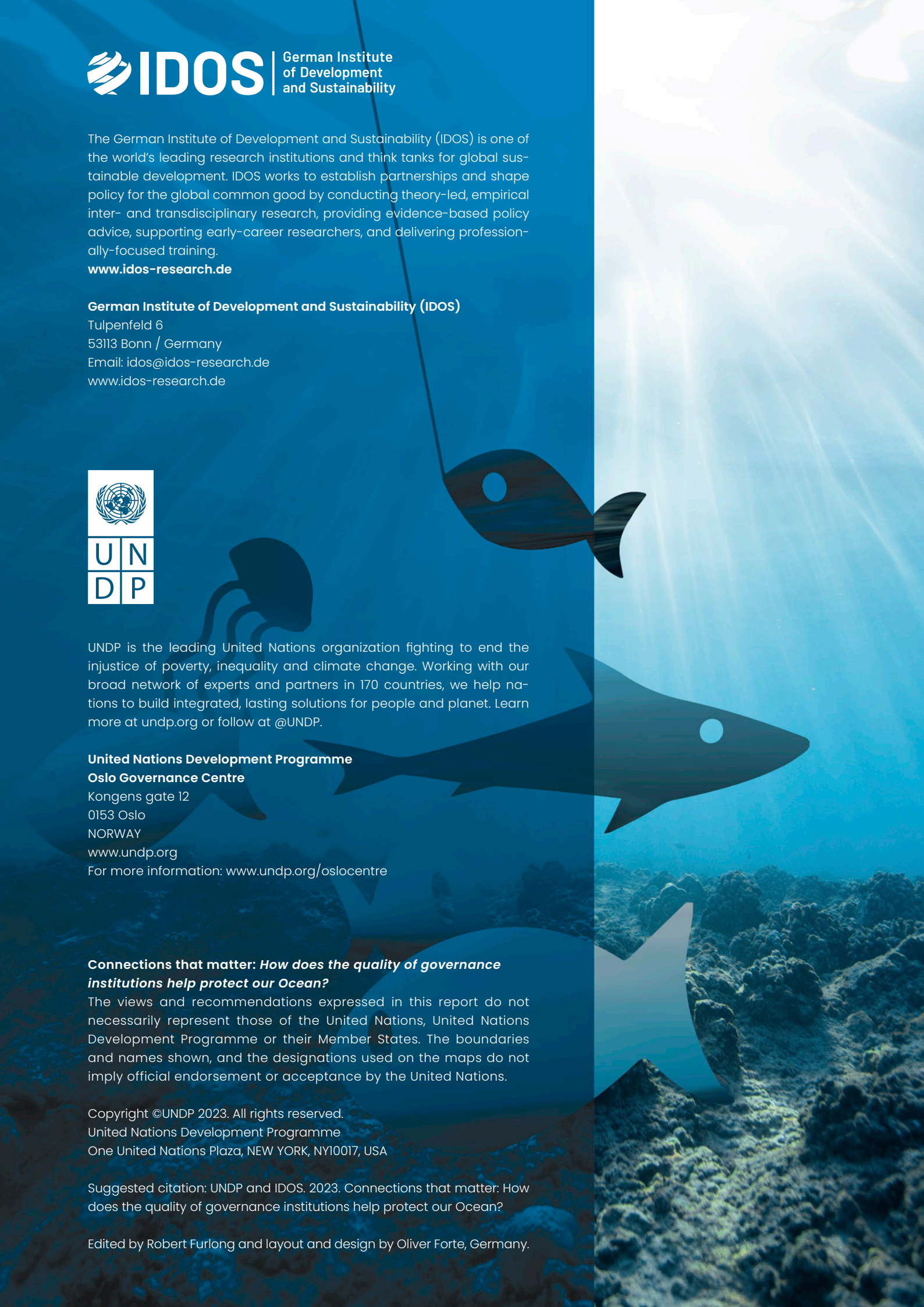
CONNECTIONS THAT MATTER:

How does the quality of governance institutions help protect our Ocean?



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Connections that matter: ***How does the quality of governance institutions help protect our Ocean?***

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CONNECTIONS THAT MATTER:

How does the quality of governance institutions help protect our Ocean?

A Systematic Literature Review on SDG 16 Interlinkages with SDG 14

March 2023

CONTENTS

FOREWORD

Our world ocean is in jeopardy, and with it, life on our planet as a whole. The ocean illustrates a key message of the 2030 Agenda for Sustainable Development – it shows how People, Planet, Prosperity and Peace are tightly interconnected and require solid Partnerships. As we stressed in our first study on Sustainable Development Goal (SDG) interlinkages, current crises are complex. Tackling any of the five 'Ps' separately or in sequence is futile. **Transformation can happen only when multiple issues are tackled at the same time**.

To implement the SDGs in such an integrated manner – and in a manner that most quickly produces results – **we need to know how action on one goal impacts other goals**. Research on these 'SDG interlinkages' is growing, but it rarely covers SDG 16. Our second joint study continues to fill this gap by offering transformative insight into a connection that may not seem the most obvious – between SDG 16 on 'peace, justice and strong Institutions' and SDG 14 on 'life below water'. Specifically, we investigate how aspects of SDG 16 that are considered critical features of governance institutions **help or hinder progress** towards the achievement of SDG 14. If asked, many of us will assume that sustainable ocean governance requires governance instruments that fit local contexts, pressures and concepts of sustainable futures. We wanted to understand better what we know about this interlinkage.

What did we find?

This study offers the aggregated empirical insight from across the globe that accountability and rule of law, participation and inclusion, as well as transparency and the combating of corruption and crime play an important role for marine and coastal protection and the sustainability of fisheries. By far our clearest results were on **participation and inclusion**: There is particularly strong evidence showing that meaningful and inclusive stakeholder engagement yields not just additional knowledge but fosters trust, ownership and cooperation, which advance the acceptance and legitimacy of marine protection efforts, thereby making them more effective. Conversely, protection efforts that fail to acknowledge local identities and expertise, override the interests of communities and neglect their access to resources can drive conflict, resistance and even illicit activity, which can easily undermine positive outcomes for ecosystems and societies.

We also found evidence on the effects of **accountability and rule of law** as well as on **transparency and control of corruption and crime**. For example, regulation, active management and enforcement tend to improve marine park conservation, whereas a lack of enforcement of regulations leads to 'paper parks'. Increased transparency through public awareness and media coverage can reduce illegal, unreported and unregulated (IUU) fishing. Also, mass media is an important tool for combating IUU fishing by shap-

ing public opinion and influencing government authorities and businesses. Another strong message is that the different elements of **governance can mutually reinforce each other**, leading to even better outcomes on SDG 14. For example, regulation efforts are more effective if they are combined with stakeholder engagement. Finally, we used all of our findings to unpack potential causal dynamics between SDG 16 and SDG 14 and created a **systems diagram** with interesting **feedback loops**, which will require further validation, especially at the country level.

What else have we learnt?

While the above shows **what we did find**, the study also helped us reflect on **what we did not find**. For example: Why did we find less research on SDG 14 related to *accountability and rule of law* as well as *transparency and control of corruption and crime* (than on *participation and inclusion*)? Why did we find plenty of *research on marine and coastal protection*, but hardly any related to *ocean pollution*? Why does much of the research focus on the Global North? These apparent biases show that a systematic literature review, as a methodology, can capture only **what is there** and not **what is not there or why**. The lack of literature can have different reasons, ranging from actual lack of evidence to varying research effort (e.g. due to incentives) and visibility (e.g. due to Northern research privilege, language bias, etc). To us, this study illustrates how important it is to avoid falling for the **'streetlight effect'** and to critically question **context, systems and methods of research**. It may mean that a study such as this one provides more questions than answers. But we strongly feel that this is what research is all about. Questions lead us to innovation. And **asking these questions together** – between researchers and practitioners, as in this collaboration – allows us to explore how to get from innovation to impact and transformative change, be it by more or other research or with different interventions altogether.

We are therefore very interested in **your views**: Whether you are a policymaker, researcher, or practitioner – which insights from this study stand out for you? And what tools, methodologies and other forms of support do you need to apply them in your context? Thank you, once more, for picking up this study and giving it your valuable attention.

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ABBREVIATIONS

ANZ	Australia and New Zealand
CGIAR	Consortium of International Agricultural Research Centers
CSA	Central and Southern Asia
ENA	Europe and North America
ESEA	Eastern and South-Eastern Asia
ICZM	Integrated coastal zone management
IAEG	Inter-agency and Expert Group
IDOS	German Institute of Development and Sustainability
IGS	Independent Group of Scientists
IUU	Illegal, unreported and unregulated
LAC	Latin America and the Caribbean
MCS	Monitoring, control and surveillance
MPA	Marine protected area
NAWA	North Africa and Western Asia
NGO	Non-governmental organisation
NORAD	Norwegian Agency for Development Cooperation
OGC	Oslo Governance Centre
RFMO	Regional Fisheries Management Organisation
SDG	Sustainable Development Goal
SSA	Sub-Saharan Africa
UN	United Nations
UNDESA	United Nations Department of Economic and Social Affairs
UNDG	United Nations Development Group
UNDP	United Nations Development Programme
UNECOSOC	United Nations Economic and Social Commission
UNGA	United Nations General Assembly
WoS	Web of Science
WTO	World Trade Organization

1. BACKGROUND

In adopting the 2030 Agenda for Sustainable Development (UNGA, 2015), countries acknowledged the integrated and indivisible nature of the Sustainable Development Goals (SDGs). The SDGs are characterized by complex **interlinkages across economic, social and environmental targets**. Successful implementation will require an improved understanding of these interactions to foster policy coherence, maximize synergies and minimize trade-offs between the goals and targets (Stafford-Smith et al., 2018; McGowan et al., 2019; Breuer et al., 2019). A broad range of recent studies have developed and applied different **methods to evaluate interlinkages between the SDGs** (International Council for Science, 2017; Institute for Global Environmental Strategies, 2017; Pham-Truffert et al., 2020; Allen et al., 2019; Miola et al., 2019). Given the very broad scope of the SDGs, these have tended to focus on a reduced set of priority targets of research interest.

Recognizing that responsive and effective governance is a critical means to achieve sustainable development, the SDGs include a standalone SDG 16 on peace, justice and strong institutions, which comprises 12 targets and 24 indicators. This includes several governance targets and concepts that are seen as key enablers for all SDGs (UNDESA, 2019). Despite their systemic importance, recent global **studies on SDG interlinkages have either excluded or provided limited coverage of SDG 16 targets** in their analyses (International Council for Science, 2017; Pham-Truffert et al., 2020; IGS, 2019). To begin to fill these knowledge gaps, UNDP's Oslo Governance Centre (OGC) and the German Institute of Development and Sustainability (IDOS)[1] commissioned a study on **interlinkages between SDG 16 and SDGs 1 (no poverty) and 10 (reduced inequalities)**, which was published in May 2022 ("Connections that Matter: How the Quality of Governance Institutions may be the Booster Shot we need to reduce Poverty and Inequality"). The study synthesized empirical evidence on interlinkages between these goals and explored causal dynamics and pathways for impact. The study recommended that the research be expanded, for example by exploring interlinkages between SDG 16 and other priority goals. In this context, UNDP OGC and IDOS commissioned the present review of the literature to synthesize evidence relating to interlinkages between SDG 16 and SDG 14 (life below water). Building on the definition by the Inter-agency and Expert Group (IAEG) Working Group on Interlinkages of SDG Statistics,

[1] In June 2022, the German Development Institute / Deutsches Institut für Entwicklungspolitik (DIE) changed its name to German Institute of Development and Sustainability (IDOS).

this study refers to an SDG 16 interlinkage when Peace, Justice and Inclusion enable or hinder progress on other goals or when other goals enable or hinder progress on Peace, Justice and Inclusion—the focus of this study being on the former.

There are several existing studies that review interlinkages associated with SDG 14 and SDG 16 (Singh et al., 2018; Le Blanc et al., 2017; International Council for Science, 2017; Pham-Truffert et al., 2020; Gissi et al., 2022). However, global reviews have not specifically looked at the impact of SDG 16 targets and/or key concepts in the SDG 14 targets. One national interlinkages study in Aruba looked at impacts in both directions (i.e. from SDG 14 to SDG 16, and from SDG 16 to SDG 14) (Singh et al., 2021).

To synthesize the evidence on interlinkages between the governance aspects of SDG 16 and SDG 14, the current study used a systematic literature review approach that was guided by the methods developed in the previous study and informed by good practice guidelines for evidence-based literature reviews in international development and policy research (ODI, 2013; Waddington et al., 2012). The study was undertaken over the period June to December 2022 by a team of reviewers that included UNDP and IDOS subject matter experts. This report presents the findings from the review. **Section 2** first outlines the scope and methods applied, including the query protocol and approach for evaluating interlinkages. **Section 3** then presents an overview of the results from the review, including a synthesis of the interlinkages identified in the literature. **Section 4** interprets and discusses the results, highlighting key findings and exploring causal linkages and pathways between the goals. Finally, **Section 5** provides concluding remarks on key findings, study caveats and limitations, policy recommendations and areas for future research.

2. RESEARCH DESIGN

Methodological approaches to evaluating interlinkages range from qualitative approaches based on literature reviews and expert opinions through to quantitative analyses of statistical correlations or dynamic modelling (Allen et al., 2021). All of these methods have strengths and limitations and have been used in previous interlinkages studies (Breuer et al., 2019). Among these approaches, **systematic literature reviews provide a particularly well-suited method for synthesizing the current evidence base on a targeted set of SDG interactions.** This is the general approach adopted for this study. The research was undertaken in several stages. Initial steps included defining the overall research question, identifying priority targets or concepts of interest for the analysis and defining the scale and directionality of the impacts being evaluated. Key decisions regarding the study design—including on the scope, scale and methods—were made through a documented consultative process involving subject matter experts from across key teams and levels at UNDP and IDOS.

"Systematic literature reviews provide a particularly well-suited method for synthesizing evidence on SDG interactions."

Many previous assessments of interlinkages between the SDGs rely on the evaluation of SDG target-to-target interlinkages; a common evaluation question is: "if progress is made on target x (entry target), how does this influence progress on target y (impact target)?" (Weitz et al., 2017; International Council for Science, 2017). However, reviewing target-to-target interactions can be challenging, as SDG targets are not neatly delineated and often overlap: Sometimes, multiple targets address the same issue (e.g. aspects of corruption are included in several SDG 16 targets), other times a single target addresses multiple issues (e.g. SDG 16.3 covers a vast array of issues around the rule of law as well as access to justice).

Therefore, the research team decided—as with the previous SDG 16 interlinkages study—to group together closely related concepts from each of the goals into entry and impact clusters (see Sections 2.1 and 2.2 below). Instead of target-to-target interlinkages, the study thus evaluates cluster-to-cluster interlinkages.

As in the previous study, this review focussed on the effects of SDG 16 on other goals, in this case SDG 14. This does not imply that effects in the reverse direction do not exist or are less important. It reflects a choice that the research team made, given the time and resources available for this study. However, the review process included the capability to capture 'reverse' interlinkages, i.e. effects of SDG 14 on SDG 16..

Against this background, the overall research question for the review was: *"What is the evidence that progress (or lack thereof) on selected governance aspects of SDG 16 (accountability, participation/inclusion and transparency) affect the achievement of selected aspects of SDG 14 (marine pollution, marine and coastal protection, sustainable fisheries)?"*

Another important consideration for the review relates to the primary scale of implementation. The previous UNDP/IDOS interlinkages study (on SDG 16, SDG 1 and SDG 10) focussed on research looking at the country level. Given the international and cross-boundary nature of ocean governance, it was important to reconsider scale aspects for this study. The research team decided to focus on the domestic level on the entry (SDG 16) side to facilitate the identification of relevant evidence for national and sub-national policymakers and to ensure a manageable scope for the review. On the impact (SDG 14) side, the team decided—for the same reasons—to focus on national decision-making and areas under national jurisdiction, but to include regional governance, since domestic ocean matters are often influenced, regulated or even managed through regional bodies. Finally, it was decided to exclude research that focussed solely on global ocean governance, as this would have included aspects of multilateral decision-making and cooperation that would have tapped into an additional body of research and required considerably more time and capacity to analyze. The team felt that global dimensions could well be the subject of future research. Nevertheless, this choice left scope to include global governance aspects in cases where papers discussed them in close connection with national-level policymaking.

2.1 Rationale for selecting targets and concepts for SDG 16

SDG 16 is an amalgam of targets covering dimensions relating to peace, justice and inclusion. For the previous study, six targets that aim to improve the quality of governance institutions were prioritized and grouped into three clusters corresponding to the principles of the United Nation's (UN) Human Rights Based Approach to Development Cooperation (UNDG, 2003), and to a subset of the principles for effective governance for sustainable development (UNECOSOC, 2018): participation and inclusion (16.7), accountability (16.6, 16.3) and transparency (16.6, 16.10, 16.5, 16.4). Targets on violence and peace had not been included, as this would have required the review of a large body of literature very specific to these issues. Both rationales were considered equally valid for this study.

However, the shift in scope for this study to the impacts on oceans (SDG 14) required reconsideration of the original entry clusters to ensure that important governance aspects of relevance for oceans were adequately captured. Drawing on the original clustering and discussions with subject matter experts, an expanded set of relevant SDG 16 targets was identified for this study **(Table 1)**. This included several additional governance aspects on the promotion of the rule of law (16.3) as well as combating illicit financial flows and organized crime (16.4, excluding language regarding the return of stolen assets). These additional targets were considered particularly important in terms of effective governance and management of marine and fisheries resources, including combating illegal fisheries activities and organized crime in the marine environment, and effective implementation of national and international marine protection agreements.

Many of the concepts included in SDG 16 are broad in nature and can, as such, be subject to differing interpretations in the literature. Definitions of key terms and concepts developed in the previous study (UNDP and DIE, 2022) were used as relevant for this study, in line with its focus on the national and subnational levels and public institutions and decision-making.

TABLE 1. Priority SDG 16 Entry Targets and Concepts

16.3	Promote **the rule of law** at the national and international levels and ensure equal access to justice for all
16.4	By 2030, significantly reduce **illicit financial** and arms **flows**, strengthen the recovery and return of stolen assets and **combat all forms of organized crime**
16.5	Substantially reduce **corruption and bribery** in all their forms
16.6	Develop effective, **accountable and transparent** institutions at all levels
16.7	Ensure responsive, **inclusive, participatory** and representative decision-making at all levels
16.10	Ensure public **access to information** and protect fundamental freedoms, in accordance with national legislation and international agreements

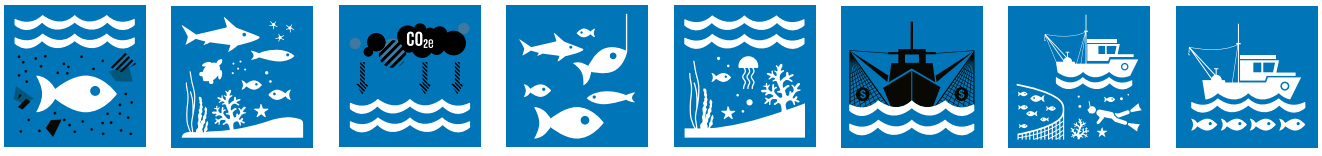
2.2 Rationale for selecting targets and concepts for SDG14

SDG 14 is underpinned by 10 targets addressing conservation and sustainable use of the ocean, seas and marine resources, including coastal zones, and targets relating to capacity-building and ocean governance. The seven primary (numbered) targets largely reflect commitments under other international frameworks, such as the commitment to maintain or restore fish stocks to levels that can produce maximum sustainable yields (made in 2002 under the Johannesburg Plan) or the commitment to conserve at least 10% of marine and coastal areas (provided under the CBD Aichi Target 11). The additional three (lettered) targets correspond to additional means of implementation for SDG 14 relating to governance, knowledge and access to resources.

As many of the SDG 14 targets address important aspects of ocean governance, an option to include all of them in up to five clusters were initially considered. However, targets 14.a and 14.c were eventually excluded, as they are themselves more enabling and global in nature. Once more, this does not mean that these targets were deemed less important (in fact, some of the findings below show that they are very relevant indeed) but integrating them in the clustering approach chosen for this study was not considered feasible. In total, a set of eight targets was selected for inclusion in the study **(Table 2)**.

TABLE 2. SDG 14 targets for inclusion in the review

14.1	By 2025, prevent and significantly **reduce marine pollution** of all kinds, in particular from land-based activities, including marine debris and nutrient pollution
14.2	By 2020, **sustainably manage and protect marine and coastal ecosystems** to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans
14.3	**Minimize and address the impacts of ocean acidification**, including through enhanced scientific cooperation at all levels
14.4	By 2020, **effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices** and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics
14.5	By 2020, **conserve at least 10 per cent of coastal and marine areas**, consistent with national and international law and based on the best available scientific information
14.6	By 2020, **prohibit certain forms of fisheries subsidies** which contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported and unregulated fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation
14.7	By 2030, **increase the economic benefits to Small Island developing States and least developed countries from the sustainable use of marine resources**, including through sustainable management of fisheries, aquaculture and tourism
14.b	**Provide access for small-scale artisanal fishers** to marine resources and markets



2.3 Framework and approach for evaluating interlinkages between SDG16 and SDG14

In line with the research question, the priority targets in **Table 1** and **Table 2** were grouped into entry clusters (SDG 16) and impact clusters (SDG 14) to separate distinct concepts and group together closely related concepts across the various targets. The logic for clustering is presented in **Figure 1**. For SDG 16 targets, three entry clusters were identified, namely increased accountability and rule of law (16.3, 16.6), increased participation and inclusion (16.7), and increased transparency and control of corruption and crime (16.5, 16.6, 16.10, 16.4). Three impact clusters were also identified for SDG 14. Firstly, the marine pollution cluster included targets 14.1 and 14.3 (whereby CO2 is considered a pollutant that results in ocean acidification). Secondly, area-based management is addressed in targets 14.2 and 14.5 on the protection of marine and coastal ecosystems and conservation of marine protected areas (MPAs). Thirdly, various aspects relating to sustainable fisheries are addressed in multiple targets, namely 14.4, 14.6, 14.7 and 14.b.

As outlined above, the clustering aimed to provide greater conceptual clarity in evaluating the impact of distinct SDG 16 principles or concepts on priority outcomes and interventions relating to oceans. Rather than evaluating target-to-target interlinkages, the evaluation explored cluster-to-cluster interlinkages, drawing on evidence from the academic literature. A simple evaluation approach was used to **classify interlinkages** from an entry cluster to an impact cluster as positive (synergy/enabling), negative (trade-off/constraining), neutral (no impact) or inconclusive (mixed impact or unclear). Given the diversity of the literature and the evidence base provided, a more nuanced framework with additional categories or scoring was not considered appropriate or feasible. However, additional qualitative and quantitative information on interlinkages and explanations given by authors regarding causal pathways was also collected and compiled during the review of the literature.

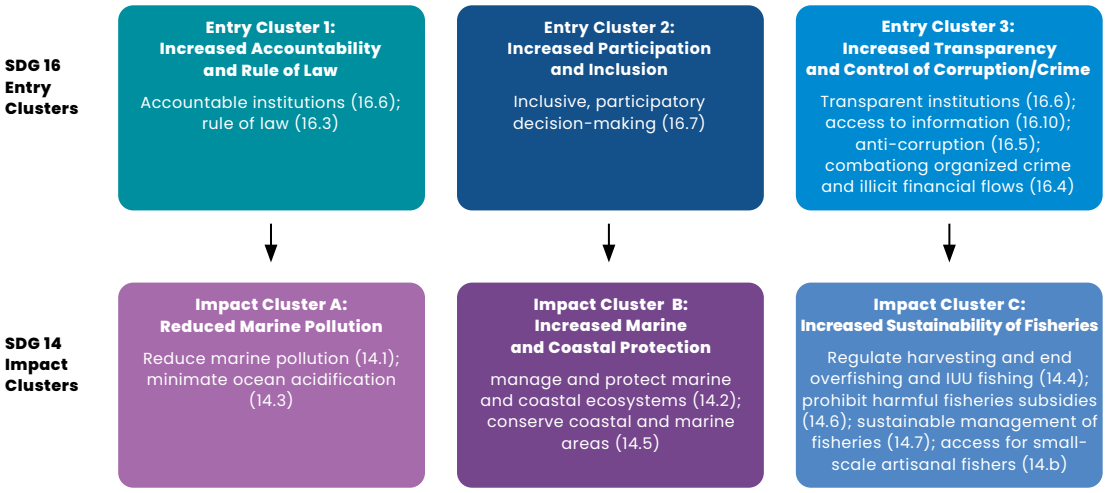
The guiding question for the evaluation of interlinkages was:
"Based on the evidence in the paper, does an increase/improvement in entry cluster X have an enabling/constraining/neutral/inconclusive impact on impact cluster y?"

The review of interlinkages focussed on identifying directional interlinkages from each of the three entry clusters to the three impact clusters. The intention was to capture as much information as possible that may be of relevance for interpreting the results, understanding interactions and causal re-

lationships, policy recommendations or gaps for future research (e.g. the study design included the capacity to capture 'reverse' interlinkages, from SDG 14 to SDG 16, as well). The review also captured information on the study methods and the type of evidence (e.g. quantitative, qualitative, etc.) as well as the geographic scale or scope of the analysis (multi-country, national, subnational) and the number of countries included in the sample for each study. This information was used to provide an indication of the type and coverage of evidence supporting the interlinkages identified in the studies.

"This study provides a systematic overview of published evidence on how progress on SDG 16 affects targets under SDG 14 on life under water."

FIGURE 1. Framework for grouping key concepts from SDG targets into three main entry and impact clusters



2.4 Query protocol, inclusion/exclusion criteria and literature retrieval

To identify the relevant literature, a review protocol was used based on a standardized set of inclusion/exclusion criteria including query terms and conditions. Key terms used in the query protocol are provided in **Table 3** and include priority concepts relating to SDGs 16 and 14 as well as other important terms that helped to refine the scope (e.g. public administration, institutions, government, etc.). Some of these concepts were further refined or shortened to ensure their workability in a database query string.

TABLE3. Potential query terms for use in the protocol

Key Concepts/Clusters	Query terms
1. Accountability	"accountable institutions" OR "accountability" OR "accountable governance" OR "accountability mechanism*" OR
2. Rule of law	"rule of law" OR "independent judiciary" OR "judicial independence" OR "regulat* enforcement" OR "legal enforcement" OR "access to justice" OR "criminal justice" OR "implementation of agreement*" OR "agreement implementation" OR
3. Participation and inclusion	"inclusive decision making" OR "participatory decision making" OR "participatory decision-making" OR "representative decision making" OR "representative decision-making" OR "responsive decision-making" OR "responsive decision making" OR "inclusive institutions" OR "participatory institutions" OR "political inclusion" OR "public participation" OR "public consultation" OR "public engagement" OR "participatory governance" OR "inclusive governance" OR "civic engagement" OR "democratic governance" OR "stakeholder engagement" OR
4. Transparency	"transparent institutions" OR "transparency" OR "access to information" OR "freedom of information" OR "right to information" OR "open government data" OR "transparent governance" OR
5. Control of corruption and organized crime	"anti-corruption" OR "corruption control" OR "control* corruption" OR "control of corruption" OR "combat* corruption" OR "fight* corruption" OR "curb* corruption" OR "crime control" OR "control* crime" OR "control of crime" OR "combat* crime" OR "fight* crime" OR "control* illicit financial" OR "control of illicit financial" OR "control* illicit arms" OR "control of illicit arms" OR "combat* illicit financial" OR "combat* illicit arms" OR "curb* illicit financial" OR "curb* illicit arms"
	AND
A. Marine pollution	"marine pollution" OR "marine debris" OR "nutrient pollution" OR "ocean acidification" OR "ocean plastic*" OR "marine plastic*" OR "land-based source pollution" OR "dead zones" OR "garbage patches" OR
B. Marine and coastal protection	"marine protection" OR "coastal protection" OR "ocean protection" OR "marine restoration" OR "coastal restoration" OR "marine ecosystems" OR MPA* OR "marine protected area*" OR "marine ecosystem protection" OR "marine management" OR "ocean* management" OR "coast* management" OR "coastal ecosystem protection" OR "protection of marine" OR "protection of coast*" OR "protection of ocean*" OR "integrated coastal zone management" OR ICZM OR "integrated coastal management" OR "coastal zone protection" OR "deep sea mining" OR "seabed mining" OR "coastal mining" OR "marine invasive species" OR "invasive marine species" OR "ballast water management" OR "marine living resources" OR
C. Sustainable fisheries	"overfishing" OR "illegal fishing" OR "unregulated fishing" OR "unreported fishing" OR IUU OR "harmful fisheries" OR "fisheries subsidies" OR "fisheries management" OR "aquaculture" OR "artisanal fisher*" OR "marine resources" OR "fisheries crime" OR "crime in fisheries" OR "blue crime" OR "maritime crime"
	AND
Additional key terms (government)	institution* OR "public sector" OR government* OR "public administration" OR governance AND
Additional key terms (oceans)	ocean* OR marine OR coast* OR sea* OR *fish*

To ensure that the scope of the literature was manageable and relevant, **only peer-reviewed articles published since 2015 (i.e. since the adoption of the SDGs) were included.** Articles were required to include at least one keyword corresponding to the SDG 16 entry clusters, plus at least one keyword corresponding to the SDG 14 impact clusters, plus at least one relating to the additional scoping terms.

The primary method of resource retrieval was based on an academic literature database search using a query string.[2] The Web of Science (WoS) database was used, as it includes 24,000+ journals across 254 subject disciplines and is curated by expert in-house editors to include only journals that demonstrate high levels of editorial rigor and best practice. The review targeted literature published in the English language and that included the query terms in their title, abstract or keywords. In addition, snowballing from reference lists of highly relevant or highly cited papers was also used to identify additional literature. Grey literature was excluded from the review.

The final WoS query was conducted in October 2022 and returned **a total of 347 articles**. These were subsequently **screened for relevance and prioritized for review** based on a set of screening criteria that aimed to identify articles of greater relevance based on their title, keywords and abstract. Higher priority articles were those that explicitly included key terms from the entry and impact clusters in their title and keywords, provided quantitative evidence and that directly corresponded to the core research question for the study.

The results from the screening were reviewed for consistency by a single author. Based on the screening exercise, **a total of 71 papers were selected for more detailed review**. During the review process, seven articles were disregarded due to limited relevance to the research question and scale of interest. In total, 64 articles were included in the detailed review of interlinkages.

[2] ((TS=("accountable institutions" OR "accountability" OR "accountable governance" OR "accountability mechanism*" OR "rule of law" OR "independent judiciary" OR "judicial independence" OR "regulat* enforcement" OR "legal enforcement" OR "access to justice" OR "criminal justice" OR "implementation of agreement*" OR "agreement implementation" OR "inclusive decision making" OR "participatory decision making" OR "participatory decision-making" OR "representative decision making" OR "representative decision-making" OR "responsive decision-making" OR "responsive decision making" OR "inclusive institutions" OR "participatory institutions" OR "political inclusion" OR "public participation" OR "public consultation" OR "public engagement" OR "participatory governance" OR "inclusive governance" OR "civic engagement" OR "democratic governance" OR "stakeholder engagement" OR "transparent institutions" OR "transparency" OR "access to information" OR "freedom of information" OR "right to information" OR "open government data" OR "transparent governance" OR "anti-corruption" OR "corruption control" OR "control* corruption" OR "control of corruption" OR "combat* corruption" OR "fight* corruption" OR "curb* corruption" OR "crime control" OR "control* crime" OR "control of crime" OR "combat* crime" OR "fight*

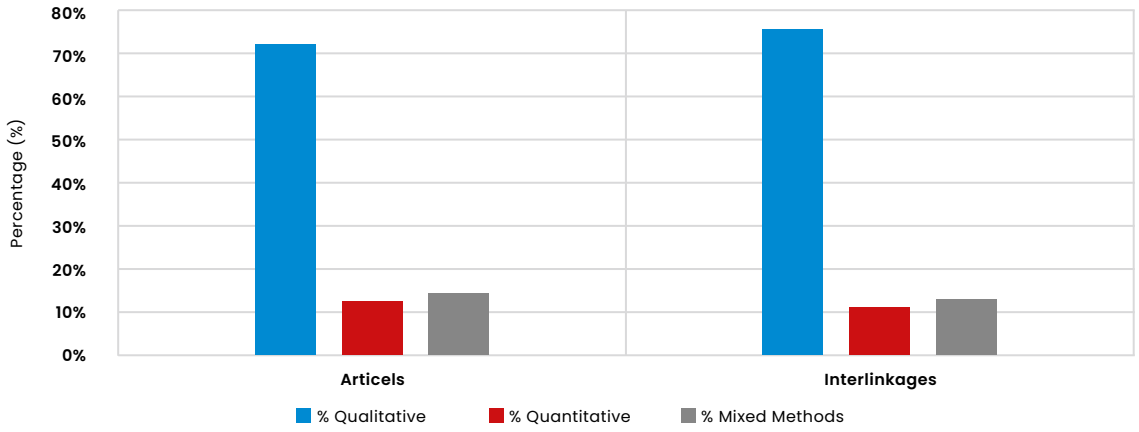
3. SUMMARY OF THE LITERATURE ON SDG 16 AND SDG 14 INTERLINKAGES

3.1 Overview of literature characteristics – type of evidence, geographic scope

Of the studies reviewed, 47 (73%) were considered qualitative analyses (mostly drawing on comparative case studies), while 8 (13%) were quantitative, and 9 (14%) were mixed methods. These studies identified a total of 92 interlinkages between the entry and impact clusters, of which the vast majority (70 interlinkages, or 76%) were identified from qualitative studies **(figure 2.)**.

"73% of the reviewed studies were qualitative and about as many focussed on the national or subnational level, the remainder were multi-country studies ranging from two to 20+ countries."

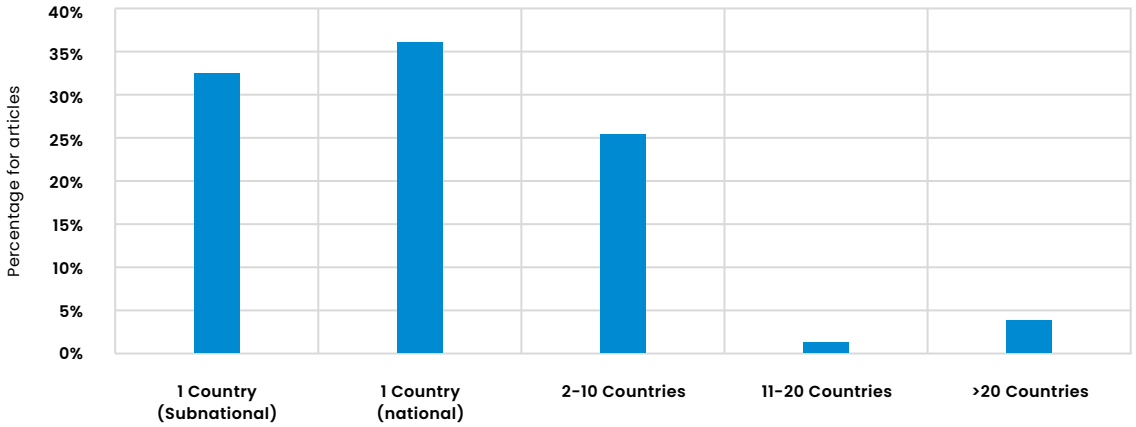
FIGURE 2. Proportion of articles and interlinkages supported by quantitative evidence



In terms of the level of the analysis, most studies (72%) included in the analysis focussed on the national (41%) or subnational (31%) levels, while the remainder were multi-country studies that ranged from including 2 countries to 26 countries **(Figure 3).** Comparatively few studies used a sample size of more than 10 countries.

crime" OR "control* illicit financial" OR "control of illicit financial" OR "control* illicit arms" OR "control of illicit arms" OR "combat* illicit financial" OR "combat* illicit arms" OR "curb* illicit financial" OR "curb* illicit arms")) AND (TS=("marine pollution" OR "marine debris" OR "nutrient pollution" OR "ocean acidification" OR "ocean plastic*" OR "marine plastic*" OR "land-based source pollution" OR "dead zones" OR "garbage patches" OR "marine protection" OR "coastal protection" OR "ocean protection" OR "marine restoration" OR "coastal restoration" OR "marine ecosystems" OR MPA* OR "marine protected area*" OR "marine ecosystem protection" OR "marine management" OR "ocean* management" OR "coast* management" OR "coastal ecosystem protection" OR "protection of marine" OR "protection of coast*" OR "protection of ocean*" OR "integrated coastal zone management" OR ICZM OR "integrated coastal management" OR "coastal zone protection" OR "deep sea mining" OR "seabed mining" OR "coastal mining" "marine invasive species" OR "invasive marine species" OR "ballast water management" OR "marine living resources" OR "overfishing" OR "illegal fishing" OR "unregulated fishing" OR "unreported fishing" OR IUU OR "harmful fisheries" OR "fisheries subsidies" OR "fisheries management" OR "aquaculture "OR "artisanal fisher*" OR "marine resources" OR "fisheries crime" OR "crime in fisheries" OR "blue crime" OR "maritime "crime")) AND (TS=(institution* OR "public sector" OR "government*" OR "public administration" OR "governance")) AND (TS=("ocean*" OR "marine" OR "coast*" OR "sea*" OR "*fish*"))) > 347

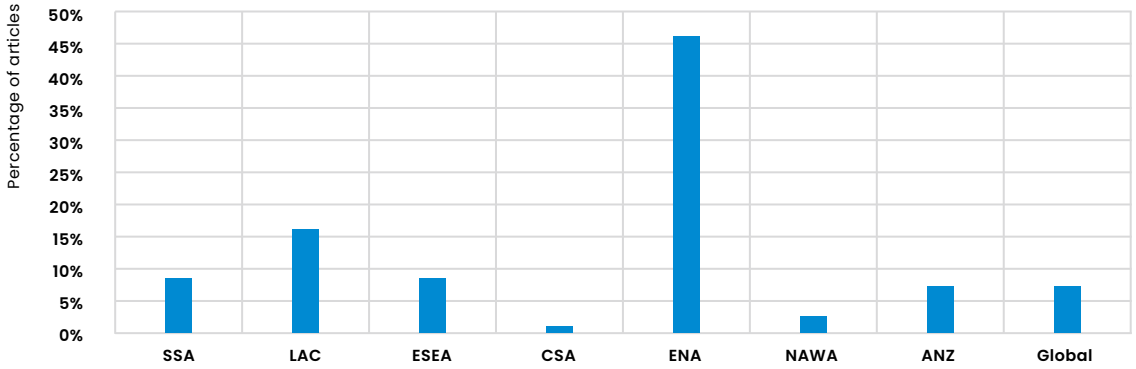
FIGURE 3. Level of analysis – number of countries reviewed in each article



"A larger proportion of studies were from Europe and North America (46%) and comparatively fewer studies from Central and Southern Asia (CSA, 2%) or North Africa and Western Asia (NAWA, 3%)."

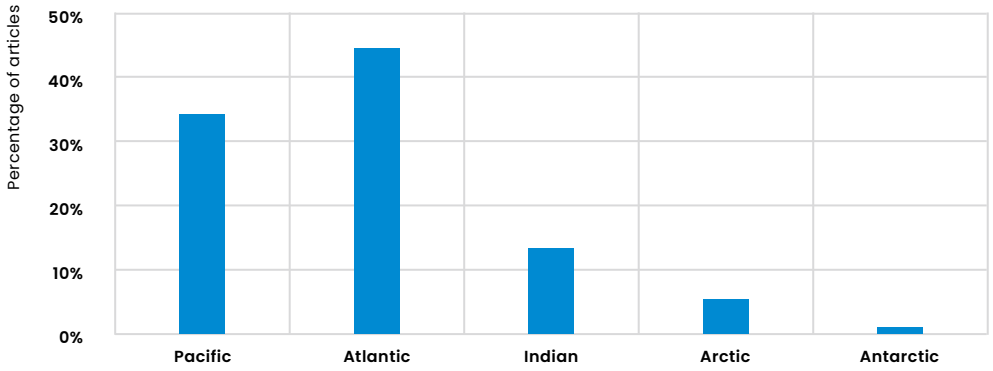
In terms of the geographic scope, there was a reasonable spread of articles across the different world regions..[3] However, a larger proportion of studies were from Europe and North America (ENA, 46%) and comparatively fewer studies from Central and Southern Asia (CSA, 2%) or North Africa and Western Asia (NAWA, 3%) (Figure 4). Around 8% of studies were considered global in scope, however these were typically literature reviews or studies with a focus on regional fishery management organizations encompassing many countries globally. Information on the main ocean zone addressed in each article was also captured during the review and is presented in Figure 5. Again, a larger proportion of articles focussed on marine and coastal areas in the Atlantic (45%) and Pacific (34%) oceans.

FIGURE 4. Level of analysis – number of countries reviewed in each article 1. Increased Accountability and Rule of Law; 2. Increased Participation and Inclusion; 3. Increased Transparency and Control of Corruption; A. Reduced Marine Pollution; B. Increased Marine and Coastal Protection; C. Increased Sustainability of Fisheries.



[3] Regional groups correspond to those used by UN Statistics Division for the Sustainable Development Goals Report (UN Statistics Division, 2019).

FIGURE 5. Main ocean zones included in the analysis (% of articles)

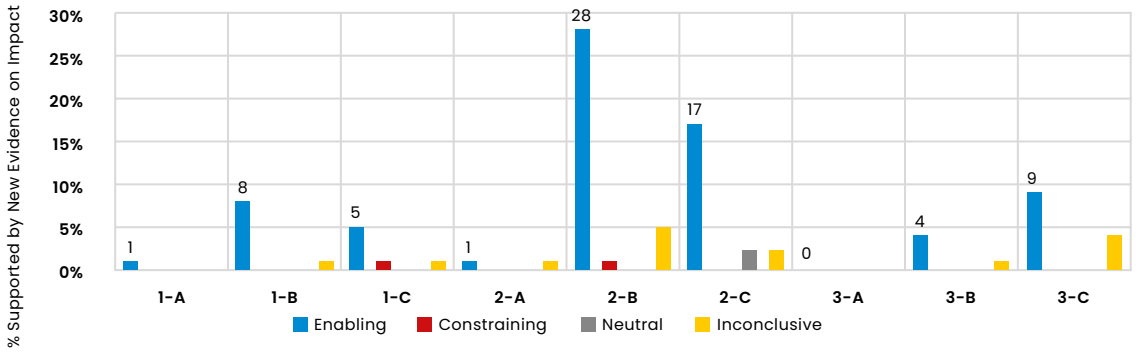


3.2 Evaluation of interlinkages between entry and impact clusters

The review identified a total of 92 interlinkages between the three entry and impact clusters, of which 73 were considered enabling interlinkages, 15 were inconclusive, 2 were neutral and 2 were constraining. The majority of enabling interlinkages were identified from entry cluster 2. Increased Participation and Inclusion (46 or 63%), followed by 1. Increased Accountability and Rule of Law (19%) and 3. Increased Transparency (18%) (Figure 6). Almost 40% of interlinkages were identified between increased participation and marine and coastal protection (2-B), with a further 23% of interlinkages identified between increased participation and sustainable fisheries (2-C). There were very few interlinkages identified between the entry clusters and the marine pollution impact cluster (A). The two constraining interlinkages were identified between increased rule of law and artisanal or small-scale fishing (1-C) and increased participation and marine protection (2-B).

"The review identified many more enabling effects than constraining effects, while a few interlinkages were identified as inconclusive and very few as neutral (little or no impact)."

FIGURE 6. Number of enabling, constraining and neutral interlinkages identified between the three primary entry clusters and three impact clusters. 1. Increased Accountability and Rule of Law; 2. Increased Participation and Inclusion; 3. Increased Transparency and Control of Corruption; A. Reduced Marine Pollution; B. Increased Marine and Coastal Protection; C. Increased Sustainability of Fisheries.



[3] Regional groups correspond to those used by UN Statistics Division for the Sustainable Development Goals Report (UN Statistics Division, 2019).

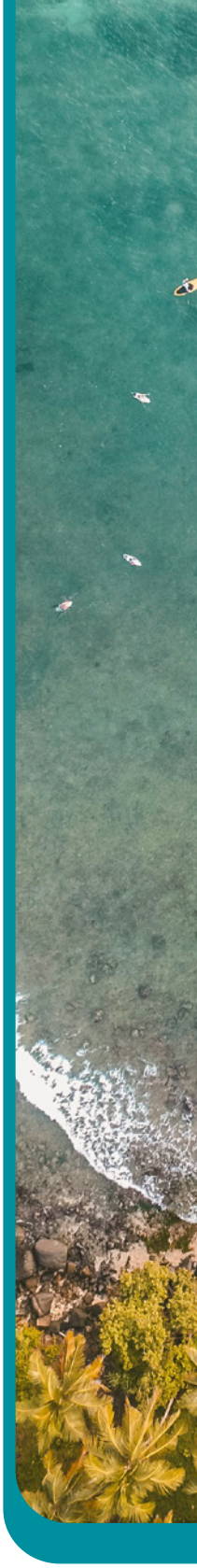
3.3 Evaluation of interlinkages at the cluster and sub-cluster levels

Based on the analytical framework illustrated in **Figure 1**, the entry and impact clusters encompassed multiple SDG targets or 'sub-clusters'. For example, entry cluster 1 included both accountable institutions (SDG target 16.6) and the rule of law (SDG target 16.3), while impact cluster C included illegal fishing (SDG target 14.4), access for small-scale fishers (14.b) and sustainable fisheries (14.7). Where possible, the sub-clusters were also captured during the review. **Figure 7** provides an alluvial diagram summary of these more detailed interlinkages, in which the width of the 'flows' corresponds to the number of enabling interlinkages identified. In most cases, the interlinkages also correspond to an individual article, so the values or flows can be roughly interpreted as the number of articles.

For the first entry cluster, increased accountability had 5 enabling interlinkages, which supported increased sustainability of fisheries (2 interlinkages to illegal fishing), increased marine protection (2 interlinkage) and reduced marine pollution (1 interlinkage) **(Figure 7)**. Increased rule of law had 9 enabling interlinkages in total, most of which enabled increased marine and coastal protection (6 interlinkages) and sustainable fisheries (2 interlinkages for illegal fishing and 1 for sustainable fisheries).

By far the largest number of enabling interlinkages identified in the literature corresponded to entry cluster 2. Increased participation and inclusion (46 interlinkages) and enabled all three impact clusters. The largest share of these enabled impact cluster B on increased marine and coastal protection (28 interlinkages), followed by sustainable fisheries (11 interlinkages for sustainable fisheries, 4 for illegal fishing and 2 for small-scale fishing) and a single interlinkage for marine pollution **(Figure 7)**.

Finally, for entry cluster 3, increased transparency had 13 enabling interlinkages in total. These largely enabled increased sustainability of fisheries (5 interlinkages for sustainable fisheries and 4 for illegal fishing) and marine and coastal protection (4 interlinkages) **(Figure 7)**.

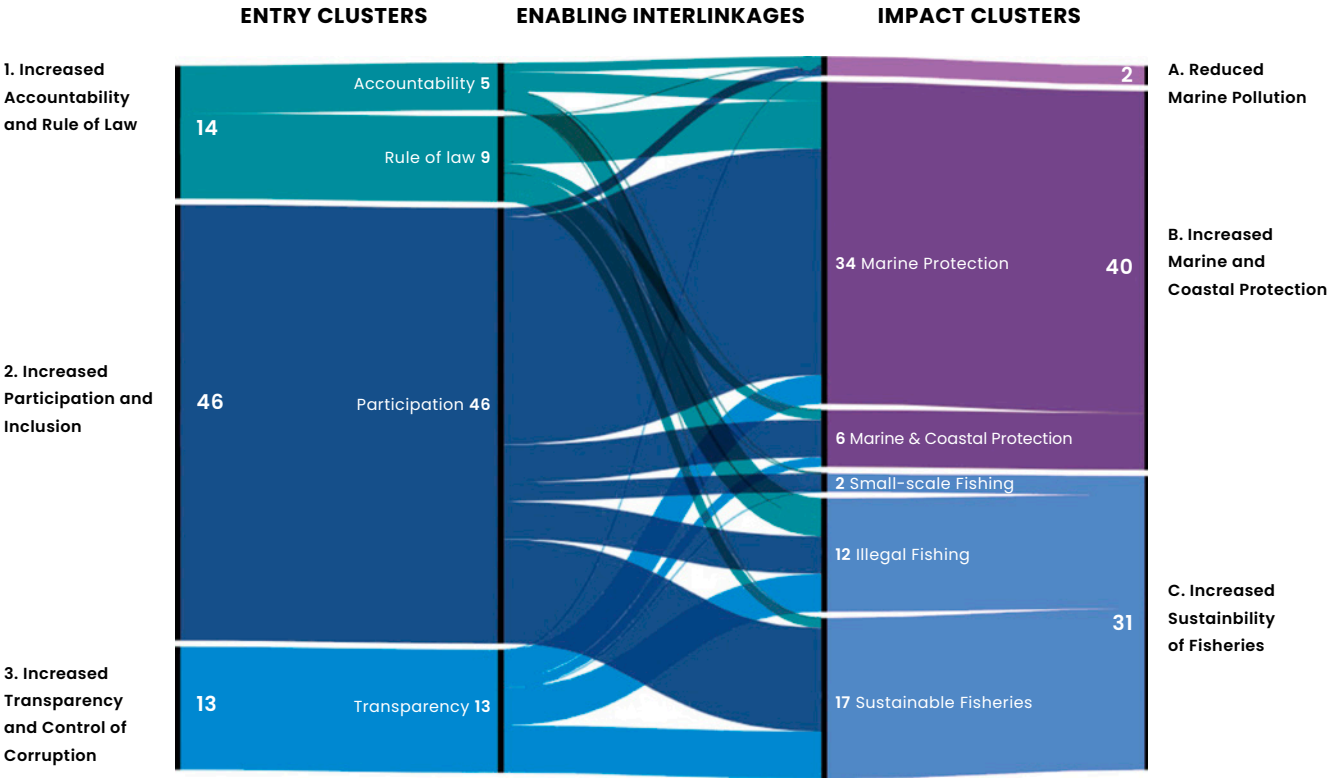


Accountability & rule of law: *A total of 14 studies identified enabling effects of increased accountability and rule of law on the achievement of SDG 14, in particular by increasing marine and coastal protection (8 studies) and the control of illegal fishing (4 studies).*

Participation & inclusion: *A total of 46 studies identified enabling effects of increased participation and inclusion on all SDG14 impact clusters, in particular on increasing marine and coastal protection (28 studies) and sustainable fisheries (17 studies).*

Transparency & combat of corruption and crime: *A total of 13 studies identified enabling interlinkages of increased transparency and control of corruption and crime on the achievement of SDG14, in particular on increasing the sustainability of fisheries (9 studies) and marine and coastal protection (4 studies).*

FIGURE 7. Alluvial chart of enabling interlinkages between the entry clusters and subcategories (left) and the impact clusters and subcategories (right). Width of the flows (and numbers inserted) represent the number of positive/enabling interlinkages.



3.4 Evaluation of the strength of evidence

All the studies reviewed were from peer-reviewed journals to ensure academic rigour. However, not all articles were considered equal in terms of the quantity and quality of evidence. Although it is beyond the scope of this study to critically evaluate the various methods used in each article, it was feasible to extract general information on the nature of the evidence provided (quantitative or qualitative), the size of the country samples used in the analyses, and whether the study provided new empirical evidence on the impacts of enabling interlinkages on marine conservation outcomes or if they relied upon findings from previous research.

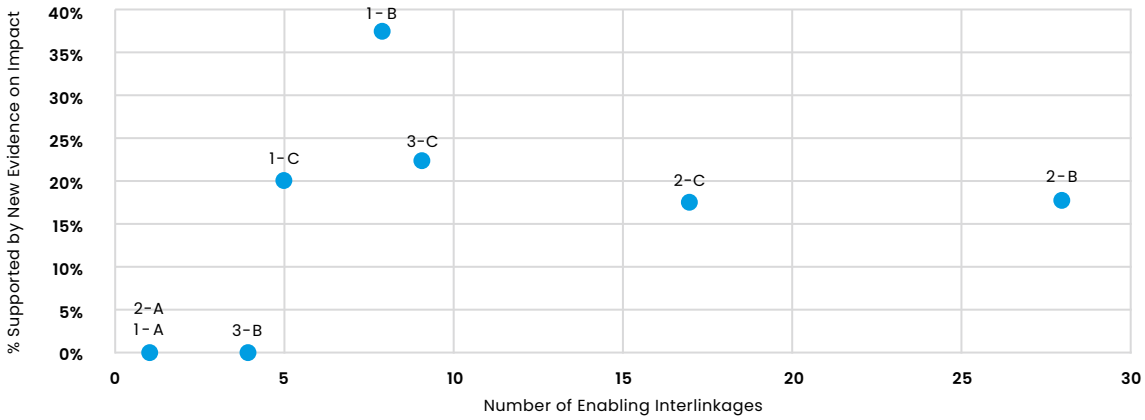
Overall, the vast majority of studies used qualitative methods and were single-country analyses or compared a small selection of country samples. There was limited **quantitative or statistical** evidence to support the findings regarding enabling interlinkages, and most studies made implicit assumptions that interlinkages were enabling based on previous research. Overall, only 10 studies provided **empirical** findings from their research that demonstrated the beneficial enabling interlinkage between the entry and impact clusters. However, in most cases the studies provided evidence of **behaviour change** associated with marine resource users rather than of **improved outcomes** for the marine environment, the assumption being that improved behaviours and perceptions would lead to these environmental outcomes. For the remaining studies, evidence for enabling interlinkages was largely assumed based on previous research findings and secondary literature. This broader literature and evidence base is also addressed in the following section on the discussion of results. The limited number of quantitative studies may be a reflection of data gaps, particularly in some regions.

Figure 8 provides a brief summary of the number of enabling interlinkages identified in the literature between the different entry clusters (1, 2, 3) and impact clusters (A, B, C). In addition, it shows the percentage of these interlinkages that are supported by new empirical findings in the studies reviewed, as opposed to assumed enabling effects based on previous research. Overall, this highlights that the studies reviewed contributed **limited new evidence** on the enabling effects of the governance characteristics from SDG 16 on marine protection and other outcomes from SDG 14. The **strongest evidence** was identified for the enabling effects of increased participation on marine and coastal protection (2-B) and sustainable fisheries (2-C), both of which had a large number of enabling interlinkages, and of which around 20% were supported by new evidence. New evidence was also stronger for the enabling effects of increased accountability and rule of law on marine and coastal protection (1-B), with a larger share of articles providing new evidence of impacts.

This highlights an **important limitation in the literature reviewed**, which needs to be acknowledged when interpreting the research findings presented in **Figure 7**. However, it does not discount the enabling effects identified in the papers. In the papers reviewed, in many cases the core research questions being addressed by authors did not relate to the enabling effects of the selected governance attributes on marine outcomes. Where evidence of improved outcomes was provided, this was generally from studies that undertook evaluations of existing MPAs or fishery management organizations, com-

parative assessments using available datasets (e.g. on illegal fisheries and compliance) and surveys undertaken before and after different management treatments were implemented. In some cases, this provided only partial evidence of improved outcomes. In particular, a very large number of studies used **previous research as the basis** to assume improved outcomes for marine and coastal protection and conservation. This means that the results presented in this review are supported by a broader research and literature base than the papers reviewed in the study. However, it also means that it is difficult to interrogate this broader source literature in terms of the evidence base for key findings. Although it was beyond the scope of the study to review this broader research in detail, key source literature is incorporated into the discussion section below.

FIGURE 8. Evidence for enabling interlinkages between entry and impact clusters. 1. Increased Accountability and Rule of Law; 2. Increased Participation and Inclusion; 3. Increased Transparency and Control of Corruption; A. Reduced Marine Pollution; B. Increased Marine and Coastal Protection; C. Increased Sustainability of Fisheries.



4. Discussion of findings from the literature on enabling and constraining interlinkages

The results from the review show that many studies have been published since 2015 identifying the enabling effects of the three governance entry clusters from SDG 16 on the impact clusters associated with SDG 14. This includes both qualitative and (to a lesser degree) quantitative articles covering a broad range of countries from different world regions, ranging from subnational through to multi-country studies and addressing all major ocean regions. Overall, **enabling interlinkages were identified between all three entry and impact clusters**, though evidence was stronger for the enabling effects of '2. Increased Participation and Inclusion' on impact clusters 'B. Increased Marine and Coastal Protection' and 'C. Increased Sustainability of Fisheries'. At the sub-cluster level, enabling effects were more commonly identified for increased marine protection (34 interlinkages), increased sustainable fisheries (17 interlinkages) and reducing illegal fishing (12 interlinkages). The geographic focus and the country sample sizes varied across the different studies. However, the **enabling effects are supported by studies from all regions, though with comparatively more covering Europe and North America**.

"Enabling interlinkages exist between all three entry and impact clusters, though evidence was strongest for enabling effects of "Increased Participation and Inclusion" on "Increased Marine and Coastal Protection" and "Increased Sustainability of Fisheries".

Although, these enabling effects are supported by studies from all regions, comparatively more studies were covering Europe and North America."

It is also important to understand the key mechanisms and pathways for the enabling (or constraining) effects identified in the literature and potential policy recommendations for leverage-enabling effects. Although many articles reviewed provided evidence of these effects or assumed these beneficial effects based on prior empirical studies, **explanations on the causal relationships and pathways that produce these effects were not always explored or discussed**. As such, it is challenging to unpack these relationships and gain a clear and complete understanding of causality. Despite this gap, many studies did attempt to explain and interpret their findings, often drawing on existing literature or outcomes from their research. This provides useful insights into the identified causal relationships and pathways that deliver enabling (or constraining) effects from SDG 16 clusters through to SDG 14 clusters. This section first discusses the literature and key findings in more detail, before synthesizing evidence on key causal relationships in the form of a systems map or 'causal diagram'.

4.1 Entry Cluster 1: Increased accountability and rule of law

A total of 14 studies identified the enabling effects of increased accountability and rule of law on the three impact clusters, while one study identified constraining effects and two studies were inconclusive. The studies covered a range of global regions (ENA, ANZ, LAC, ESEA and Oceania), and a larger share of these studies provided new evidence on the enabling effects for marine and coastal protection.

4.1.1 Accountability and rule of law effects on reduced marine pollution

Overall, there were **very few studies** that **addressed** impact cluster 'A. **Marine Pollution**'. A single qualitative review study by Li et al. (2020) suggests that increasing the **accountability of local governments** in the environmental impact assessment of marine engineering **reduces marine pollution** in the long term. It also suggests that stakeholder participation and education as well as awareness of environmental issues are important for accountability.

4.1.2 Accountability and rule of law effects on marine and coastal protection

A selection of eight primarily qualitative studies provided evidence of enabling interlinkages between increased accountability and rule of law and improved marine and coastal protection. This comprised a mix of subnational, national and multi-country studies covering several regions (ENA, ANZ, LAC, ESEA and Oceania).

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© Foto by **UNDP Pacific Office in Fiji**

Of these, two studies identified the **enabling effects of increased accountability on marine protection**, with a specific focus on MPAs. Firstly, Christie et al. (2017) identify best-practice management principles for large-scale MPAs through an expert multi-country consultation, including that increased accountability (as well as transparency and stakeholder engagement) in the design of MPAs improves their effectiveness. Secondly, Aburto et al. (2020) investigate the failed attempt to introduce a large-scale MPA in Chile (Rapa Nui) and its subsequent successful reformulation and establishment, finding that a lack of accountable decision-making resulted in a suboptimal outcome for the MPA.

The remaining six studies were related to the positive **enabling effects of the rule of law on marine protection**. Most of these were national or subnational studies focussed on the Europe and North America region. For example, Maestro et al. (2020) evaluate the management of the Azores Marine Park in Portugal, finding that regulation, active management and enforcement improves marine park conservation. Drawing also on evidence from a previous study by Zupan et al. (2018), the study finds that MPAs with reduced conservation threats invested more funds in active management, and they had clear management objectives and regulations that were implemented. **Management plans were also critical to ensure that MPAs were able to meet the objectives** for which they were designated (including the protection of biodiversity, the maintenance of ecosystem services, the restoration of fish stocks, the administration of econom-

Kiribati – hatchery team/local divers. National food security in the context of global climate change © Foto by **UNDP Pacific Office in Fiji**

ic activities, the reduction of conflicts between users of resources and poverty reduction). Similarly, the study by Casola et al. (2022) in the Bahamas finds that a **lack of enforcement of regulations diminishes the effectiveness of MPAs**, creating 'paper parks', which allow governments to claim environmental wins without furthering conservation. Similarly, the evaluation by Yu and Dong (2022) of China's legislation for multiple-use MPAs finds that local law enforcement is also crucial for MPAs and helps to address weaknesses in top-down approaches.

"A study in Bahamas found that a lack of regulatory enforcement diminishes the effectiveness of Marine Protected Areas, leading to the creation of 'paper parks'."

The review paper by Siders et al. (2016) finds that a **dynamic approach to governance and regulation** is needed for the Bering Strait and would **increase the efficiency of achieving environmental and economic outcomes** (including marine conservation and fisheries). Dynamic management describes marine governance systems that flexibly adjust management and regulations based on **real- or near-real-time resource monitoring**, using common tools such as areas to be avoided, bycatch limits and vessel speed reductions. This helps to adapt and target management efforts, temporally or spatially, and thereby **reduce conflicts among ocean resource users**. It requires significant investment in data collection, analysis and dissemination as well as substantial stakeholder engagement.

Ferreira et al. (2015) provide empirical evidence that **regulation combined with stakeholder participation, education and awareness results in improved conservation outcomes** and is effective for coastal protection, particularly where access cannot be restricted. This highlights the complementary effects of improvements in regulations and participation. Drawing on a previous comprehensive review by Bennett and Dearden (2014), they provide several policy recommendations to achieve environmental conservation. These include the **effective communication** of rules and regulations; extensive **programmes of environmental education** and outreach; **participatory processes** for creation and management structures; acknowledging the relevance of all stakeholders; **coordination** with other management institutions; the **integration of scientific and traditional knowledge**; and mechanisms for **conflict resolution** and ensuring transparency and accountability.

> ***"Regulation combined with other governance measures such as stakeholder engagement results in improved conservation outcomes."***

Reviewing case studies on oceans policy and governance in Australia and Canada, Stephenson et al. (2019) find that a **key barrier to effective management results from multiple overlapping and jurisdictional layers**, which undermines effective regulation and accountability. They suggest that integrated management of marine and coastal areas is needed, which is enabled by appropriate legal and institutional frameworks for coordinated decision-making support. Other important features for effective integrated management include stakeholder engagement; a **shared vision** among stakeholders and decision makers; a common and comprehensive set of operational objectives; **flexibility** in adapting to changing conditions; processes for review and refinement; explicit **consideration of trade-offs** and cumulative impacts; and effective resourcing, capacity, leadership and tools.

4.1.3 Accountability and rule of law effects on increased sustainability of fisheries

A total of five qualitative and mixed-methods studies identified enabling effects of accountability and rule of law on increasing the sustainability of fisheries, while one study also identified constraining effects. These were largely national- and subnational-scale studies covering one or two countries and several regions (ENA, SSA, ESEA and Oceania).

Of these, four studies addressed enabling effects for the **control of illegal fishing**. Firstly, Ayers and Leong (2020) examine fisheries in the US Pacific Islands and find that **greater enforcement and compliance capacity can reduce illegal fishing**. Compliance capacity encompassed several logistical aspects that affect the ability to engage in compliance activities, including adequacy of funding and staffing to conduct **surveillance and enforcement activities** as well as for **non-instrumental compliance activities** (e.g. outreach and education) to **raise awareness** of existing rules and regulations.

Kiribati – hatchery team/local divers. © Foto by **UNDP Pacific Office in Fiji**

Outside of enhanced compliance capacity, greater **fisher and community participation in research** and management improves relationships and levels of trust, leading to **better compliance with regulations**, and eventually, **improved social-ecological outcomes**. Non-regulatory interventions encourage voluntary compliance through **education, outreach and targeted behaviour change**. National fishery observers and vessel-monitoring devices were also seen as important. The authors recommend that both instrumental and non-instrumental approaches are needed to address the underlying drivers of non-compliance.

Similarly, Selig et al. (2022) find that **increased enforcement capacity and accountability at ports** is associated with **lower risks of IUU fishing**. They **combine empirical data and satellite information** and find that key **barriers to effective IUU fishing control** include **weak capacities at ports, corruption** and a **lack of transparency** in ownership of vessels. The study identifies **high-risk ports**, which offer opportunities for increased **coordination of enforcement and monitoring capacities**, market-based or financial incentives, and governance controls. They conclude that by wielding their respective powers, **key actors can take concerted action across supply chains**, create or **improve regulatory frameworks**, and catalyse **change in industry behaviour** to reduce the risks of labour abuse and IUU fishing in global fisheries.

"Instrumental approaches (including surveillance and enforcement activities) as well as non-instrumental approaches (including awareness raising, education and outreach activities) were both found helpful to address drivers of non-compliance and thus to achieving better socio-ecological outcomes."

The review article by Rosello (2016) explores the role of coastal states in controlling IUU fishing, highlighting that improving the enforcement capacities and accountability of states is important, including at the international, transnational and domestic levels. They suggest that **coastal state accountability has lagged behind the regulatory land-**

scape, which undermines the effective control of IUU fishing. Feng et al. (2020) evaluate the control of illegal fishing in China and suggest that **strengthened capacity for legal enforcement will reduce illegal fishing**. They recommend improvements to legislation and developing a comprehensive maritime law enforcement department with compulsory powers.

"Weak capacities at ports, and corruption and lack of transparency in ownership of vessels constitute key barriers to effective control of Illegal, Unreported and Unregulated (IUU) fishing. Improving the enforcement capacities and accountability of states will reduce illegal fishing."

The final study identifying enabling interlinkages for sustainable fisheries was the review by Siders et al. (2016), which finds that **dynamic marine governance combining regulation and zoning with real-time monitoring and adaptation** improves sustainable fisheries management outcomes. The incident-based and threshold-triggered regulations and dynamic responses create a **system of incentives that encourage resource users to modify behaviour** and invest in solutions to achieve management goals and further increase efficiency.

A constraining interlinkage between the rule of law and access to small-scale fishers was also identified in the study by Peer et al. (2022), which reviews marine conservation in South Africa. The study examines experiences in five MPAs and suggests that **marine protection legislation has undermined the rights of local and indigenous communities** to access marine and fishing resources. This includes **reduced access to and tenure of resources**, poor governance processes, interference with local development processes, as well as **poor recognition of traditional and cultural identity and knowledge**. Drawing on previous research (Baynham-Herd et al., 2018), the authors highlight that this **can generate an unsustainable feedback loop**, whereby conflicts between the **conservation objectives of management authorities** and researchers **override the interests of local communities** and drive unregulated and illegal activity. This in turn leads conservationists to call for stricter top-down enforcement. Despite this top-down control, illegal fishing will most likely continue in MPAs, further driving conflict between enforcement authorities and local communities. They provide evidence of this conflict in the broader literature and emphasize that **MPA governance processes need to be fair, equitable and participatory** if they are to address this challenge (Bennett and Dearden, 2014; Charles et al., 2016; Abukari and Mwalyosi, 2020).

Again drawing on previous research (Isaacs and Witbooi, 2019), the authors suggest that **including stakeholders** could **alleviate** the continued **marginalization faced by fishers** and other marine resource users, and potentially provide a protective role as co-managers of coastal and marine resources. This shows how **improved outcomes for sustainable fisheries and marine conservation rely on the combination of different governance attributes** (e.g. rule of law and stakeholder participation).

4.2 Entry Cluster 2: Increased participation and inclusion

There were a comparatively large number of studies supporting enabling interlinkages associated with increased participation and inclusion (46 studies), which related to all three impact clusters.

4.2.1 Increased participation and inclusion effects on reduced marine pollution

The review by Li et al. (2020) on the environmental impact assessment of marine engineering developments suggests that these processes reduce marine pollution in the long term, provided that they include extensive public participation.

Kiribati –sandfish deployment © Foto by **UNDP Pacific Office in Fiji**

4.2.2 Increased participation and inclusion effects on increased marine and coastal protection

In total, 28 studies identified enabling interlinkages between increased participation and marine and coastal protection, while one study identified a constraining interlinkage. Most of these were qualitative studies at the national and subnational scales and addressed most global regions (ENA, LAC, ESEA, SSA and ANZ).

"Studies from Italy, England, Brazil, United States and China suggest that increased involvement of stakeholders and local populations improves marine conservation success by enabling consensus and reducing conflicts between marine resource users and creating a greater sense of ownership. "

D'Anna et al. (2016) review stakeholder perspectives on governance in the Egadi Islands MPA in Italy and suggest that **involving stakeholders and local populations** improves MPA protection by increasing collaboration among institutional (top-down) and local stakeholders. In their review of MPAs in England, Lieberknecht and Jones (2016) suggest that **bottom-up, collaborative stakeholder engagement enables consensus** between stakeholders, while Richmond et al. (2019) conclude that **stakeholder engagement and input leads to better protection** of small and large MPAs in the United States. Comparing practices between Brazil and the United States, Obraczka et al. (2017) find that effective integrated coastal and environmental management regimes that include extensive stakeholder engagement mitigate conflict between users and reduce multiple environmental stressors, including climate change. Christie et al. (2017) also identify stakeholder engagement as an important best-practice principle for large-scale MPAs, based on expert perspectives. In their study on MPA planning in China, Zeng et al. (2022) draw on past research (Hockings, 2006) to suggest that **public participation in the planning and management of MPAs leads to longer-term conservation success** due to a greater **sense of ownership** among stakeholders.

Studies on MPA processes in the LAC region suggest that **a lack of stakeholder engagement has undermined conservation outcomes**, including in Chile (Aburto et al., 2020), Ecuador (Burbano and Meredith, 2020) and the Bahamas (Casola et al., 2022). The studies suggest that **participatory practices increase the social acceptance** of resource users, which is essential for the **long-term sustainability** of management strategies and can expedite the advancement of an effective conservation agenda. **A lack of participation erodes trust** (e.g. of small-scale fishers) and can **lead to protests and resistance from local communities**. Casola et al. (2022) find that **stakeholder support for MPAs is critical** for their effective long-term outcomes and can be increased through public engagement in the establishment of MPAs, as it builds a sense of ownership and may result in higher levels of compliance

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with MPA regulations. They also cite previous research (Broad and Sanchirico, 2008; Hayes et al., 2015; Chaigneau and Brown, 2016) that identifies several socio-cultural factors that positively impact community support for MPAs, including knowledge of MPA rules and benefits, education levels, access to alternative sources of income (i.e. non-marine resources) and the ability to comply with MPA rules while still providing for livelihoods. **Opposition is especially high in areas where food security depends on communities' ability to fish**. To support greater engagement, Batista et al. (2020) design a method for incorporating public participation in integrated coastal zone management in Cuba, reporting positive results for increased awareness and knowledge about sustainable uses. However, they also note **potential barriers, including higher costs, limited knowledge of stakeholders**, different levels of interest and **gaps in data availability**. In another coastal study in Belize, Arkema et al. (2015) find that the coproduction of ecosystem service information that effectively integrates science, stakeholder interests and local knowledge into a comprehensive ocean management plan leads to greater returns from coastal protection and tourism.

A lack of meaningful community participation in the management of MPAs is also evident in the review by Peer et al. (2022) on South Africa. The authors indicate that the global literature has widely endorsed stakeholder engagement as important for building relationships and trust as well as leading to improved environmental and marine management outcomes (Reed, 2008; Sterling et al., 2017; Sayce et al., 2013; Gaymer et al., 2014). Although a **lack of capacity and time constraints can hinder engagement**, studies captured in the review show that **successful protected area management requires long-term, ongoing commitment and communication** that builds trust between groups based on shared values and ultimately leads to more effective and harmonious conservation man-

Kiribati – hatchery team/local divers. © Foto by **UNDP Pacific Office in Fiji**

agement (Ban and Frid, 2018; Cvitanovic et al., 2018; Dehens and Fanning, 2018). Drawing on Day (2017), they identify important considerations for **effective community engagement** such as considering who is involved, **recognizing agency**, and **providing opportunity and access**. Adding to this, the study by Lucrezi et al. (2019) on stakeholder engagement in a marine reserve in Mozambique provides evidence that **education and capacity-building have the potential to empower stakeholders**, promote collaboration and create a culture of marine stewardship.

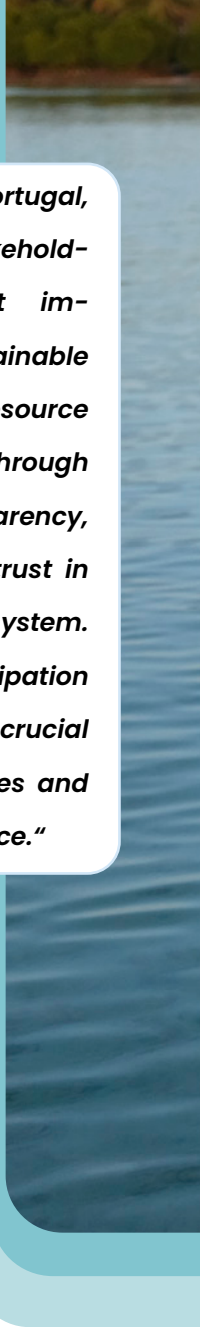
Studies in Australia (Dichmont et al., 2016), Canada (Diggon et al., 2020; Cadman et al., 2020) and Taiwan (Chung et al., 2019) also find that stakeholder engagement is important for successful marine protection. However, this is largely based on previous literature. Diggon et al. (2020) recommend that **stakeholder engagement** in marine planning processes **should also include conflict resolution processes** and a clear process and structure to resolve conflicts to ensure the process moves forward during times when consensus is difficult to achieve. Cadman et al. (2020) specifically highlight the importance of **engagement with NGOs** that operate as **bridging organizations at the science–policy interface**, bringing new scientific research and related information to the attention of governments while advising academics and communities on how to advocate for policy change effectively. Chung et al. (2019) suggest that **public participation contributes to legitimacy in the establishment**

of MPAs and helps to build **cooperation and credibility** between governments, experts and affected stakeholders. The role of public participation in improving the management of MPAs is supported by previous studies in Australia (Voyer et al., 2012) and Tanzania (Gustavsson et al., 2014).

"Several European studies found stakeholder engagement to effectively improve marine protection. Entry points for stakeholder engagement include: baseline analysis, goal-setting, process-monitoring, and reporting."

The remaining seven studies focussed on case studies in European countries. Maestro et al. (2020) review stakeholder perspectives on the management of the Azores MPA in Portugal and find that **effective public participation** in the implementation of MPAs improves marine protection. This is because the **implementation of most strategies, plans and actions depends on communities** rather than decision makers and participation builds trust. Another study in Portugal (Ferreira et al., 2015) finds that public participation improves coastal protection, particularly where access cannot be restricted. They provide evidence that **early participation of stakeholders in decision-making** in MPAs **produces a positive response** with an **increased short-term compliance** with regulations. However, it is expensive, time-consuming and resource-intensive. Adding to this, Semitiel-García and Noguera-Méndez (2019) investigate structural barriers to stakeholder involvement in MPAs in Spain, identifying cultural differences, prejudices and stereotypes, limited social and technical capacities, and institutional limitations as other impediments. Drawing on previous literature (Hogg et al., 2017; Nenadovic and Epstein, 2016; Delaney et al., 2007; Sterling et al., 2017), they conclude that **stakeholder participation improves MPA management by incorporating a diversity of views, values, and local knowledge** and increasing the **legitimacy of governance**.

In their multi-country analysis of six European countries, Di Franco et al. (2020) suggest that **stakeholder engagement improves marine protection**, including by increasing the **engagement of fishers in compliance and management**, which improves perceptions of the positive effects of interventions, and in turn increases support for MPAs. In their study in England, Singer and Jones (2021) find that **flawed stakeholder-consultation provisions can erode trust** and negatively impact the effectiveness of MPAs, and that improving stakeholder inputs can facilitate collaborative learning, increased awareness and peer enforcement, and social capital. Coupled with **strong legislative incentives and funding**, this can improve the effectiveness of MPAs. Another study by Maestro et al. (2022) suggests that **participatory processes in MPAs** in Croatia have improved over time, which has **increased**



social acceptance, reduced conflict and improved marine protection. The authors recommend important **entry points for engagement** including baseline analysis of the situation, goal-setting, political commitment, implementation and monitoring of the process, and evaluation and reporting.

"In Italy and Portugal, increased stakeholder engagement improved sustainable fisheries and resource management through greater transparency, legitimacy and trust in the regulatory system. Industry participation was found to be crucial to align incentives and ensure compliance."

Finally, Burdon et al. (2018) find both enabling and constraining effects of stakeholder participation on marine protection in Dogger Bank in the North Sea. They find that local stakeholder engagement is necessary for policy recommendations for improved management. However, the bottom-up approach applied did not produce an integrated management plan, as the conflicting stakeholders were unable to compromise. A **range of other factors undermined effective management**, including **differing policy objectives**, a **lack of sufficient resources** and staff, **uncertainties in scientific evidence** and legal and political processes, and **complexity in multi-level governance processes** that challenge consensus. The authors recommend that **successful stakeholder engagement** in decision-making **requires adequate time and realistic deadlines**; additional staff and **financial resources**; manageable expectations among stakeholders and their influence on outcomes; **clear tasks and responsibilities**; close cooperation and coordination among the various institutions; scientific data; and conflict-resolution strategies to manage trade-offs and competing interests.

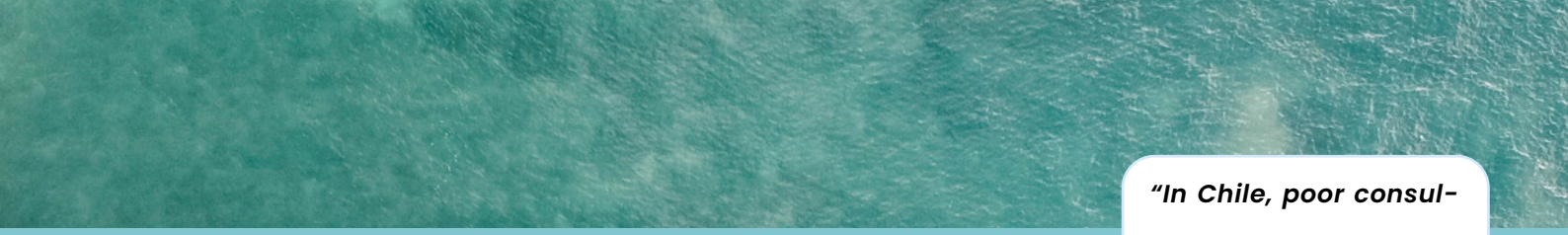
4.2.3 Increased participation and inclusion effects on sustainable fisheries

A total of 17 studies identified enabling interlinkages from increased participation to increasing the sustainability of fisheries, comprising a mix of subnational, national and multi-country studies covering most regions (ENA, SSA, ESEA, LAC and NAWA). These corresponded to all three impact sub-clusters of sustainable fisheries, illegal fishing and small-scale fishers.

Most of these (11 studies) identified interlinkages with sustainable fisheries. This includes several studies already reviewed above, including those by Siders et al. (2016) on dynamic ocean governance in the Bering Strait, Ferreira et al. (2015) on bottom-up approaches to MPAs in Portugal and the longitudinal study in Italy by Freeman et al. (2018). Drawing on previous research (Reed, 2008; Lewison et al., 2015; O'Keefe and DeCelles, 2013), the studies find that **stakeholder engagement improves sustainable fisheries and resource management** through **greater transparency, legitimacy and trust**

in the regulatory system, which can facilitate long-term compliance as well as manage trade-offs and minimize conflict. **Industry participation** is particularly **crucial to align incentives** and ensure compliance. Similarly, Isaac and Ferrari (2017) review the management of the North Shelf Large Marine Ecosystem in Brazil and draw on existing research (Long et al., 2015) on the important role of stakeholder participation to ensure the sustainability of fisheries. This includes through the development of **improved measures informed by local and traditional knowledge**, as well as improved commitment to sustainability and the implementation of management measures, and better monitoring and communication. This guarantees a more effective protection of natural resources.

Crandall et al. (2019) explore stakeholder perceptions of fisheries management processes in the Gulf of Mexico in the United States, demonstrating a positive correlation between meaningful participation opportunities and increased satisfaction with fisheries management among stakeholders. Gelcich et al. (2019) review fisheries management in Chile, suggesting that **better participation in fisheries governance mechanisms can improve fisheries management**. Based on recent experience with fisheries legislation, they find that **poor consultation leads to a lack of trust** (e.g. between fishers and authorities and between industrial and artisanal fishers) and can lead to resistance from stakeholders. In reviewing the FarFish project in the European Union, Arias et al. (2022) find that enabling meaningful and effective participation was a pivotal factor for the success of the results-based management approach, with anticipated positive effects on sustainable fisheries. In their review of stakeholder perspectives across 21 Mediterranean and Baltic Sea countries, Corner et al. (2020) suggest that participatory approaches can lead to greater social acceptance of aquaculture, which is important to improve long-term environmental, social and economic sustainability. Similarly, Schwermer et al. (2021) suggest that the management of cod in the Baltic Sea can be improved through stakeholder participation, which brings



"In Chile, poor consultation management including power imbalances was found to undermine sustainable outcomes."

together different types of knowledge and improves levels of trust in fisheries management. In their study on fisheries management in Canada, Ayles et al. (2016) suggest that a participatory and transparent decision-making framework can improve fisheries management. However, **overall**, there is **limited evidence** in these studies on **how better management practices** (undoubtedly an important intermediary step) improve the sustainability of fisheries (i.e. the actual outcome).

The review by Fischer (2020) is distinct as it focusses on the achievements and challenges of 13 Regional Fisheries Management Organisations (RFMOs) that manage fish stocks in the high seas, suggesting that the involvement of stakeholders in the decision-making process can have true benefits for effective fisheries management outcomes. This is because the **participation of stakeholders triggers two-way social learning**, contributing to improved information for assessments, encouraging creative approaches, increasing the support of stakeholders for management decisions and fostering a sense of partnership.

The remaining six studies focussed on the enabling links for controlling illegal fishing and promoting access for small-scale fishers, including studies reviewed above by Peer et al. (2022) on marine conservation in South Africa, Aburto et al. (2020) on the case of small-scale fishers and marine protection in Rapa Nui in Chile, Burbano and Meredith (2020) on marine conservation in the Galapagos Islands, and Ayers and Leong (2020) on compliance in the US Pacific Islands region. These studies find that meaningful **stakeholder engagement can reduce illegal fishing activities and improve outcomes for artisanal fishers**. Ayers and Leong (2020) cite previous literature that illustrates how improvements in **procedural justice**, involvement in rulemaking, **legitimate participation** in management, and **perceived fairness** improve compliance and result in the sustainability of common pool resources such as fisheries (Turner et al., 2016; Ostrom, 1990). Similarly, Burbano and Meredith (2020) find that social acceptance by resource-users is an essential element for the long-term sustainability of conservation management strategies and is undermined by a lack of consultation. More specifically, they demonstrate how **poor management of consultation processes**, including power imbalances, **can undermine sustainable outcomes**: In the case studied, a large international conservation NGO lobbied the government into adopting a stringent conservation plan and abandoning initial local consultations, which led to protests by small-scale fishers and, eventually, a moratorium on the entire plan.

"For rules to be perceived as fair, socio-economic and power imbalances need to be considered in the formation of laws."

Silva et al. (2021) assesses **factors that contribute to compliant behaviour** by fishers in Brazil, finding that higher levels of stakeholder engagement led to higher levels of **trust**, which contributed to higher levels of compliance with fishery regulations. When **socio-economic and power imbalances** are not **considered in the formation of laws**, fishers tend to find rules unfair, resulting in lower levels of trust and reduced compliance. **Education** was also found to be an important factor in predicting attitudes towards conservation, with more years of formal education associated with more compliant behaviour. However, **age was the most important determinant of behaviour**, with older fishers being found to be potentially less compliant.

Finally, Katikiro and Mahenge (2016) study the use of dynamite fishing practices in Tanzania, highlighting the enabling effects of participation on reducing illegal fishing practices. Authors illustrate that for there to be behavioural change and effectiveness in preventing and managing destructive fishing, there needs to be a shift from top-down management to including local fishers and other stakeholders involved in the practice in relevant decision-making processes.

4.3 Entry Cluster 3: Increased transparency and control of corruption and crime

Finally, there were 13 studies in total that identified enabling interlinkages associated with increased transparency, which enabled two impact clusters (excluding A. Marine Pollution).

4.3.1 Enabling effects of increased transparency on marine and coastal protection

Four studies identified the enabling effects of increased transparency on marine and coastal protection. Christie et al. (2017) summarize the knowledge shared by 17 country experts, identifying institutional transparency, transparent decision-making and legitimate governance (among others) as important best-management practices for large-scale MPAs. Aburto et al. (2020) identify the **lack of transparency as a key factor leading to a poor management outcome** for the Rapa Nui MPA in Chile. The review paper by Agardy et al. (2016) suggests that transparency is important for achieving conservation targets and objectives set during the establishment of MPAs. The authors suggest that **simplistic targets and metrics** (e.g. the percentage of area under MPA designation) **will not deliver effective conservation** outcomes without transparency and the integration of stakeholder interests. Arkema et al. (2015) describe information exchange and transparency as critical in the MPA planning process in Belize. In particular, **access to information on ecosystem services** is predicted to lead to **greater returns from coastal protection**. However, these studies mostly rely on previous research and do not provide new evidence to support the improved outcomes associated with transparency on marine protection.

4.3.2 Enabling effects of increased transparency on the sustainability of fisheries

A total of nine papers identified enabling interlinkages between increased transparency and sustainable fisheries, which included qualitative, quantitative and mixed-method studies corresponding to several regions (ENA, ESEA, LAC and Oceania). Of these, four focussed on illegal fishing, including the study by Ayers and Leong (2020) examining compliance in the US Pacific Islands region. This study found that a **lack of data undermines the effective management of illegal fishing**, including the effect on **stock assessments** and **fish catches**. The authors propose that an inventory of compliance issues throughout the region would enable scientists to improve understanding of how non-compliance affects marine social-ecological systems and allow managers to target specific areas to improve stewardship.

"Increased transparency, enforcement and monitoring are needed to disincentivize Illegal, Unreported and Unregulated (IUU) fishing. The use of satellite information, e.g. on fishing activities and vessel characteristics, and international data exchange can help to support these efforts."

Selig et al. (2022) combine global empirical data with **satellite information on fishing activities** and **vessel characteristics** and find that **increased transparency at ports reduces risks of IUU fishing**. For example, ports that had signed the Port States Measures Agreement conducted more rigorous procedures of inspection, international data exchange, and entry refusal at port and were less likely to attract **high-risk vessels** such as those with **flags of convenience** or from countries with **poor control of corruption**. In other words, stronger transparency, enforcement and monitoring can disincentivize IUU fishing, whereas weaker capacities at ports, corruption and a lack of transparency in vessel ownership escalates risks. The authors also provide initial policy recommendations, including a greater focus on certain vessels in **port controls and inspections**, additional due diligence measures in company supply chains for certain vessels, as well as better coordination between actors.

Belov and Soboleva (2020) study **media coverage of illegal fishing** in Russia, suggesting that **increased transparency and accountability** through **public awareness and media freedom** can reduce IUU fishing. In the study, media coverage provides an indicator of IUU activity, which can help to identify problem areas for improved governance. Drawing on previous research (Österblom et al., 2010), they suggest that the **elimination of IUU fishing** requires a **complex strategy** that includes **tightening controls** in the ports of landing, **increasing information exchange** between trading countries to document catch schemes, restructuring excessive fishery capabilities and creating **alternative employment opportunities** for fishermen, among others. Despite its limitations, **mass media** is considered an **important tool** for combating IUU fishing by shaping public opinion and

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"Greater transparency improves the performance of regional fisheries management organizations (RFMO) - key actions include: increasing publicly available scientific data, independently verifying measures of monitoring, control and surveillance (MCS), and reviewing performance regularly."

influencing government authorities and businesses, particularly if combined with **real-time data** and processing capabilities. Based on the results of the study, it appears that the media stimulates the government to take a more active role in addressing reported issues and companies to avoid using controversial business methods.

The review by Walton et al. (2020) of 26 US Pacific Island countries finds that improving transparency is an essential part of improving marine policy and management in the region, including management of IUU fishing. Moving towards greater transparency in decision-making processes and outcomes can help build public and political buy-in to improve governance of the fisheries sector.

The five remaining studies focussed on enabling interlinkages with sustainable fisheries (and fisheries subsidies). Formenti (2022) extracts information from World Trade Organization (WTO) notifications to shed light on the determinants of government transparency in relation to fisheries subsidies, finding that government transparency plays an important role in improved fisheries management and that the **WTO framework needs to be modernized** to create better incentives for disclosure. The study by Gelcich et al. (2019) on fisheries management in Chile also finds that building trust and improving transparency improves fisheries resource management. The study by Arias et al. (2022) on European fisheries in the Atlantic and Indian oceans outside Europe found that increased transparency through the **use of remote sensing** supported compliance of fisheries activities. However, partner **countries often lacked the capability to process data**, and data-sharing agreements also impeded access. The authors recommend that increasing **scientific exchange in tools and knowledge** can help to address these challenges, as well as science-industry cooperation.

Clark et al. (2015) evaluate transparency in eleven RFMOs based on three broad categories of transparency: availability of information, participation in decision-making processes and access to outcomes. They find that greater transparency improves RFMO performance. However, it is also possible for an RFMO to be transparent yet also fail to meet its conservation and management goals. This suggests that transparency improves performance up to a point. Some of the key areas where RFMO transparency was considered weakest included a **lack of publicly available scientific data**, a lack of independent verification **of monitoring, control and surveillance (MCS) measures**, weak or **non-existent commitments to regular performance reviews**, failing to report on objectives and preventing the participation of observers. Specific areas for improvement included greater availability of MCS information, officially agreeing to a regular schedule of performance reviews, reporting outcomes against prior objectives and better linking transparency to accountability measures. Transparent behaviour is a first step towards providing civil society the means to hold its governments (and, subsequently, industry) accountable for actions taken under the auspices of RFMOs in the management and exploitation of common property resources.

Finally, Winter and Hutchings (2020) study fisheries management in Canada and find that transparency improves accountability in decision-making processes and supports a precautionary approach to sustainable fisheries. Citing Bailey et al. (2016), the authors identify **publicly available scientific evidence as an essential means for the public to hold decision makers to account** and ensure that fisheries management decisions can be evaluated. A regular, **transparent peer-review process** and distinguishing science advice from stakeholder advisory inputs are important for transparency and accountability, in particular in the setting of reference points, harvesting decision rules and other fisheries management decisions. The institutional and policy framework, however, often obfuscates or renders **unclear** the **role of science**, eroding accountability and the credibility of Canada's fisheries management decisions.

5. UNPACKING THE CAUSAL DYNAMICS BETWEEN SDG 16 AND SDG 14

The studies reviewed identify a complex array of causal relationships and dynamics between the SDG 16 entry clusters and the SDG 14 impact clusters. These are often indirect or complemented by a range of other enablers and drivers. For example, the studies suggest that **combining stakeholder participation with improved accountability and transparency measures** may deliver the best outcomes for marine and coastal protection and sustainable fisheries.

Figure 9 attempts to capture the **relationships** identified from the literature in a **systems map or causal framework**. To interpret the diagram, all black arrows (+) represent a positive polarity or enabling effect, which can be read as *"Increasing and/or improving variable x results in an increase and/or improvement in variable y"*. In contrast, red arrows (-) represent a negative polarity and should be read as *"Increasing/improving variable x results in a decrease/decline in variable y"*.

All the **linkages identified are backed by the literature** reviewed in previous sections. Although this results in a very complex diagram, it is still unlikely to be complete in terms of capturing all of the important factors and complex dynamics at play. Nevertheless, it does include some key dynamics and pathways identified in the literature, which can assist in developing an understanding of the overall theory of change. Further development and **refinement of the framework could be undertaken using subject-matter expertise and knowledge, or there could be a broader review of the literature** to bring in additional SDG targets or important missing elements.

The diagram was developed in three stages. It commenced with the literature on entry cluster '2. Increased Participation and Inclusion' (dark blue), given that this represented the largest share of the literature reviewed. To this, additional elements from the literature on '1. Increased Accountability and Rule of Law' (green) and then '3. Increased Transparency and Control of Corruption' (light blue) were added. The colours and shading of variables in the diagram therefore reflect the three entry clusters used in the conceptual framework for the analysis **(Figure 1)**. However, there was some overlap between the **relationships and pathways** identified in the literature for each cluster. Note that all of the entry and impact clusters are included in the diagram (highlighted with coloured shading). Important

pathways to impact relate to **improving the effectiveness of management interventions** and increasing **compliance with the appropriate legal and institutional frameworks**. A broad range of factors influence these two measures and are themselves affected by improvements in increased participation, accountability and transparency.

With regard to **2. Increased Participation and Inclusion**, the studies reviewed identified enabling effects with all impact clusters along with a range of intermediary factors or causal pathways for these effects. For example, participation improves collaboration between institutional and local stakeholders; enables consensus; increases social acceptance and reduces conflict between users; increases a sense of ownership and support for MPAs; improves perceptions of legitimacy; increases coordination; builds relationships and trust; increases awareness and peer enforcement; and supports the incorporation of local knowledge. This is thought to result in higher levels of compliance with regulations, improve the effectiveness of management interventions, deliver more harmonious conservation management, and overall lead to improved environmental and marine management outcomes.

Education and capacity-building programmes also have the potential to empower stakeholders, promote collaboration and create a culture of marine stewardship. Increased engagement of fishers in compliance and management can improve perceptions on the positive effects and benefits of interventions and MPA rules, and in turn increase support for MPAs. Local and traditional knowledge can inform improved management plans and provide better information for assessments. Trust is widely seen as critical for long-term compliance and is built through effective and meaningful stakeholder engagement. Other factors also increase support for MPAs, including higher levels of formal education, the capacity to access alternative sources of income and provide for livelihoods, as well as younger age demographics. However, participation can also be hindered by higher cost and resource requirements as well as limited knowledge and interest of stakeholders, and it may require effective mechanisms for resolving conflicts and competing objectives among stakeholders.

For '**1. Increased Accountability and Rule of Law**', the literature highlighted that accountability in the design and establishment of MPAs (as well as transparency and stakeholder engagement) improves their effectiveness but provided limited information on the pathways to impact. The literature suggests that important features for the effective management of MPAs include appropriate legal and in-

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stitutional frameworks, a shared vision among stakeholders and decision makers, a common and comprehensive set of operational objectives, stakeholder engagement, and effective resourcing, capacity, and tools, among others. Studies suggest that having clear management objectives and regulations, combined with investment in enforcement and active management, are important for achieving MPA objectives, including biodiversity protection, the maintenance of ecosystem services, the restoration of fish stocks, the administration of economic activities and a reduction in conflicts between users.

Greater enforcement and compliance capacity also reduces illegal fishing and is dependent upon adequate funding and staffing to conduct surveillance and enforcement activities as well as additional funding for non-instrumental compliance activities (e.g. outreach and education) to raise awareness of existing rules and regulations and deal with the underlying drivers of non-compliance. Greater fisher and community participation in research and management also improves relationships and levels of trust and results in greater compliance with regulations as well as (eventually) improved social-ecological outcomes.

Marine protection legislation can also undermine the rights of local communities to access marine and fishing resources. Where MPA governance processes are not fair, equitable and participatory, they can lead to an unsustainable feedback loop, whereby conflicts between the conservation objectives of management authorities and researchers override the interests of local communities and drive unregulated and illegal activity, which in turn leads to calls for stricter top-down enforcement and further conflict and non-compliant behaviours.

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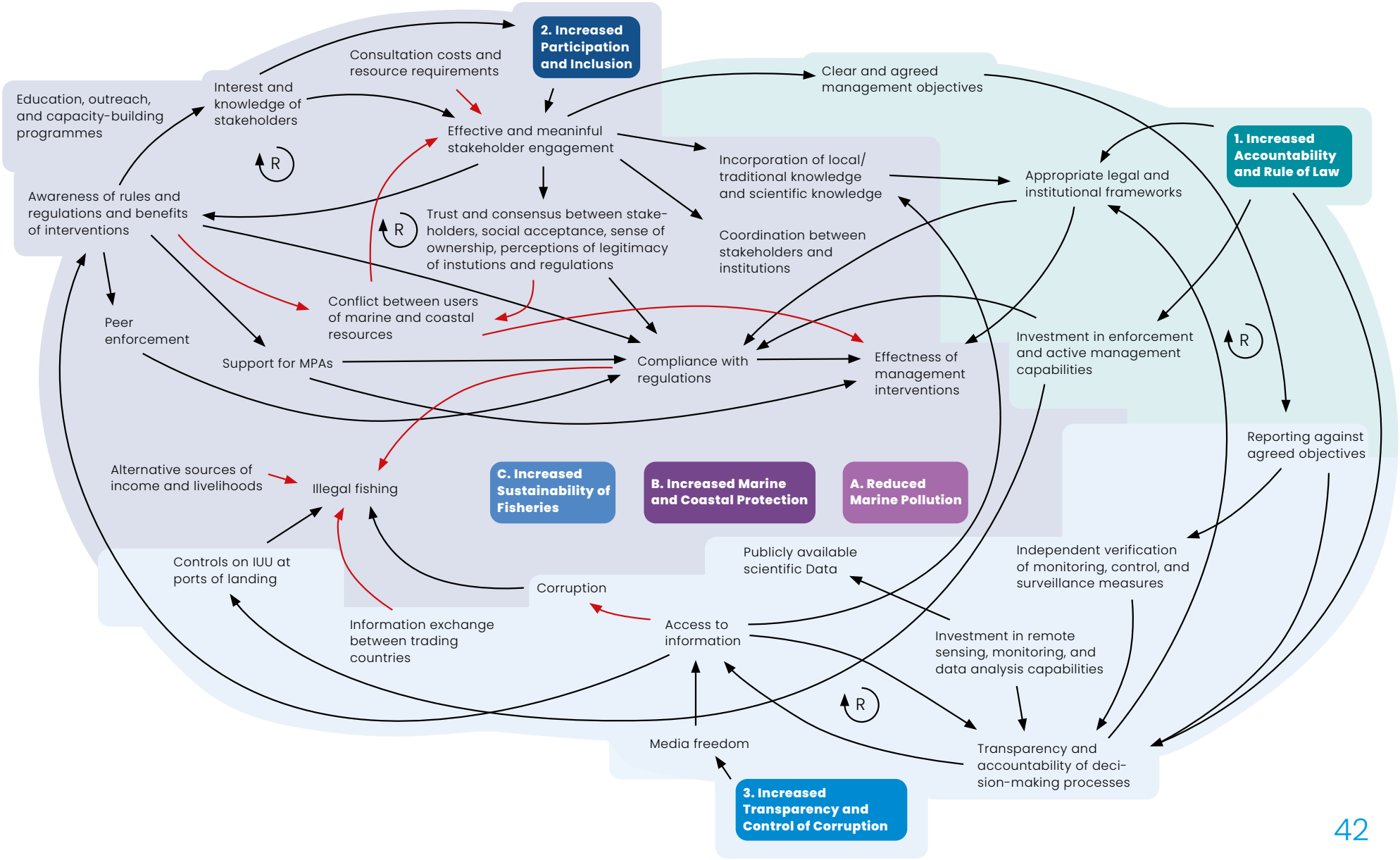
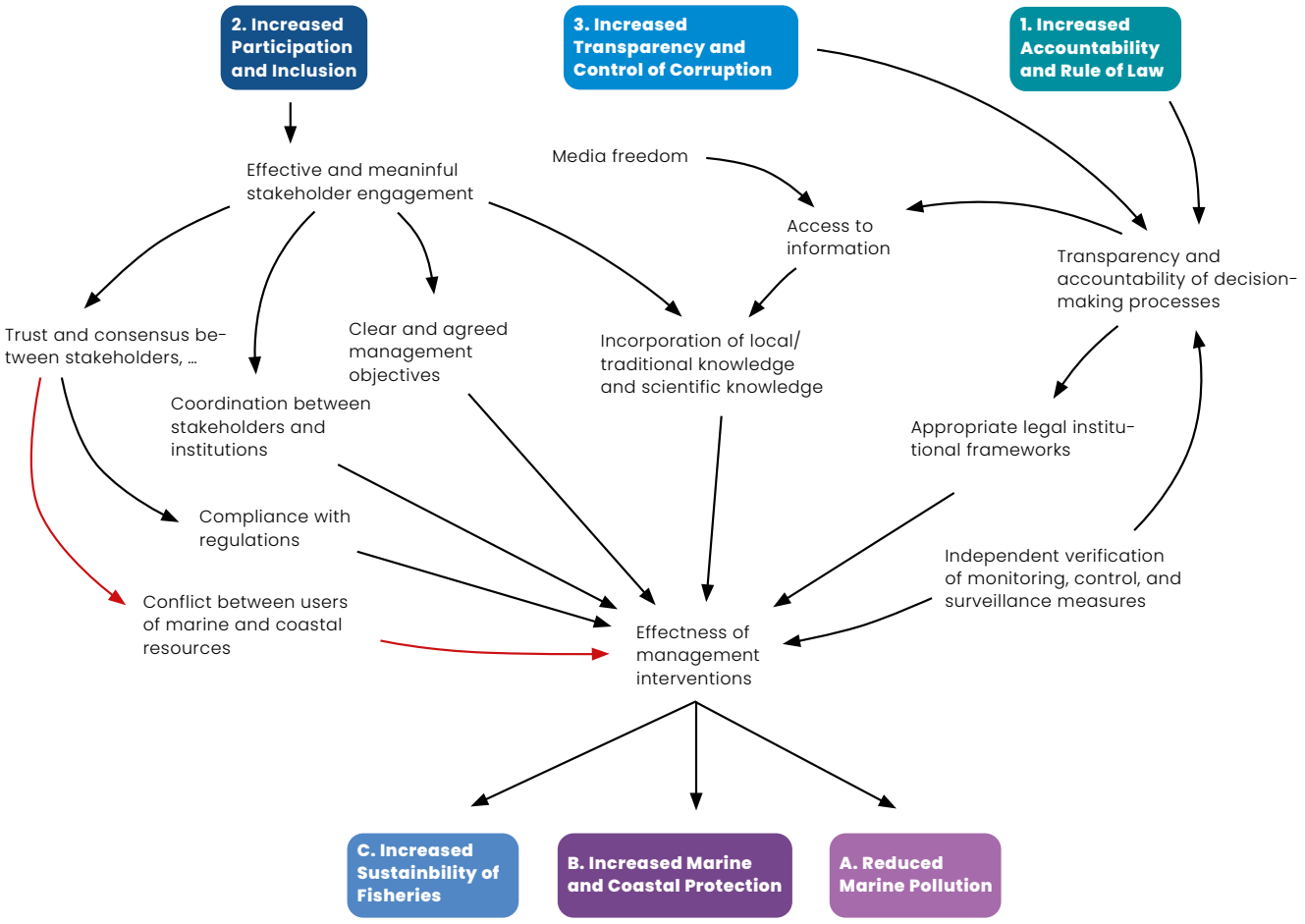
Finally, with regard to '**3. Increased Transparency and Control of Corruption**', the literature highlights that the legal designation of MPAs and elaboration of objectives and targets will not deliver positive outcomes without transparency, which also improves accountability in decision-making processes. Greater transparency in decision-making processes and outcomes can help build public and political buy-in and improve fisheries management. Increased transparency and accountability through public awareness and media freedom can also reduce IUU fishing, and media coverage can shape public opinion and influence government and business actions, particularly if it is combined with real-time data and processing capabilities. Elimination of IUU fishing can be supported by increasing information exchange between trading countries, tightening controls in ports of landing and creating alternative employment opportunities. Increased transparency at ports is critical for reducing risks of IUU fishing, including more rigorous procedures of inspection, international data exchange and refusal of entry. Stronger transparency, enforcement and monitoring can disincentivize IUU fishing, while weaker capacities at ports, corruption and a lack of transparency in vessel ownership escalates risks. Tools such as remote sensing can improve transparency. However, they require capacity and improved data access and sharing arrangements. Investments in data collection and analytics can support dynamic governance or more targeted and adaptive management measures. Improving transparency of RFMOs can be facilitated through publicly available scientific data, the independent verification of MCS measures, regular performance and peer reviews, reporting against agreed objectives, and better linking of transparency and accountability measures. Transparency improves accountability in decision-making processes and supports a precautionary approach to sustainable fisheries, which enables citizens to hold decision-makers to account. The literature included examples of how clearly labelled scientific evidence, political inquiries and investigative journalism findings can create essential means for the public to hold governments and industry to account.

FIGURE 9. Systems Diagram: Identified causal pathways from SDG 16 Entry Clusters to SDG 14 Impact Clusters, as identified in the literature reviewed
[Dark Blue = 2. Increased Participation and Inclusion; Green = 1. Increased Accountability and Rule of Law; Light Blue = 3. Increased Transparency and Control of Corruption]. Black arrows indicate positive/enabling connections while red arrows indicate negative or constraining interactions.



In **Figure 9**, an important pathway between the entry and impact clusters we identified in the reviewed literature relates to the 'effectiveness of management interventions' variable. A simplified diagram of these pathways to impact is given in **Figure 10**, which highlights that increased participation and inclusion supports effective and **meaningful stakeholder engagement**, which in turn **has several potential positive effects** associated with **improved coordination among actors, clear management objectives**, and the **incorporation of local and scientific knowledge**. Conflict between users can undermine effective management, and thus building trust and consensus through stakeholder engagement can mediate this negative effect. **Improving access to information** is also a key factor, which can be improved through transparent and accountable decision-making processes and media freedom. The effectiveness of management interventions can also be improved through the **appropriate legal and institutional frameworks** and the independent verification of measures. Further investigation of these pathways involving experts and practitioners could validate and expand on the evidence drawn from the academic literature.

FIGURE 10. Identified pathways to impact associated with improving the effectiveness of management interventions

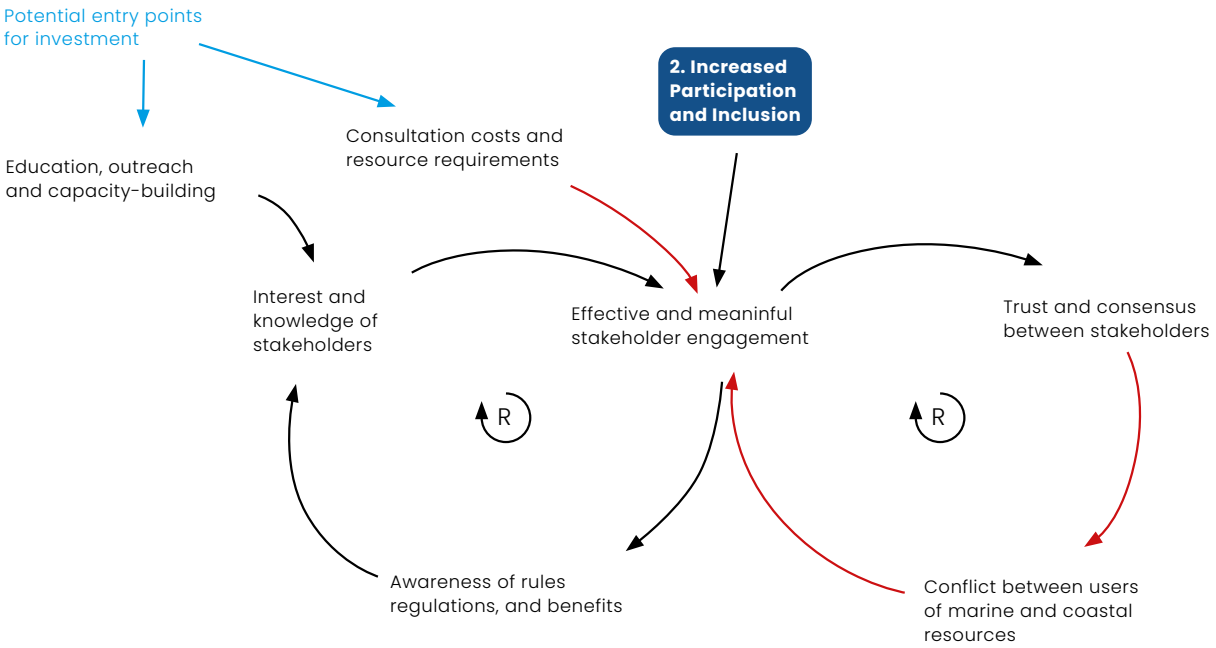


Another important feature of **Figure 9** relates to the feedback loops ( ) that sit within the causal diagram. Such feedback loops are a well-known **characteristic of complex systems**, representing important reinforcing or balancing dynamics, which can lead to complex non-linear behaviour over time (Meadows, 2008). They are **important for identifying the key entry points**, interventions and accelerators that can deliver (or undermine) desirable outcomes.

"Our study identifies reinforcing feedback loops associated with meaningful stakeholder engagement. Potential entry points include investment in education, outreach and capacity-building as well as in staff and resource requirements."

For example, **Figure 11** presents the **reinforcing feedbacks associated with** enabling effective and meaningful **stakeholder engagement**, whereby it raises awareness, interest and knowledge of stakeholders, which in turn further improves stakeholder engagement processes. Similarly, it can build trust and consensus between stakeholders, thereby reducing conflict and in turn improving engagement. The figure also identifies potential entry points for leveraging these reinforcing feedback effects associated with investing in education, outreach and capacity-building for stakeholders, and ensuring adequate investment to cover financial costs and other staff and resource requirements.

FIGURE 11. Identified reinforcing feedback loops associated with enabling effective and meaningful stakeholder engagement



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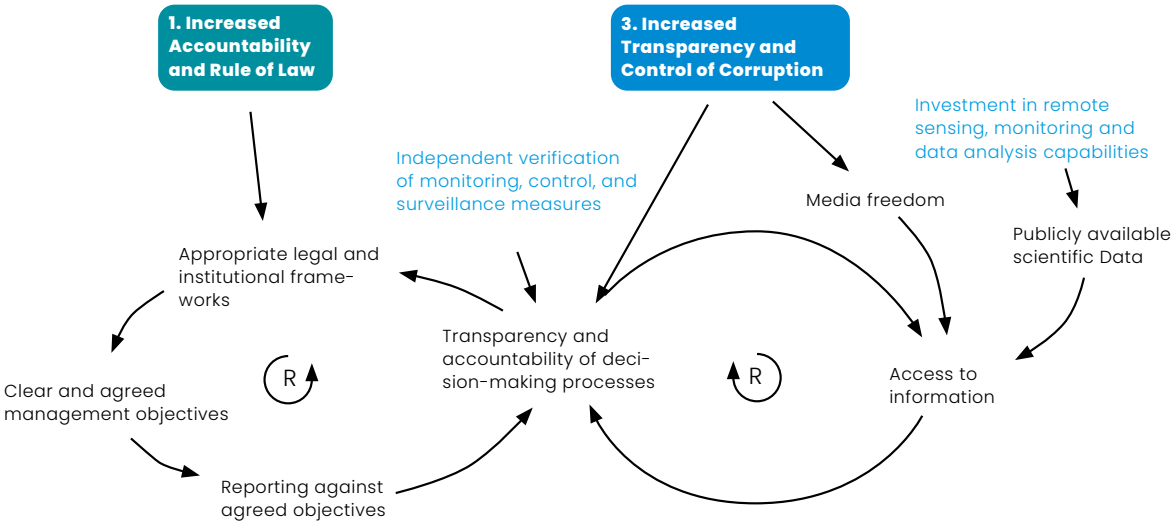
"Investments into monitoring and data analysis, independent verification and improved access to information can help to unlock reinforcing feedbacks associated with transparent and accountable decision making."

Additional reinforcing **feedback loops** are identifiable with regard to the other entry clusters on **transparency and accountability** (Figure 12), as well as potential interventions that could leverage these effects. For example, **investing in monitoring and data analysis** capabilities as well as **independent verification** could unlock reinforcing feedbacks associated with transparent and accountable decision making through **improved access to information**, legal and institutional frameworks, and reporting against objectives. However, it is important to note that the causal diagram is based only on the relationships identified in the literature reviewed. Given the focus on only a selection of goals, it is unlikely to be a complete representation of all relevant dynamics. In addition, precise interactions will highly depend on the specific context and may not be directly transferable to other contexts. Nevertheless, they provide further insights into the complex system dynamics associated with the entry and impact clusters addressed in this study, and the potential opportunities for interventions to leverage systems change.

FIGURE 12. Identified feedback loops associated with increased transparency and accountability



6. CONCLUSIONS: MAIN FINDINGS, POLICY IMPLICATIONS, LIMITATIONS AND FUTURE WORK

Main findings

This study has systematically reviewed a subset of the academic literature and evidence relating to the **enabling or constraining effects of key governance aspects of** SDG 16 on 'peace, justice and strong Institutions' **on the achievement o**f SDG 14 on 'life below water'.

It contributes to the literature on SDG interlinkages and **responds to the limited coverage of SDG 16 targets in recent studies on SDG interlinkages**. It also responds to recommendations from the previous UNDP-OGC and IDOS study to expand the research to additional goals. The results highlight the evidence on mostly enabling and some constraining effects of SDG 16 on SDG 14 at the national and subnational scales. A range of causal linkages and pathways are also identified that may deliver these synergistic effects.

Overall, the study offers **aggregated empirical insight from across the globe** that accountability and rule of law, participation and inclusion, as well as transparency and the combat of corruption and crime play an important role for marine and coastal protection and the sustainability of fisheries.

Enabling interlinkages were identified between all three entry and impact clusters, for example:
On ***accountability and rule of law***: Regulation, active management and enforcement improve sustainable ocean governance, whereas a lack of enforcement of regulations can lead to the creation of 'paper parks', enabling governments to claim environmental wins on paper without actually furthering conservation or sustainable management via the inclusion of local communities.

On ***transparency and control of corruption and crime***: Increased transparency through public awareness and media coverage can reduce IUU fishing. In addition, mass media is an important tool for combating IUU fishing by shaping public opinion and influencing government authorities and businesses, particularly if combined with real-time data and processing capabilities.

Overall, we found the strongest evidence on the enabling effects of the governance characteristics ***participation and inclusion***, which correspond to SDG target 16.7, particularly on marine and coastal protection, which are covered by SDG targets 14.2 and 14.5. A large number of primarily qualitative studies at the national and subnational scales identified these enabling effects across all world regions. For example, integrated coastal and environmental management regimes that include extensive stakeholder engagement reduce conflict between users as well as multiple environmental stressors, including climate change. Importantly, stakeholder participation improves sustainable ocean management by incorporating a diversity of interests and local knowledge, thus increasing the legitimacy of networks crucial for implementing change towards sustainable futures. Interestingly, even the two papers we found showing constraining effects discussed the importance of stakeholder engagement processes: One demonstrates the complexity of achieving consensus between stakeholders and the other flags the risk of neglecting participation alongside enforcement.

Overall, another strong message is that the different **elements of governance can mutually reinforce each other**, leading to even better outcomes on SDG 14. For example, regulation efforts on ocean conservation are more effective if they are combined with stakeholder engagement and vice versa.

Some of the identified literature flags the **global context**, for example the role of subsidies going to industrial fishers in putting pressure on small-scale fishers. One could add the challenges of ensuring Biodiversity Beyond National Jurisdiction, for which an international agreement is still being negotiated. While not the focus of this study, understanding how global governance—perhaps mediated through domestic governance—impacts on SDG 14 outcomes could be the subject of further investigation.

Finally, an important advancement in this study relates to the **pathways to impact** identified by the literature. Although existing studies on SDG interlinkages often focus on methods to identify enabling and constraining effects, they pay less attention to the underlying causal links and pathways to impact. Drawing on expert literature, the approach in this study is advancing these methods by developing system diagrams, which visualize identified pathways to impact. This approach recognises that important interlinkages, trade-offs and synergies are embedded in complex systems, within which reinforcing or constraining dynamics between SDG targets may occur.

Policy implications

The above illustrates the detailed evidence we gathered from a wide range of studies regarding the effects of improved accountability, transparency and participation for marine protection and conservation. The question is how can this information inform policy discussions and decisions?

It is important to note, once more, that, while our systematic review has identified causal pathways by collating evidence from a large number of studies across regions, how these effects play out exactly will **highly depend on the context**. In other words, as with any complex question, there is no blueprint that can be applied to all countries or contexts. This being said, we can see three broad implications emerge that are worth considering and testing in specific settings:

- **Identifying levers:** Where the literature provides information on pathways to SDG 14 outcomes (on all three impact clusters, but mostly on marine protection and sustainable fisheries), many studies stress the importance of the 'effectiveness of **management interventions**' and of increasing compliance with the appropriate '**legal and institutional frameworks**'. Instead of treating these as outcomes in and of themselves, our study suggests that they should be highlighted as **levers** for impact on SDG 14.

- **Increasing impact and managing risks:** Our results provide policymakers with evidence that to **activate** these levers, progress on one or several key features of governance institutions (participation, accountability and transparency) is critical. For example, our results show that meaningful stakeholder engagement, access to information, and transparent and accountable decision-making make management interventions more effective and institutional frameworks more appropriate as well as increase compliance. In turn, a lack of progress on these aspects can **undermine** management interventions and institutional frameworks, for example by fostering corruption or creating conflict with and between users of marine resources. Another way of looking at this is by recognizing how pathways to impact rely on both **formal and informal governance institutions**. Formal institutions such as **legal and institutional frameworks** (e.g. laws, management plans, monitoring systems) need to connect with informal institutions such as **social norms, values and rules** (e.g. building trust; acknowledging local knowledge, interests and needs; respecting people's capacities by allocating sufficient time for engagement processes). Although focussing on formal institutions can appear easier, faster and cheaper, the reviewed literature illustrates how neglecting informal institutions may not only slow down, but even derail formal processes. Knowing this allows policymakers to reprioritize participation, accountability and transparency in their effort to achieve SDG 14—based on an impact and risk-management argument.

- **Investing in systems and focussing resources:** As many of the lever effects do not materialize instantly or through the effort of any one public entity alone, the literature suggests that governments take a **whole-of-government** and **systems approach** and **invest** in them on an ongoing basis. In the context of constant resource constraints, it is particularly useful to identify reinforcing **feedback loops**

and focus on investing in their entry points. Those will also depend on the context, but they could include ongoing stakeholder outreach, better coordination among and between (marine and other) management institutions, environmental education, budgeting for consultation costs, strengthening capacities for marine monitoring and data analysis, or ensuring provisions for the independent verification of monitoring and control measures. Investing in systems—and, ideally, their feedback loops—helps policymakers focus resources and sustain beneficial effects.

Limitations

A key challenge experienced during the study design as well as the review of the literature was that **concepts** included in SDGs 16 and 14 were sometimes vague or overlapping and were interpreted in different ways in different studies. This lack of clarity is also apparent in the way that concepts overlap across different targets in the SDG framework, and pragmatic choices were made early in the study design to ensure both conceptual clarity and a manageable scope for the review. Of primary interest were key governance principles relating to participation and inclusion, accountability and transparency, and their effects on various aspects of sustainable oceans. However, it is acknowledged that the relationships between these issues are highly complex and incorporate a myriad of factors that are likely to correspond with many other goals and targets within the framework of the SDGs. Efforts were made during the study design and implementation to ensure a consistent interpretation of concepts and interlinkages. For example, if a paper used the term 'accountability' (part of entry cluster 1) to examine issues of corruption, then the evidence was (also) used for findings around 'increased transparency and control of corruption' (entry cluster 3). In addition, a comprehensive final revision of the review results was conducted by the core review team prior to synthesis.

It is further acknowledged that the decision to consider **literature published since 2015** also potentially excludes a large body of relevant literature published prior to this date. The importance of this literature became evident during the review, as many of the studies reviewed often assumed the enabling effects of different governance attributes on various aspects of marine protection and conservation based on the findings of previous studies and the broader international literature. A minority of studies provided new empirical evidence to support their findings on enabling interlinkages, which is an important limitation. We ameliorate this to some degree by incorporating this broader literature into the discussion of interlinkages, which yields a richer literature base for the study findings. It is notable that this secondary literature is diverse, and in many cases context-specific, and enabling effects are confirmed by a broad literature base. However, it also highlights a potential gap in recent studies, which would profit from stronger evidence and findings on the beneficial outcomes of governance attributes for marine protection and conservation objectives.

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As highlighted in several studies, measuring the success and adequacy of marine conservation initiatives and governance characteristics is challenging for the scientific community. A lack of long timeseries data, interference from other sources of disturbance, pollution events or storms can mask environmental responses to the management measures applied. Undertaking **long-term monitoring can be complicated and expensive**, and it may take a long time for surveys to record a change in conditions, which can lead to the discrediting of protection measures. To address this gap, several studies reviewed undertook stakeholder surveys to elicit behaviour change responses to governance changes (e.g. increased participation and engagement). Although these studies found that increased participation—for example in decision-making processes—resulted in positive changes in behaviours, acknowledgement of the beneficial effects of MPAs or increased compliance with regulations, the studies then largely implied that these would result in beneficial marine conservation outcomes.

Lastly, but importantly, the study made us reflect on what we found and what we did not find. In the study, the **volume** of evidence was considered greater where there were a larger number of studies. For example, the review found a larger number of articles that identified the enabling effects of increased *participation and inclusion* (than of *accountability and rule of law and transparency and control of corruption and crime*). Some topics, such as *marine pollution*, also received very little attention in our sample of literature. Finally, the literature was skewed towards European and North American countries. However, this should be interpreted with some caution, as the number of studies may be simply a reflection of **research effort**—that is, particular topics have received greater attention from the research community—rather than signifying a stronger enabling effect compared to other factors. In other words, not finding literature on certain topics or regions can have different reasons: It can indeed mean that there is less evidence (in our case: fewer interlinkages) to be found. But it can also mean that less re-

search has been conducted on those interlinkages for other reasons, such as lack of **incentives** (e.g. due to a lack of funding or political interest in certain topics). It can even mean that research exists but has not received the same attention, for example if it is written in a language that is not globally published (**language bias**) or comes from institutions whose work is less readily accepted by high-profile journals (**Northern research privilege**) or if they lack other means to promote their work widely. Some of the SDG targets themselves try to address these issues, for example 14.a on increasing scientific knowledge and developing research capacity. In short, a systematic literature review can only **find what is out there, not what is not there or why**. In some fields, this may not be a problem because there is overall a lot of research activity in different disciplines and a wide range of incentives and interests. In other areas, these caveats may make the knowledge base of a systematic literature review quite narrow, which may be the case with the present study. This does not make the findings or the methodology wrong. It simply illustrates how important it is to avoid falling for the '**streetlight effect**'—by looking at results from a birds-eye perspective and by critically examining the context, systems, and methods of our research.

Future work

We think that this study can inform the work of different stakeholders.

Researchers

We identify gaps that suggest the need for **further research**.

For example:

- We found less evidence on the interlinkage between *accountability and rule of law* or *transparency and control of corruption and crime* on the one hand, and SDG 14 clusters (in particular, *marine pollution*) on the other. Additional research could examine these interlinkages further and show why they are underexplored. This could include further examining the interplay of formal and informal governance structures.

- Moreover, our results suggest the need for more research on outcomes: Many studies in this review show that increased stakeholder engagement leads to positive changes in behaviours towards the perceptions of, and compliance with, marine and coastal protection efforts. Yet, considerably fewer studies have undertaken the next step to investigate whether these behavioural and attitudinal changes translate into improved ecological outcomes. Future research should invest in seeking to provide empirical evidence between behaviours and outcomes.

- Taken together, the reviewed studies and the empirical data on which they are based indicate that important data gaps exist with regard to SDG 14. Monitoring progress towards sustainable outcomes for the Ocean will require investments into the collection of long-term data series as well as into the establishment of a research *data infrastructure* to make quantitative and qualitative data available for transregional analyses.

- It was beyond the scope of this study to look at *global* ocean governance or to further examine *specific causal pathways*, including in individual countries. Both are needed to provide more detailed guidance to policymakers.

Such research could include expanding the range of literature (e.g. to 'grey' literature and to cover other UN languages such as Arabic, Chinese, Russian, Spanish or French) in a systematic literature review, combining research methodologies (e.g. engaging experts to review and validate key pathways and feedbacks) or exploring non-traditional methodologies such as action research.

International organizations, bilateral donors, foundations, academic networks

To address some of the limitations we identify—such as research efforts, incentives, language bias and Northern research privilege—there is a clear need to **enable and promote research and to explore transformative knowledge creation** on ocean governance. This may include support to connect research capacities across countries and regions (including in less-connected local universities and research institutions), to increase the visibility of existing research from the Global South or to fund neglected areas of research. Moreover, there is a need to explore how rational-scientific approaches to knowledge that can be exclusionary can connect with indigenous ontological and epistemological perspectives for which research methodologies already exist (such as vanua, kakala, talanoa, ula and fa'afaletui in the Pacific). In these efforts, it will be important to ensure balanced research partnerships between Northern and Southern partners to allow for joint and mutual learning.

Governments, civil society, international organizations, bilateral donors

Finally, as we already stressed in our first study, insight is not itself transformation: Only the application of insight can lead to transformative change. This means working with national partners to **localize and apply research** on interlinkages between SDG 16 and SDG 14, bearing in mind that the results of all the papers we reviewed are highly context-specific. This could include developing a tool with national partners that helps explore SDG 16 interlinkages with SDG 14 (or other SDGs, for that matter) in a given context. Building on the previous two points, such a tool or process should draw on a broader range of (local) knowledge and methodologies. It could be used to bring together researchers, practitioners and policymakers to jointly make sense of results and discuss how to feed them into specific policy processes. In fact, such an 'SDG 16 interlinkages' tool could aim to reflect the same governance characteristics we derived from SDG 16 for this study (participation, accountability and transparency) in order to connect interlinkages research with policy and practice—to achieve the SDGs.

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