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Fifteen years of lessons from the Seascope approach: A framework for improving ocean management at scale

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Abstract

Seascapes are large, multiple-use marine areas, defined scientifically and strategically, in which government authorities, private organizations, and other stakeholders cooperate to conserve the diversity and abundance of marine life and promote human well-being. This approach has been applied by global nonprofit partnerships in five seascapes across eight countries and has drawn on the practical experience of more than 250 partners over 15 years. These experiences have helped define the Seascope approach, consisting of nine essential elements, for achieving effective ocean governance and management from local to regional levels. Lessons learned relate to using integrated planning frameworks, community-led and locally owned initiatives, and a network of partners and a “backbone” organization for effective Seascope planning and design; promoting diversification in funding sources, private sector engagement, and the transition of nonprofit roles to ensure durability of a Seascope; and ensuring Seascope outcomes are measured through robust monitoring and evaluation frameworks and communicated effectively. Seascapes are unique in their ability to create a pathway toward sustainable development. To ensure support and amplification of the approach, they must align with diversified funding opportunities and global priorities outlined in international United Nations conventions focused on sustainable development and ocean health.

KEYWORDS

ecosystem-based management, large-scale management, marine conservation, ocean governance, Seascope, Seascope approach

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1 | INTRODUCTION

The steady decline of ocean health over the past century has been well documented (Doney et al., 2012; Halpern et al., 2008; Pörtner et al., 2019; Roberts, 2012). Deterioration of oceans, the largest and most biodiverse biome on the planet (Inniss et al., 2016) will have dramatic impacts on human societies. Fisheries provide approximately 20% of the annual protein intake for nearly 3.3 billion people (FAO, 2020); coastal and marine ecosystems protect coastlines from storms and store significant amounts of carbon (Spalding et al., 2014); fisheries and aquaculture support the livelihoods of over 10% of the world's population (FAO, 2014); and the oceans offer important tourism, recreation, and cultural value (Fletcher, Baulcomb, Hall, & Hussain, 2014; Halpern et al., 2012; Oleson et al., 2015; Spalding et al., 2017).

Several United Nations (UN) conventions have established indicators and targets that measure progress toward sustainable development and ocean health. These include the UN Convention on Biological Diversity (CBD), the UN Framework Convention on Climate Change (UNFCCC), the UN Convention on the Law of the Sea (UNCLOS), and the UN 2030 Agenda for Sustainable Development, which includes 17 Sustainable Development Goals (SDGs). SDG 14 (Life Below Water) aims to “conserve and sustainably use the oceans, seas, and marine resources for sustainable development.” Working toward the implementation of SDG14 directly links with and benefits additional SDGs (Cernev & Fenner, 2020; Griggs, Nilsson, Stevance, & McCollum, 2017; Le Blanc, Freire, & Vierros, 2017), highlighting the importance of a healthy ocean to sustainably manage our environment and benefit people (Ntona & Morgera, 2018; Singh et al., 2018). However, this increased recognition of the importance of healthy oceans has been insufficient to generate required actions to reverse ocean degradation at a global scale. Currently, around 5% of oceans are actively protected (Marine Conservation Institute, 2020), below SDG target 14.5 and Aichi target 11 under the CBD, “to conserve at least 10% of coastal and marine areas” by 2020 using marine protected areas (MPAs) and other effective area-based conservation measures (OECMs). With a new sense of urgency to effectively conserve marine areas at a large scale, the International Union for Conservation of Nature (IUCN) endorsed a resolution which calls for the Parties to the CBD to adopt 30% as a target for marine area protection (IUCN, 2016). This will require approaches that integrate ecosystem health and human well-being, supported by strong ocean

To achieve such ambitious global goals, it is important to identify approaches that have been successful in scaling up effective ocean management. One way to protect and manage the ocean and coast at a large scale is through the Seascope approach, as developed by Conservation International (CI) and partners over the past 15 years (Atkinson, Esters, Farmer, Lawrence, & McGilvray, 2011). Seascapes are “large, multiple-use marine areas, defined scientifically and strategically, in which government authorities, private organizations, and other stakeholders cooperate to conserve the diversity and abundance of marine life and to promote human well-being” (Atkinson et al., 2011). The Seascope approach is a practical framework for implementing the principles of Ecosystem-Based Management (EBM), with its dual focus on both ecosystem health and human well-being (McLeod, Lubchenco, Palumbi, & Rosenberg, 2005), is essential for achieving successful long-term marine conservation (Foley et al., 2010) that also meets people's needs. While there are multiple approaches to large-scale ocean management including Large Marine Ecosystems (LMEs), Marine Ecoregions and Regional Seas Programs (Bensted-Smith & Kirkman, 2010), there are differences in the emphasis put on ocean governance and multisector engagement, capacity building, and mobilization of partners.

This article describes the Seascope approach and presents results to date from five Seascapes (Bird's Head Seascope; Eastern Tropical Pacific Seascope; Sulu Sulawesi Seascope; Abrohlos Seascope; and Lau Seascope) spanning parts of eight countries and highlights lessons and best practices for current and future Seascope initiatives that can be useful as countries and other actors seek to expand effective ocean management.

2 | THE SEASCOPE APPROACH

The “seascope” terminology has been recognized and adopted for multiple purposes. The IUCN has defined six protected area management categories (Dudley, 2008), including category V titled “Protected Landscape/Seascope” which recognizes a “protected area where the interaction of people and nature over time has produced an area of distinct character with significant ecological, biological, cultural, and scenic value: and where safeguarding the integrity of this interaction is vital to protecting and sustaining the area and its associated nature conservation and other values” (Dudley, Shadie, & Stolton, 2013). The term “seascope” is also used when

governance and a global network of partners aligned around shared ocean commitments (Duarte et al., 2020; Franke et al., 2020).

applying the landscape ecology concept to marine environments, examining ecological causes for spatial distributions and patterns in the ocean (Forman &

Godron, 1981; Kavanaugh et al., 2016; Pittman, 2017). The term also describes a mosaic of habitats connected by the movement and dispersal of organisms (Olds, Connolly, Pitt, & Maxwell, 2012) and other biological, physical, and chemical processes (Grober-Dunsmore, Pittman, Caldow, Kendall, & Frazer, 2009).

2.1 | Development of the Seascope approach

The Seascope approach, as defined by CI, aims at building coalitions among government, the private sector, and civil society to harmonize sustainable use and protection of oceans and coasts. It highlights the importance of achieving governance across sectors and at all levels, from local to regional (Atkinson et al., 2011). The approach also encourages multiuse management at the Seascope scale, and multiple management tools are typically used across the Seascope including MPAs, OECMS, fisheries and species management areas, and locally managed marine areas. It draws on the practical experience and expertise of practitioners both within CI and in more than 250 partner organizations. Since 2004, five Seascope initiatives have been implemented (Figure 1; Table 1). The diverse sizes and ecological, socioeconomic, and

political contexts of these Seascopes have generated an array of lessons. Thirteen annual exchanges brought together field practitioners from these Seascopes and technical experts to develop and refine the approach and synthesize lessons to inform adaptive management. These evaluations have generated products including a formal Seascope definition, criteria, and essential elements (Figure 2), as well as a Seascopes Guidebook (Atkinson et al., 2011). In addition, bilateral exchanges between Seascopes offered opportunities for hands-on learning between teams. A global Seascope coordination unit (housed at CI) allowed Seascopes around the globe to exchange knowledge and lessons, and replicate working tools, models, and approaches.

2.2 | The essential elements of the Seascope approach

Fully functional Seascopes share three basic characteristics: scope, scale, and commitment (Atkinson et al., 2011):

1. *Scope*: The program of work is grounded in an understanding of the goals and needs of all relevant stakeholders and builds a comprehensive strategy for



FIGURE 1 Location and boundaries of Conservation International's five Seascope programs (Sulu-Sulawesi Seascope in Indonesia, Malaysia, and the Philippines; Bird's Head Seascope in Indonesia; Eastern Tropical Pacific Seascope in Costa Rica, Panama, Colombia, and Ecuador; Abrolhos Seascope in Brazil; and Lau Seascope in Fiji)

TABLE 1 An overview of selected characteristics of the five Seascope programs

	Seascapes				
	Abrolhos	Bird's Head	Eastern Tropical Pacific	Lau	Sulu Sulawesi
Countries	Brazil	Indonesia	Costa Rica, Panama, Colombia and Ecuador	Fiji	Indonesia, Malaysia, and Philippines
Size (km ²)	893,350	225,000	2,132,542	335,895	900,000
Year Initiated	2005	2004	2005	2016	2005
MPA coverage (km ²)	449,510	52,298	240,000	277	23,008
Population Living within 10 km of coast	413,281	742,648	3,975,050	9,600	35,147,864
Total known philanthropic investment (USD)	Low	High	High	Low	Medium

Notes: Total known philanthropic investment categories are low = <\$10 million; medium = \$10–50 million; and high = >\$50 million.

- working on all nine essential elements of a functional Seascope (Figure 2). Agreement is pursued around a set of solutions and partnerships are formed at multiple levels of governance.
2. *Scale*: While there is no defined size, Seascope boundaries are large enough to ensure cultural, political, economic, and ecological connectivity and encompass multiple levels of governance that determine how people use and protect nature, but not so complex as to hinder practical cooperation toward shared goals.
 3. *Commitment*: A “backbone” organization and coalition of partners are committed for long-term engagement to achieve progress on the nine essential elements and to help partnerships mobilize the financial and human resources required to achieve transformation to sustained nature-based development.

Through implementation of the nine elements of the Seascope approach, appropriate enabling conditions, changes in behavior, and long-term capacity can lead to the necessary outcomes desired in EBM.

3 | DATA COLLECTION AND ANALYSIS

We reviewed all available documentation from annual Seascope workshops, project products and outcomes, additional exchanges, and internal reporting since 2004.

In addition to existing reports, an online survey was designed using Qualtrics software (Qualtrics, Provo,

building, financial sustainability, and the role of international nonprofit organizations. There were 74 questions relevant to their historical engagement in a Seascope(s) (Supporting Information S1). This included multiple choice, Likert scale, and open-ended survey questions; multiple choice answer options were randomized where appropriate. The survey was available in the four languages most practical to the Seascope programs (English, Portuguese, Spanish, and Indonesian) to ensure individuals were able to participate. The survey was sent to 154 CI staff and Seascope partners who have previously or currently work in one of the five Seascapes. Individuals were targeted who were able to speak to the application of the Seascope approach in their region. Online survey data was analyzed using SPSS (SPSS Inc, 1999; Chicago, Illinois) and Microsoft Excel, and patterns or themes were extracted from open-ended survey questions using principles of thematic analysis (Braun & Clarke, 2006).

Recognizing an online survey platform may present sampling and access issues (Wright, 2005), such as presumed bias toward people with good connectivity, semistructured interviews were conducted over the phone with CI staff and Seascope partners who have previously or currently work in a Seascope, to complement online survey responses (Supporting Informtaion S2). A semistructured interview method was used to allow for flexibility and encourage follow-up questions (Kallio, Pietilä, Johnson, & Kangasniemi, 2016). Interviews were conducted between March and April 2020 and were recorded if prior consent was given and transcribed to

Utah) to better understand lessons relating to the Seascope essential elements. Questions were framed around Seascope planning, implementation, partnership

avoid inaccuracies and data loss. Patterns or themes were extracted from the interview data guided by the principles of thematic analysis (Braun & Clarke, 2006).

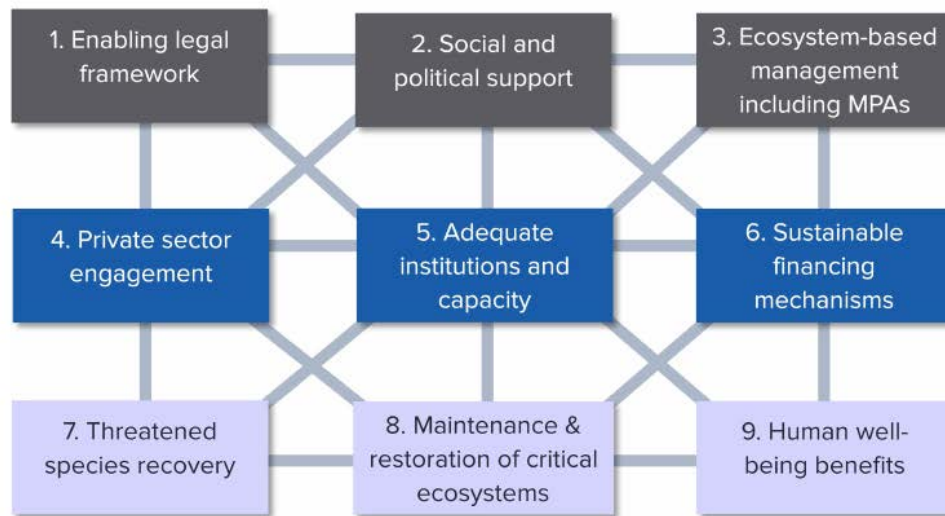


FIGURE 2 The nine essential elements of a Seascope adapted from the Seascope Guidebook (Atkinson et al., 2011): organized by elements related to Seascope process (top row), durability (middle row) and outcomes (bottom row): The Seascope has (1) an enabling framework of laws, conventions, regulations, and policies that facilitate marine conservation at local, national and/or regional scales; (2) increased social and political viability of marine conservation as an integral part of sustainable development, and has built broad support at all scales, from stakeholders in local marine managed areas to national leaders; (3) advanced large-scale management of marine ecosystems and species within seascope boundaries through the use of multidisciplinary scientific information to inform effective planning, implementation, monitoring, and evaluation, including MPA networks; (4) increased economic opportunities linked to healthy marine ecosystems and reduced impacts to those ecosystems through active engagement of the private sector; (5) adequate institutional frameworks and capacity, including personnel, infrastructure, and equipment, to make marine governance structures (governmental, commercial, and civil) work effectively, efficiently, and equitable; (6) sustainable finance, with funding portfolios that are stable, diverse, and large enough to implement all priority marine conservation activities; (7) stabilized or improved population trends for threatened marine species; (8) maintained or restored critical habitats and ecosystems so that ecological processes and ecosystem services are sustained; and (9) improved the social/cultural and economic wellbeing of human communities dependent on marine and coastal resources and ecosystems

4 | SITE DESCRIPTIONS

4.1 | Bird's Head Seascope

The global epicenter of marine biodiversity (Mangubhai et al., 2012), the Bird's Head Seascope covers approximately 225,000 km² in West Papua and Papua Provinces in Indonesia. In 2004, CI, The Nature Conservancy (TNC), and World Wildlife Fund (WWF) Indonesia, launched the Bird's Head Seascope initiative to protect biodiversity, address illegal and destructive fishing (McKenna, Allen, & Suryadi, 2002), and secure management of marine resources in a manner that ensures food security and sustainable economic benefits for people, especially Indigenous Papuans (Mangubhai et al., 2012). After 16 years of implementation, this initiative has brought together over 70 local and international partners in addition to traditional communities and local and provincial governments. A network of 26 MPAs was created covering 52,298 km², with 20.2% no take zone area and

Szuster, & Salm, 2009). Most MPAs were gazetted bottom-up through community customary *adat* declarations and local government regency laws and then reinforced by national legislation (Agostini et al., 2012; Pakiding et al., 2020). Across the Seascope, illegal and destructive fishing has been dramatically reduced, coral health has stabilized, food security and school enrollment has significantly increased, and eco-tourism is now the foundation of the local economy (Ahmadia et al., 2016). Primary responsibility for management of the Seascope has been transferred from international nonprofit partners to provincial government and local communities, and diversified revenue sources are in place to ensure long-term financing. The Seascope has become an effective model of community-driven conservation, sustaining Indigenous communities while safeguarding the health of their ecosystems and building economic opportunities.

4.2 | Eastern Tropical Pacific Seascope

the majority of the remaining MPA area set aside exclusively for sustainable fishing by local communities, including traditional practices such as “sasi” (McLeod,

The Eastern Tropical Pacific Seascape is the largest of the five Seascapes, covering the Pacific national waters,

coasts, and islands of four countries (Costa Rica, Colombia, Ecuador, and Panama). Encompassing pelagic hotspots and migratory routes for exceptional concentrations of sharks (Bessudo et al., 2011), turtles (Plotkin, 2010), whales (Avila, Dormann, García, Payán, & Zorrilla, 2020), and seabirds (Vilchis, Ballance, & Fiedler, 2006), these coastal and marine ecosystems underpin food, employment and climate security for local communities. Over 400,000 people are in fishery associated jobs (OECD, 2020) and nature-based tourism plays a fundamental economic role in places like the Galapagos islands (Epler, 2007) and Costa Rica (Sanchez, 2018). Coastal communities represent a mix of rural and fishing communities composed in some cases of Afro-descendants and Indigenous people (mostly in Colombia and Ecuador). To address risks due to overfishing and illegal fishing methods and poorly planned urban and agricultural expansion (Edgar et al., 2011), the Seascope launched in 2004 and was built around six existing offshore MPAs, of which four are now designated UNESCO world heritage sites, and aligned with existing regional initiatives such as the Eastern Tropical Pacific Marine Corridor (CMAR for its Spanish acronym: Corredor Marino). Over 100 partners have worked collaboratively together in a regional network of marine organizations, including government at all levels. There are now over 77 MPAs in a transboundary network covering 240,000 km². The Seascope has worked on diverse initiatives, from the recovery of mangrove ecosystems and coastal fisheries, to demonstrating the connectivity between MPAs through migratory routes of marine animals. This regional cooperation and integrated strategy may promote replication to neighboring countries interested in applying the approach and is a good example of the complexities and benefits of working at a large, transboundary scale.

4.3 | Sulu-Sulawesi Seascope

The 900,000 km² Sulu-Sulawesi Seascope is transboundary, including parts of Indonesia, Malaysia, and the Philippines. The Seascope contains one of the world's most diverse and productive marine areas (Allen, 2008; Veron et al., 2009), with over 100 million people dependent on marine resources for their livelihoods; however, these resources are threatened by overfishing, pollution, coastal development, and climate change. In 2001, the three countries formed a common 50-year vision for biodiversity and sustainable productivity, and this legal

Coral Triangle Initiative, the goal was to protect priority species and habitat in four marine biological conservation corridors (Verde Island Passage, Cagayan Ridge, Balabac Strait, and Trinational Sea Turtle corridor) which acted as manageable planning units within the Seascope (Conservation International Philippines, 2009). The Seascope now supports over 90 MPAs as part of an established MPA network (Horigue et al., 2015) and has facilitated the passage of more than 50 policies on MPAs and enforcement. It has increased total no-take area by 79% and has fostered a network of small MPAs, with a 242% increase in the total marine area under some form of protection. In addition, the Seascope has promoted community-based mangrove restoration to improve climate resiliency and local livelihood opportunities. The Seascope approach has generated strong results even in a densely populated region by building coalitions to improve ocean governance. The Seascope is now sharing lessons and best practices to support new Seascope development in the Coral Triangle, demonstrating the transboundary scale is possible to replicate.

4.4 | Abrolhos Seascope

The Abrolhos Seascope in Brazil covers 893,350 km², extending from a shallow continental shelf up to 200 km from the coast to a seamount chain connected to the oceanic islands of Trindade and Martin Vaz. It hosts coral reefs, calcareous algae, seamounts, seagrass, mangroves, and large remnants of Atlantic Forest in Brazil's northeast (Dutra, Allen, Werner, & McKenna, 2006). Initial marine conservation activities started in 1996, and by 2005 the Seascope approach was initiated (initially 90,000 km², changing to the present 893,350 km² in 2018). The initiative developed a mosaic of offshore and coastal MPAs to protect biodiversity and livelihoods, including a mixture of World Heritage and Ramsar sites. People in Abrolhos are dependent on their coastal and marine resources, with an estimated 20,000 residents employed as fishers and around 80,000 employed in the tourism sector (Dutra et al., 2012). The area is threatened by oil and gas exploration, illegal, unreported, and unregulated fishing (IUU), farming and aquaculture expansion, deforestation, and climate change impacts (Pereira et al., 2013). The boundaries of the Seascope were expanded over the past decade, with two large-scale MPAs created to protect the oceanic ecosystems in 2018. The present goal is to strengthen the MPA network and surrounding ecosystems as a key piece of the strategy for improving the sus-

framework was formally adopted in 2004 between the governments of each country (Miclait, Ingles, & Dumaup, 2006). Established as the first Seascope in the

tainable development in the region based on the linked economies of fisheries, tourism, and forest restoration. The recent expansion of large-scale offshore MPAs has

introduced new challenges for the Seascope, such as off-shore monitoring and enforcement and the need for additional funding and partnerships (Maretti et al., 2019), but it has demonstrated there is local capacity for leading national change.

4.5 | Lau Seascope

Located in Fiji's eastern archipelago, the Lau Seascope is composed of roughly 60 islands and inlets, 30 of which are inhabited, scattered across 335,000 km² (26% of Fiji's Exclusive Economic Zone [EEZ]). There are 9,602 inhabitants dependent on healthy island, coastal, and ocean ecosystems. The Seascope hosts unique biodiversity (Conservation International Pacific Islands Program, 2013; Heaps, 2005), but due to the remoteness of these islands, Lau's island communities have historically received little national and international support for the management of marine resources or to bolster resilience to climate change impacts. The newest of the CI-facilitated Seascopes, the Lau Seascope was formed in 2016 due to the need for strategic interventions to conserve key biodiversity areas as well as restore degraded resources that underpin food security, livelihoods, and culture. There was a consultation and participatory process with community, nongovernmental organizations, government, academic institutions, and the private sector (Conservation International, 2018). The vision for the Seascope is driven by Indigenous Lauans and represents the convergence of community-based management and large-scale ocean conservation extending to the boundary of the EEZ. The approach includes establishing a network of protected areas, terrestrial and marine, including community managed, multiuse, and co-managed areas. The Seascope is currently focused on gaining political support at the highest level for legal designation while securing private sector engagement, as well as the establishment of a sustainable finance mechanism.

5 | RESULTS

A total of 64 individuals responded to the online survey, an approximately 40% response rate (Supporting Information Table). There were four incomplete survey responses removed from the analysis, resulting in 60 survey responses. Individuals included CI staff (33/60, 55.0%) and Seascope partners (27/60, 45.0%). CI staff identified as technical personnel (10/60, 16.6%), program

who are based within one of the five Seascope programs (25/60, 41.6%) as well as CI staff based outside the five Seascope programs, but play a technical and supportive role (8/60, 13.3%). Seascope partners identified as government (10/60, 16.6%), nongovernmental organization (7/60, 11.6%), researcher/academia (4/60, 6.6%), private sector (2/60, 3.3%), local community member (1/60, 1.6%), and other (3/60, 5.0%). Survey respondents have been, or were involved in, the Seascope for less than 1 year (4/60, 6.6%), 1–4 years (17/60, 28.3%), 5–10 years (22/60, 36.6%), 11–15 years (14/60, 23.3%), and over 15 years (3/60, 5.0%).

A total of 31 people were interviewed across the five Seascope programs. Individuals included CI staff (22/31, 70.9%), comprised of conservation practitioners in the field and staff who had an important role in the development of the Seascope approach and program. Interviewees also included Seascope partners (9/31, 29.1%), comprised of nongovernmental organizations, researchers/academia, community leaders, and donors.

Additional insights from the online survey and interviews can be found integrated into the lessons learned section below.

6 | LESSONS LEARNED

Key themes were extracted from the semistructured interviews and insight from the online survey to help outline lessons from applying the Seascope approach, as well as identify case studies to complement the list of lessons learned. Lessons were organized around three thematic areas: (a) Seascope process; (b) Seascope durability; and (c) Seascope outcomes (see Figure 2). Essential elements related to Seascope process refer to elements that produce enabling conditions and changes in behavior. Essential elements related to Seascope durability refer to elements that support the long-term sustainability of a Seascope. Essential elements related to Seascope outcomes refer to elements that produce ecological, social, cultural, and economic outcomes.

6.1 | Seascope process

The Seascope approach emphasizes developing sustainable, multilevel governance structures. 88.3% of survey respondents agree the Seascope approach established an enabling legal framework, and 85% agree it established strong social and political support at all levels, from local

manager (9/60, 15.0%), program coordinator (5/60, 8.3%), executive team member (3/60, 5.0%), country director (2/60, 3.3%), and other (4/60, 6.6%). There were CI staff

to regional. These elements created enabling conditions for effective design and implementation of Seascapes and 78.3% agree the elements advanced implementation of

ecosystem-based management, due to (a) integrated planning frameworks; (b) community-led and locally owned initiatives; and (c) support from a strong network of partners and the leadership of a “backbone” organization (Turner, Merchant, Kania, & Martin, 2012).

6.1.1 | Integrated planning framework across multiple levels of governance

Building a coalition and forming a shared vision among stakeholders is key when beginning a Seascope initiative. Seascapes form effective planning frameworks when they utilize both top-down approaches to ensure political support and buy-in at the highest levels of national governments, and bottom-up approaches to guarantee the vision for the Seascope is locally driven and benefits communities who depend on coastal and marine resources. Of those survey respondents involved in the Seascope planning process, 90.0% agree it linked to regional levels; 95.2% agree it linked to national levels and subnational and local levels; and 88.3% believe their work is part of a holistic Seascope strategy and shared vision among multiple seascope partners and stakeholders. This allows for stakeholder buy-in and ensures coordinated strategies and frameworks for better collaboration and successful marine planning (Gunton, Rutherford, & Dickinson, 2010). It also opens the opportunity to align to existing frameworks and systems already in place within the Seascope, as well as international mandates and commitments. The Lau Seascope illustrates how to secure broad stakeholder support (Case study 7.1). Only through a long-term commitment can comprehensive solutions be put in place with the capacity and stewardship established to sustain a new, more sustainable nature-based development paradigm.

6.1.2 | Locally owned and community-led initiatives

Successful, sustainable conservation initiatives depend on strong, dynamic local leaders (Gutiérrez, Hilborn, & Defeo, 2011), involve communities, and respect indigenous values, rights, and cultural sensitivities (Ban & Frid, 2018; Nursey-Bray, 2011). The Seascope teams found when local communities understand and drive the work within a Seascope it can lead to more innovative and culturally appropriate management approaches that generate buy-in, compliance, and greater conservation

ocean and coastal resources, such as women and youth. Seascope initiatives have shown success when engaged local leaders are recruited and invested in, including targeted training and mentorship, and take ownership over the management of their coastal and marine resources. Co-management frameworks between government and local communities can be particularly important (Hind, Hiponia, & Gray, 2010) and have led to improved cooperation and enforcement within multiple Seascope programs, such as Abrolhos (Case study 7.2).

6.1.3 | Strong committed networks of partners and a “backbone” organization

Partnerships are essential for working at a Seascope scale as planning and implementation requires diverse expertise and resources. Survey respondents (78.2%) agree collaboration between seascope partners improved over the course of their involvement in the Seascope, and interviews highlighted implementation of the Seascope approach in the five Seascapes built over 250 new non-governmental organizations and marine professionals; some of which have built up sufficient capacity to lead their own projects and fundraising efforts. Strong and coherent partnerships transform region-wide change, but to make them work requires a shared vision and regional coordination, which can become increasingly complex in cases where Seascapes are transboundary in nature. A trusted “backbone” organization provides coordination and ensures partners are working together toward a shared goal (Turner et al., 2012). CI served as the “backbone” organization in the five Seascapes discussed here, but this role could be taken on by any high capacity local or international organization committed to cultivating a coalition of partners (Case study 7.3).

6.2 | Seascope durability

The Seascope approach strives to establish robust coalitions that will ensure the long-term sustainability of the Seascope. Large conservation initiatives can fail when project funding runs out and the international organization driving the initiative exits (White, Christie, D'Agnes, Lowry, & Milne, 2005). To avoid this challenge, early stages of Seascope development need to include deliberate planning for long-term durability around management, local institutional capacity, and financial sustainability. While nonprofit, donor, and stakeholder

and social outcomes (Leisher et al., 2012). This is particularly important for groups who may not traditionally be involved in the management and conservation of their

commitment has been strong across Seascapes, they have varied in institutional capacity and sustainable financing, with 62% of survey respondents agreeing adequate

capacity and institutions are in place, and 39% agreeing sustainable financing mechanisms are in place. While capacity in a Seascope was perceived similarly across the portfolio, there were differences in perceptions on sustainable financing mechanisms, with a significantly different distribution in the Bird's Head Seascope (74% agree) compared with Eastern Tropical Pacific Seascope (24% agree). It has been demonstrated that durability within a Seascope resulted from (a) diversification in funding sources; (b) private sector engagement; and (c) effective transition of nonprofit roles.

6.2.1 | Diversification in funding sources

All the Seascapes, with the exception of Lau, were developed with the support of an initial committed, flexible, outcome driven philanthropic donor. This long-term commitment from a core donor provided the Seascope programs with the flexibility to develop comprehensive planning frameworks, widespread scientific characterization and build strong coalitions of partners. However, survey and interview respondents indicated having a core donor can present challenges and create dependency if there is no deliberate planning around diversified funding sources, or there are not incentives to bring in additional partners and revenue streams. Philanthropic funding alone is not sufficient (Giving Compass, 2019), nor should it be expected to cover the full costs of Seascapes or other approaches to integrated ocean management. Diversification in funding sources is essential for the long-term sustainability of a Seascope, and good examples of this can be seen in Bird's Head and Sulu-Sulawesi Seascapes (Case study 7.4). Lessons learned to date suggest the funding model should change over time, with philanthropic funding supporting initial planning, but as capacity and implementation progresses, funding revenues should expand to sources like public funding, the private sector, and self-generating revenue sources (Huwyler, Käppeli, Serafimova, Swanson, & Tobin, 2014). Core funders can, and do, play a role in this financial diversification, attracting additional philanthropic partners, funding the planning of long-term financing mechanisms, and required significant match requirements.

6.2.2 | Private sector engagement

In addition to serving as a funding stream, the private sector set incentives for improved local production and governance. Many cases of this can be seen across the Seascope

(Castrejón, Cesar, Jerson, Mariana, & Suárez, 2017; Szuwalski, Castrejon, Ovando, & Chasco, 2016), and the EcoGourmet work in the Eastern Tropical Pacific Seascope which connects small-scale fishers directly with local restaurants (Diazgranados, 2017). This creates self-sustaining initiatives where sustainable production is rewarded with larger market share or better prices. Assessing the private sectors operating in each Seascope is important at the outset of planning, to identify opportunities and threats, adopt best practices, obtain funds, change the economic model of the regions, or act as an ambassador for the Seascope. This is also important to identify which sectors should be engaged to avoid detrimental impacts, such as the oil and gas industry; in the Sulu Sulawesi Seascope, CI was able to develop an effective line of communication to work with the sector to adopt best practices in coastal and marine conservation (Rosales & Vergara, 2009).

6.2.3 | Effective transition of nonprofit roles

Nonprofits play a pivotal role in marine conservation, and within the Seascope programs have provided significant long-term coordination, technical and financial support to local partners. Only 18% of survey respondents agree there would be adequate funding and capacity in their Seascope without international nonprofit support. While this recognizes the importance and value of long-term support from conservation organizations, it also highlights the need for these organizations to evolve and adapt in their roles to ensure the long-term sustainability of the Seascope. This is only possible if local institutional capacity is present to ensure resilient governance is in place. While local capacity building is a long-term commitment, it ensures a smoother transition of management and funding responsibilities to local entities from international nonprofits, resulting in a sustainable and lasting initiative. Also, a mature Seascope becomes more complex with multiple partners and a heightened awareness of emerging challenges; therefore, as the local organizations reduce their need for funding and technical support from international nonprofits, it enables more flexibility for those organizations to tackle emerging challenges and test innovative solutions.

6.3 | Seascope outcomes

The Seascope approach aims to show improvement in

portfolio, such as responsible high-end lodges/dive tourism in the Bird's Head Seascape (Atmodjo, Lamers, & Mol, 2019; King, 2017), live lobster purchase in the Galapagos

critical habitat restoration, threatened species recovery, and social/cultural and economic human well-being. While survey and interview respondents indicated these

improvements have been demonstrated by quantitative data, anecdotal data or expert opinion, many others do not believe these improvements are evident in their Seascope, but are likely with continued implementation of their strategy. While all Seascapes were designed to achieve these outcomes, the approach and level of investment in consistent impact measurements varied across the Seascapes. At a minimum, all Seascapes have utilized the Management Effectiveness Tracking Tool (METT; Stolton, Hockings, & Dudley, 2002), or an adaptation of METT, to assess management effectiveness of the MPAs within a Seascope. The Bird's Head Seascope has the most robust monitoring and evaluation system in place and has some of the strongest reported impacts (Ahmadia et al., 2016; Pakiding et al., 2020). Sites that effectively demonstrated Seascope wide impact benefited from (a) robust monitoring and evaluation frameworks; and (b) effectively communicating impact.

6.3.1 | Robust monitoring and evaluation frameworks

There is a need to demonstrate that it is possible to secure ecological benefits, increased incomes, and improved human well-being through conservation. While survey respondents indicated they believe there has been improvement in capacity, governance, ecological health, human well-being, and economic stability, they acknowledged impact should be validated through measurable indicators, where a clear baseline is established, and a monitoring framework is in place to track progress toward Seascope goals on ecosystem health and human well-being. When monitoring and evaluation frameworks were invested in within a given Seascope, this led to improved buy-in and support from partners. This has been challenging in some Seascapes, as there is a general lack of comparable and standardized methods to measure impact at the Seascope scale (Bottrill & Pressey, 2012). Implementing monitoring and evaluation frameworks at the Seascope scale is costly and it is challenging to adapt a consistent model across a Seascope while adapting to local circumstances. Greater investment in implementing a robust monitoring and evaluation framework could help amplify the Seascope approach and diversify funding sources by providing evidence that Seascope outcomes align with public sector priorities related to human well-being and sustainable development.

6.3.2 | Effective story telling

multifaceted and multiinstitutional outreach (Case study 7.5). Environmental management is often complex and being able to effectively communicate outcomes to multiple audiences, such as high-level decision makers, funders, and local community members, is vital for buy-in and support for the Seascope initiative (Dahlstrom, 2014). Developing comprehensive communication and outreach strategies can ensure relevant audiences are targeted with the appropriate communication tools. The notion of a Seascope can feel conceptual if not rooted in place-based examples and stories, so it is important to understand what the implementation of the Seascope approach achieves and how best to communicate impact to different stakeholder groups.

7 | CASE STUDIES

The following case studies illustrate stories across the five Seascope programs related to specific lessons learned shared in the section above.

7.1 | The development of the Lau Seascope strategy

Inspiration for the creation of the Lau Seascope was derived from a Seascope workshop held in the Bird's Head Seascope in 2015, with participation from CI's Fiji Country Director. This led to a learning exchange in 2018, where Bird's Head Seascope staff and a Papuan chief travelled to Fiji to discuss their experience implementing the Seascope approach with the chiefs of the Lau province. Before the exchange, the Lau chiefs were independently conducting their own conservation work but were interested in working collectively to discuss common issues and solutions at the archipelagic scale. The Bird's Head Seascope team provided examples of how they worked to ensure local governance is respected, build community capacity and engagement, and link the Papuan provincial government and Indonesian government to build alignment between community interests and government policy. The concept of the Lau Seascope was strengthened from this exchange. After over 3 years of consultation with stakeholders, including Indigenous leaders, the people of Lau, government of Fiji, academic institutions, and local and international nongovernmental organizations, a consolidated framework known as the Lau strategy was developed (Conservation International, 2018). The strategy repre-

In addition to validating impact through monitoring frameworks, it should be communicated through a

sents the shared vision and goals of Indigenous people of Lau, with technical support from partners and government.

7.2 | Traditional rights guaranteed by fisheries co-management regimes in Abrolhos Seascope

In the 1990s, increased fishing effort caused a drop in shrimp production in various areas of the Abrolhos region (Dutra, Camargo, Santos, & Ceotto, 2011). As a result, fishing boats began focusing their efforts in the Corumbau region, a traditional fishing village located in the central part of Abrolhos. The local community—mostly of the Pataxó Indigenous ethnicity—rebelled against what they called an “invasion by foreign boats” and sought means to protect areas where they traditionally fished. They asked the Federal Government to create an Extractive Reserve—RESEX, a MPA co-managed by local communities, government, and nonprofits. CI joined the community to produce the technical information needed in the process, and the Corumbau RESEX was created in 2000, covering an area of 895 km² where about 260 families rely on fishing as their main source of income. With the creation of the RESEX, the local fishermen gained exclusive rights of use over these areas, where fishing by “foreign boats” were banned. Corumbau inspired other communities in the region to ask for the creation of extractive reserves, resulting in two additional RESEXs in the region (Canavieiras and Cassurubá), covering an area over 2,000 km² where about 3,650 families maintain their traditional fisheries. The RESEX provided ownership for the communities over their traditional territories, guaranteeing conditions for maintaining small-scale community fisheries managed for sustainable harvest.

7.3 | Grant-making mechanisms to increase capacity and build a network of partners in the Eastern Tropical Pacific Seascope

In the Eastern Tropical Pacific Seascope, CI provided external grants and consultancy contracts to partners to develop projects for core activities in the Seascope workplan. This helped form partnerships, enhanced and pooled human and financial resources, and provided a platform for partners to help forge and implement a joint vision for the Seascope. A group of organizations, including multiple governmental partners, now work in alliance and collaborate on projects working toward the common goal of improving marine resources management and conservation in the Seascope. As the Seascope

consultancies were administered to more than 100 different partners, increasing local partner capacity; many whom now independently raise funds and pursue initiatives. The strong focus on supporting local capacity paid dividends, with the region now poised to build upon these foundations to pursue even stronger management goals. Survey respondents recognize the instrumental role CI played laying the groundwork for the vast array of local and national partners and stakeholders to push the Seascope initiative forward; however, they also indicate the complexities of a transboundary Seascope, including political and cultural sensitivities unique to each country, and a lack of resources to maintain strong regional coordination, has created challenging conditions for maintaining a strong network of partners over time.

7.4 | Funding diversification in Bird's Head and Sulu-Sulawesi Seascapes

In the Bird's Head Seascope, a financial cost model was done in early Seascope planning stages to give a sense of the funding required to manage the MPA network. A plan was then put in place for the transition of a philanthropically funded initiative to one of a diversified funding portfolio with effort focused on creating local and national government buy-in to the Seascope initiative to increase government allocation to management. The Seascope also sought additional sustainable financing mechanisms through self-generated revenue sources such as tourism entrance fees (Atmodjo et al., 2019) to support management activities and the creation and capitalization of the Blue Abadi Fund, a conservation trust fund dedicated to ensuring sufficient financial resources are available to local institutions conducting critical Seascope management activities (Bird's Head Seascope, 2020). Effort was also focused on building local institutional structures legally capable of receiving and managing non-governmental revenue streams. In the Sulu-Sulawesi Seascope, partners were forced to consider alternative funding sources with the sudden cessation of support from a long-term donor. Effort was then focused on obtaining public funding from multiple bilateral and multilateral institutions, such as United States Agency for International Development (USAID) and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ). The Seascope also focused on government engagement, incorporating the Seascope into government priority plans, co-implemented by numerous partners with funding from various sources. While both funding

progresses, it will work to increase the role of key partners as joint “owners” to ensure long-term sustainability. Over a 15-year period, over 300 individual grants and

models originated from different circumstances, Bird’s Head and Sulu-Sulawesi Seascapes show great examples of how a program can transition from solely

philanthropic to a diversified funding model that safeguards long-term sustainability (Figure 3).

7.5 | Robust monitoring framework and effective storytelling in the Bird's Head Seascope

The Bird's Head Seascope has been able to successfully demonstrate the social and ecological benefits the Seascope provides through a robust impact monitoring framework complimented by effective storytelling. Recognizing the importance of comparable long-term datasets across the Seascope, the international conservation nonprofits that work in the Bird's Head Seascope collaborated with the State University of Papua to design a consistent ecological and social impact monitoring program and to build local scientific capacity to drive these monitoring efforts, reduce costs and ensure long-term sustainability (Fox et al., 2017). There was additional startup funding necessary to design protocols and train teams, and now on average it takes approximately \$200,000 USD to maintain these monitoring efforts. State University of Papua now leads the development of an annual "State of the Seascope" report, which reports trends in governance, MPA management, ecosystem health, and socioeconomic conditions (Pakiding et al., 2020). Monitoring is crucial to adaptive management and communication of empirical results as well as anecdotal stories generated from the Seascope. In the early stages of Seascope implementation, international nonprofit partners established strong partnerships with local and international media groups. As a result, the Seascope made international and national headlines in hundreds of newspaper, magazine, and online articles and launched its own

dedicated website (www.birdsheadseascope.com), and media groups met with nongovernmental staff on an almost-monthly basis to learn more about locally relevant environmental issues. Local media capacity was also increased through multiple trainings and workshops. This media attention not only generated significant name-recognition, tourism interest, and support for conservation in the Bird's Head Seascope, but also it helped to directly highlight connections between conservation efforts and livelihoods, education enrollment, and food security, keeping conservation top-of mind for constituents and decision-makers.

8 | DISCUSSION

After 15 years of implementing the Seascope approach in five geographies with varying contexts and barriers, the approach successfully demonstrated the importance of integrated planning frameworks, community-led and locally owned initiatives, and a network of partners dedicated to a holistic Seascope vision. The approach also demonstrated it can yield ecosystem health, human well-being, and social, cultural, and economic benefits, but this impact needs to be better measured at the Seascope scale and more broadly communicated. The long-term sustainability of the approach requires adequate capacity and resources, with diversified funding models and integration of priorities from public institutions and the private sector. The application of the Seascope approach requires one or a few "backbone" organizations, as well as a long-term commitment by key partners and stakeholders.

Seascopes are unique in their ability to promote sustainable development. The approach acknowledges the

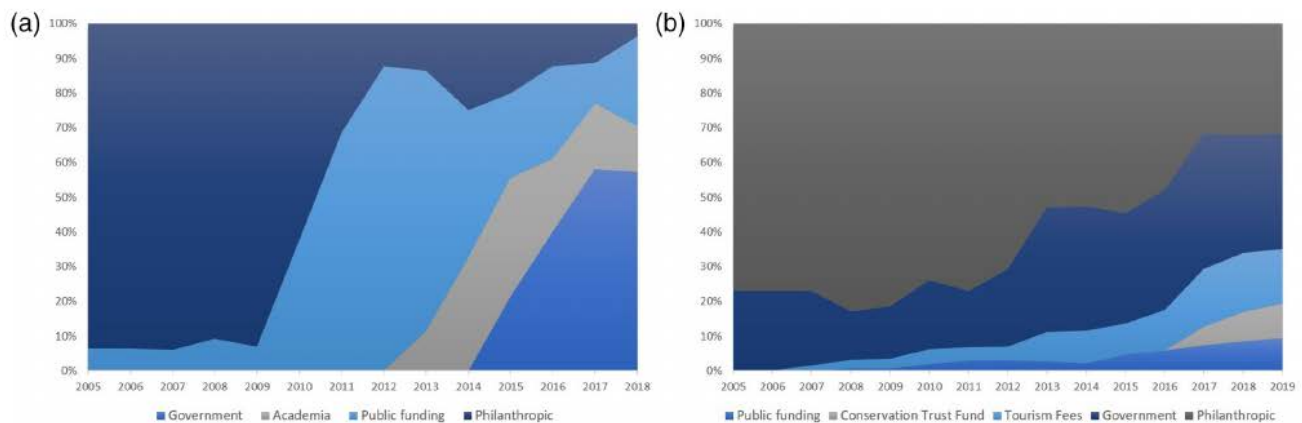


FIGURE 3 The investment in (a) Sulu-Sulawesi Seascope and (b) Bird's Head Seascope over the life of the Seascope categorized by

investment type. The graph shows the percentage of Seascope funds that was covered by a specific investment type during any given year between 2005 and 2019. These graphs are based off of raw financial data provided by Seascope teams, but numbers were altered if there were clear data gaps and instead were estimated based on expert opinion

ocean is interconnected, requiring integration of ecological, social, and economic components. It builds partnerships between multiple sectors, often with differing coastal and ocean resource priorities. When connecting the approach to national and international policy, Seascope can advance a sustainable development agenda by: (a) aligning Seascope goals to existing policy to ensure local, national and international commitments are met; and (b) using the Seascope approach to develop policy, bringing together stakeholders to understand their goals around coastal and ocean resource management, and developing interventions to promote goals at local, national and international levels. The CBD is considering a commitment of expanding protection of oceans to a 30% global target; Seascope provide countries an approach to protect and sustainably manage their ocean and encourages them to commit to more protected and integrated management of their ocean, especially in consideration of wide-ranging species and ecological processes that span political boundaries.

Global policy priorities also tie to funding diversification opportunities. Public funding is driven by international conventions, and governments are incentivized by where they can secure financial resources; therefore, when ocean-based sustainable development is prioritized in global agreements, it will catalyze funding opportunities. The UN estimates there is a \$2.5 trillion-dollar gap annually to achieve the SDGs (International Coral Reef Initiative, 2018), with SDG14 receiving the smallest amount of blended finance (Basile & Dutra, 2019) and impact investments (Libes & Eldridge, 2019). Recognizing governments alone cannot finance this 2030 agenda, the Seascope approach can help identify clear priorities for large-scale ocean management and network the necessary partners to strategize on targeted and diversified funding opportunities. AidData's 2017 "Listening to Leaders" survey indicated world leaders prioritized SDG14 the least out of the 17 SDGs (Custer, DiLorenzo, Masaki, Sethi, & Harutyunyan, 2018); to increase the prioritization of SDG14 in government agendas and budgets, governments will need to realize how progress toward SDG14 can benefit progress toward other SDGs, and how large-scale ocean management frameworks, such as the Seascope approach, can make these connections.

While these lessons have been generated based on the analysis of five diverse Seascope programs across the globe, it is important to note these Seascope programs are centered in tropical regions and less developed countries. This raises the need to better understand application of the Seascope approach in higher latitudes and more con-

that can endure shocks, such as pandemics and economic recessions (Bennett et al., 2020; Hockings et al., 2020).

9 | CONCLUSION

The Seascope approach initiated by CI was an ambitious concept to manage and sustain marine biodiversity at a large scale. Implementing this innovative approach required significant funding which inevitably drew stakeholder and government interest and support, critical to the success of Seascope. The window of opportunity for addressing global sustainability issues, including those addressed by the Seascope approach, is closing. There is a need for the Seascope approach to be supported and adopted by political and financial institutions if we are to meet SDG targets as well as the proposed post-2020 global biodiversity framework goal to conserve 30% of our oceans by the year 2030. Seascope provide the capacity and holistic vision to sustain adequate management at a large and necessary scale. As such, nongovernmental organizations, governments, private sector, and funding institutions should actively promote this sustainable management approach at a global scale.

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CONFLICT OF INTEREST

The authors declare no conflicts of interest.

AUTHOR CONTRIBUTIONS

All authors have contributed and have given final approval of the version to be published.

DATA AVAILABILITY STATEMENT

Survey and interview responses are confidential and thus not accessible. A summary of the data can be obtained from the corresponding author upon request.

tested regions. Also, as with all conservation initiatives, the impacts of COVID-19 have illuminated the importance to think about building durable, resilient Seascapes

ETHICS STATEMENT

CI is committed to creating a research climate that promotes faithful adherence to high ethical standards in the

conduct of research and scholarship without inhibiting the productivity and creativity of persons involved in research. Research ethics is a cornerstone of public trust and critical for advancement to international prominence and excellence in research. To further emphasize its commitment to excellence, CI has developed its “Research Ethics Policy” to ensure that research carried out and/or funded by the organization is subject to an appropriate ethical review and approval process. CI’s Institutional Review Committee (IRC) considered this study methodology and found it to be exempt from full ethical review.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of this article.

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