societal understanding of Southern Ocean issues and appreciation of Southern Ocean for its intrinsic values, as a unique environment, and global values, for its role in Earth systems and regulating climate change.
 - Foreground the effects of climate change
 - Contextualise recognized Southern Ocean values in relation to wider UN Ocean decade priorities
- **Challenge U2:** Recognise that Antarctic history extends beyond the ‘Heroic Era’ and that local communities have long-standing narrative connections with the Southern Ocean. Stories from Non-European contexts and those of Indigenous and First Nations people need to be recognized, included and foregrounded in discussions around the history and future of the region.
 - Foreground the long standing connections of Indigenous populations in Gateway or Southern rim countries with Antarctica and the Southern Ocean
- **Challenge U3:** Nurture public education and outreach initiatives to support increased societal awareness of the values of the Southern Ocean (including for the global weather and climate system) and inspire next generation as a vector to other sectors of the community.
- **Challenge U4:** Recognize the importance of conservation of the Southern Ocean to preserve its intrinsic values, for humanity, including for future generations.
- **Challenge U5:** Engage meaningfully with audiences both close to and far away from the Southern Ocean.
 - Regionally with the Southern Ocean rim countries that have close proximity to the Southern Ocean
 - Globally, foregrounding the ways oceanographic connections make the Antarctic region relevant to humans around the world
- **Challenge U6:** Encourage participation of citizens in Southern Ocean relevant projects through citizen science.
 - Create opportunities for researchers and industry to engage with each other to create meaningful citizen science opportunities on Southern Ocean tourist vessels
 - Emphasise global connections with Antarctica through localised projects with an ocean focus
- **Challenge U7:** Connect people remotely to the Southern Ocean through the celebration and promotion of cultural production.
- **Challenge U8:** Facilitate communication, cooperation and engagement between Antarctic Treaty Parties on education and outreach on Southern Ocean
- **Challenge U9:** Reach wider publics outside polar community by sharing educational resources on ocean literacy with special reference to the Southern Ocean.
- **Challenge U10:** Highlight the Southern Ocean across Policy Agendas across a range of scales.
 - Continue active engagement with CCAMLR and the Antarctic Treaty System in relation to Southern Ocean issues, including ecosystem management, MPA

designations, and the policy and environmental implications of these governance tools

- Engage regional and local policy makers [understand the importance of the impacts happening with] changes in the Southern Ocean
- Identify methods that have proven effective in communicating between science and policy in other places (Asian SE Asia,) and determine how these apply to the unique treaty-governed Antarctic Region (>60°S).
- Release policy advice and educational information at different levels of complexity in order to engage across the full spectrum of society and to directly benefit from use of research results in decision-making

Cross Cutting Themes (CCT)- *(note for the overall report - cross cutting WG - language used is specific to areas people are from, eg “stakeholder” is not preferred in Oceania, but standard usage in Europe.) - Gateways as cross-cutting?*

1. Use an integrated trans- or multidisciplinary approach to research combining biodiversity/biology/adaptations with physical oceanography, geophysics and biogeochemistry, social sciences, humanities and arts. **(CCT Theme 2: Improve transdisciplinary capacity and knowledge integration)**
 - a. Such diverse perspectives should be integrated into projects at the outset
 - b. There are VERY few, if any properly holistic integrated research projects
 - c. There is limited funding for this type of project from national funders, and diverse project teams should be made a priority in future funding calls
 - d. Concentrate on funding pathways to address transdisciplinary approaches to raising public awareness
2. Strong collaborations between academia, government, and industries are required to enhance technology developments, new jobs, safer operations, better sustainable economies (transport, fisheries and industry), and capacity building in the Southern Ocean **(CCT Theme 2: Improve transdisciplinary capacity and knowledge integration)**
3. Use topical areas involving resource conservation and use (tourism, transport, fishing) as focal areas for research on strengthening knowledge integration that can be incorporated into strengthened regulatory and management practices **(CCT Theme 2: Improve transdisciplinary capacity and knowledge integration)**
 - a. Acknowledge existing governance structures in Antarctica and the Southern Ocean (CCAMLR, ATS)
4. Encourage business operators to participate in the collection of long time series of ecosystem monitoring data. These should be utilised to their maximum and expanded with greater spatial coverage, engaging operators in using mobile, comparative, and complimentary measurement platforms **(CCT Theme 2: Improve transdisciplinary capacity and knowledge integration)**
5. Rhetorically develop food as an avenue of connection to the Southern Ocean, using the questions “Where does my food come from?” as a starting point for discussion. **(CCT connection with fisheries - WG3)**

ACTION: Add actions on the science eg a workshop aimed at research challenges

Identify tangible actions that would be able to address these challenges. Delineate the scope of suggested actions (leading organisation, involved stakeholders, funding, timeline, implementation).

Action 1: Science of Science Communication

Name of Action	Workshop to evaluate current practices related to outreach and education in the Southern Ocean , with a focus on practical pathways to achieving an inspiring and engaging ocean for a diverse range of publics. Driven by contemporary research on the science of science communication, this workshop could address questions such as: <ul style="list-style-type: none"> ○ What is the current situation with regards to ocean literacy at the outset of the Southern Ocean Decade? ○ How well are we doing the research? ○ What is the science-based evidence we have? ○ What methods are available for testing engagement? ○ What specific areas related to engagement with the Southern Ocean require further academic attention over the medium to long term?
Related challenge	R1, R2, R3, R4, R5, L3, U1, U9
Key stakeholders to consider	Researchers, educators, public,
Timeline	Short - Medium (establish baseline near start of decade)
Potential resources	
Other comments	

Action 2: Policy-makers

Name of Action	Workshop for policy makers. Collaborative endeavours like workshops for the policy makers and decision makers to ensure better understanding of the relevance of Southern Ocean and need for action in a climate change scenario
Related challenge	R5, L8, U10

Key stakeholders to consider	Policy makers; decision makers of government organization and NGOs,
Timeline	Short - Medium (establish baseline near start of decade)
Potential resources	
Other comments	This action uses outreach techniques to connect policy-makers with researchers and facilitate conversations about the most effective ways of ensuring meaningful dialogue that enriches the wider Southern Ocean and global communities

Action 3: National Antarctic Programs

Name of Action	Recognising the value of interdisciplinary research, National Antarctic Programs should actively support the Arts to engage with the Southern Ocean region, providing opportunities for logistical access (infrastructure) and targeted funding that expands knowledge about the Southern Ocean and human interactions with the place. <ul style="list-style-type: none"> ○ Embed artists within science programs ○ Funded projects to require diverse teams from the start
Related challenge	L1, L5, L6, U6, U7,
Key stakeholders to consider	Researchers, Artists, Educators,
Timeline	Medium- Long
Potential resources	
Other comments	Lack of sustained funding makes it difficult for artists to be involved in a longer term project. There are multiple benefits to including artists - artists do their own research/work; but artists are also public facing and their art helps in engaging a wide variety of publics.

Action 4: Funders

Name of Action	Target funding and logistical support to foreground multi-disciplinary projects that model effective communication between natural sciences, social sciences, arts and humanities, and other relevant parties.
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Related challenge	L1, L7,
Key stakeholders to consider	Educators, Researchers, Artists, NGOs
Timeline	Medium- Long term
Potential resources	
Other comments	Target funds towards projects that can demonstrate diverse research teams and that address priorities such as: recognizing the values of the Southern Ocean; promoting appreciation of global climate connections; building an inclusive Antarctic Region; engaging the Southern Ocean industry in knowledge production; fostering cultural connections with Antarctica; supporting ocean education; and highlighting the Southern Ocean across policy agendas.

Action 5: More-than-human world

Name of Action	All projects related to the Southern Ocean should consider the more-than-human world when undertaking activities and making decisions about the place. <ul style="list-style-type: none"> ○ Identifying the ethical obligation of human's towards the non-human life forms in Antarctica and Southern Ocean ○ Recognizing the human impact on their habitat ○ Emphasizing connectedness of global systems
Related challenge	L1, L2, and L4
Key stakeholders to consider	Decision makers, researchers, government organisations, Antarctic parties,
Timeline	Medium- Long term
Potential resources	
Other comments	This action underpins other actions and suggests a move away from the anthropocentric framing of the Southern Ocean is required in order to best serve the needs of the region as whole

Action 6: Diverse voices

Name of Action	Identify demographic groups and knowledge systems that are being missed out of key conversations and prioritise the involvement of under represented groups at regional, national and international level to encapsulate a wider range of narratives.
Related challenge	L3, U2, U5
Key stakeholders to consider	<i>name individuals, entities identified as missing, underrepresented groups</i>
Timeline	ongoing
Potential resources	
Other comments	Resources (interviews/ stories/ etc) can be in online and offline mode. Resources related to narrative connection of Non-European and First Nation stories (beyond the ‘Heroic Era’) and local communities of Southern rim countries with the Southern ocean

Action 7: Educators

Name of Action	<p>Utilize and expand globally existing expertise on education (PEI) to design education and training systems to strengthen the public understanding of the relevance of Southern Ocean (& Polar Regions) in the global weather and climate system</p> <p>Educational resources can be shared online as well as distributed among public and students at various occasions.</p>
Related challenge	R3, R4, U1, U2, U3, U10
Key stakeholders to consider	Utilise expertise of Polar Educators International to include polar aspects, but also reach beyond English speaking countries
Timeline	Short/ Medium/ Long term
Potential resources	
Other comments	

Action 8: Artists and Writers

Name of Action	Connect people remotely to the Southern Ocean region through cultural production. Foster a sense of connection and care for place by promoting engagement with books, films, images, audio content, and other creative works about the Southern Ocean.
Related challenge	L6,U7, U9,
Key stakeholders to consider	General public.
Timeline	Short/ Medium/ Long term
Potential resources	
Other comments	Remote interaction with Southern Ocean will inspire general public and disseminate the need to care for the Southern Ocean

Action 8: Antarctic Governance

Name of Action	Continue active engagement via education and outreach in and on the Southern Ocean amongst key governing bodies, including: <ul style="list-style-type: none"> i) Antarctic Treaty Parties ii) CCAMLR iii) Regional policy-makers (including Antarctic-proximate places and more distance locations across Asia, Africa, Europe etc.)
Related challenge	U8, U10
Key stakeholders to consider	Antarctic Treaty Countries, policy maker from regional level,
Timeline	Short/ Medium/ Long term

Potential resources	
Other comments	

Action 9: Build Capacity [cross cutting issue]

Name of Action	<p>Build Capacity and connections across career levels and industries by bringing together key parties with an interest in and care for the Southern Ocean region.</p> <ul style="list-style-type: none"> ○ Workshops/ summer training for ECRs/educators/policy makers focussed on specific challenges ○ Target events to best cater for the people who hold the information and disseminate this and build capacity between areas, perspectives, wide range of views ○ Workshop events as opportunities for participants to upskill in regards to science/ pedagogy/ policy priorities and to build community around Southern Ocean issues
Related challenge	R2, R5, L3, U8,
Key stakeholders to consider	Students, ECRs, polar workforce, SCAR CBET, SOOS, UNEP, industry, local - regional - international policy makers, Industry, smaller/medium polar organisation/departments, NGOs,
Timeline	Longer term (ongoing)
Potential resources	Collaborate with national and international ECRs (APECS)/ Scientific Experts groups or committees/ universities
Other comments	

Action 10: Industry

<p>Name of Action</p>	<p>Build on current and develop further collaborative opportunities with industry for engaging with tour operators in the Antarctic region.</p> <ul style="list-style-type: none"> ○ Support involvement with industry, public, educators, etc through citizen scientist programmes ○ Opportunities for educational engagement with place ○ Opportunities for scientific engagement ○ Opportunities to engage in decision-making processes
<p>Related challenge</p>	<p>L5, U6, U10</p>
<p>Key stakeholders to consider</p>	<p>IAATO, COLTO, CCAMLR, tourists, general public, educators, etc.</p>
<p>Timeline</p>	<p>ongoing (update each year?) - <i>report links to funding calls</i></p>
<p>Potential resources</p>	<p>Encourage industry active in the Southern Ocean to participate in the collection of long time series of ecosystem monitoring data. These should be utilised to their maximum and expanded with greater spatial coverage, engaging operators in using mobile, comparative, and complimentary measurement platforms</p>
<p>Other comments</p>	<p>Through citizen scientist program, general public not only help scientists in data and can be a source of an inspiration for others to realize the importance of the Polar Regions.</p> <p>Action here in contingent upon findings from Action 1 (identifying best ways to promote engagement)</p>

Action 11: Regional Connections

Name of Action	<p>Link global climate to the regional level, with a focus on places proximate to the Southern Ocean (eg. Antarctic Gateways) as well as regions distance from Antarctica, but impacted by global systems.</p> <ul style="list-style-type: none"> ○ Emphasise connection with place ○ Recognise impacts of Southern Ocean on local area (eg via ocean currents) ○ Ensure Southern Ocean has a visible presence in discussions about place identity
Related challenge	U4, U5
Key stakeholders to consider	Southern rim countries, local government, state governments, tour operators
Timeline	
Potential resources	
Other comments	Impact of climate change in the Polar Regions and global effects can be discussed highlighting the consequences at regional level, Southern rim countries and at global level.

Action 12: Early Career Professionals

<p>Name of Action</p>	<p>Promote the involvement of early career researchers and professionals in discussions and projects relevant to the Southern Ocean at regional, national and international level.</p> <ul style="list-style-type: none"> ○ Creating internship and training opportunities ○ Foregrounding principles of equity in regards to access to capacity building opportunities ○ Recognising early career researchers and professionals as integral to the future of their disciplines and the health of the planet
<p>Related challenge</p>	<p>R1, L3, U2, U3,U4</p>
<p>Key stakeholders to consider</p>	<p>ECRs, APECS (International and Country Chapters)</p>
<p>Timeline</p>	<p>ongoing</p>
<p>Potential resources</p>	
<p>Other comments</p>	<p>Celebration of events like ocean day; albatross Day; delivering popular science lectures on Southern Ocean (online/offline);</p> <p>Direct interactions with the public or students</p>