

A NEW PARADIGM FOR **SUSTAINABLE SEAFOOD STRATEGIES**



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EXECUTIVE SUMMARY

The scale of the sustainable seafood challenge, the number of people and initiatives involved in it, and the complexity of its dynamics and interactions are overwhelming sustainable seafood efforts. In response, the shift to a **new change paradigm** is already underway. Its development can be accelerated by being clear about its contours and supporting its emergence. This means some activities should be stopped, some redesigned, some supported, and some initiated.

This picture grows out of an investigation that began in June 2020. For 30 months, a team looked at sustainable seafood activities through the lenses of whole systems thinking and leading transformation knowledge. It engaged individuals working for sustainable seafood to investigate the question of whether those lenses might provide new insights to accelerate the realization of a sustainable seafood world.

Systems thinking¹ and whole systems strategies are now popularly referenced in transformation work. They hold great promise for addressing the three big challenges of transformation: scale, complexity, and long time horizons. The “how” of developing systems transformation strategies, however, is still at an early stage of development. Strategies usually focus on a narrowly defined geography, such as a specific littoral or part of an ocean, or around a particular concern, such as tuna or whales. But we know that the oceans and markets are global-local systems. This inquiry, then, focuses on better aligning sustainable better align sustainable seafood strategies with the nature of these systems.

The first event in the activities was a webinar that introduced the concept of a “**transformation system**” for **sustainable seafood** as a “whole systems” approach. The sustainable seafood transformation system comprises all those efforts that aim to shift our current reality towards a future where sustainable seafood approaches are firmly established. This includes thousands of local to global NGOs and communities, governments and intergovernmental organizations, and science and research initiatives. It also includes artisanal fishers and global fishing companies, retailers and consumers who are supporting sustainable seafood.

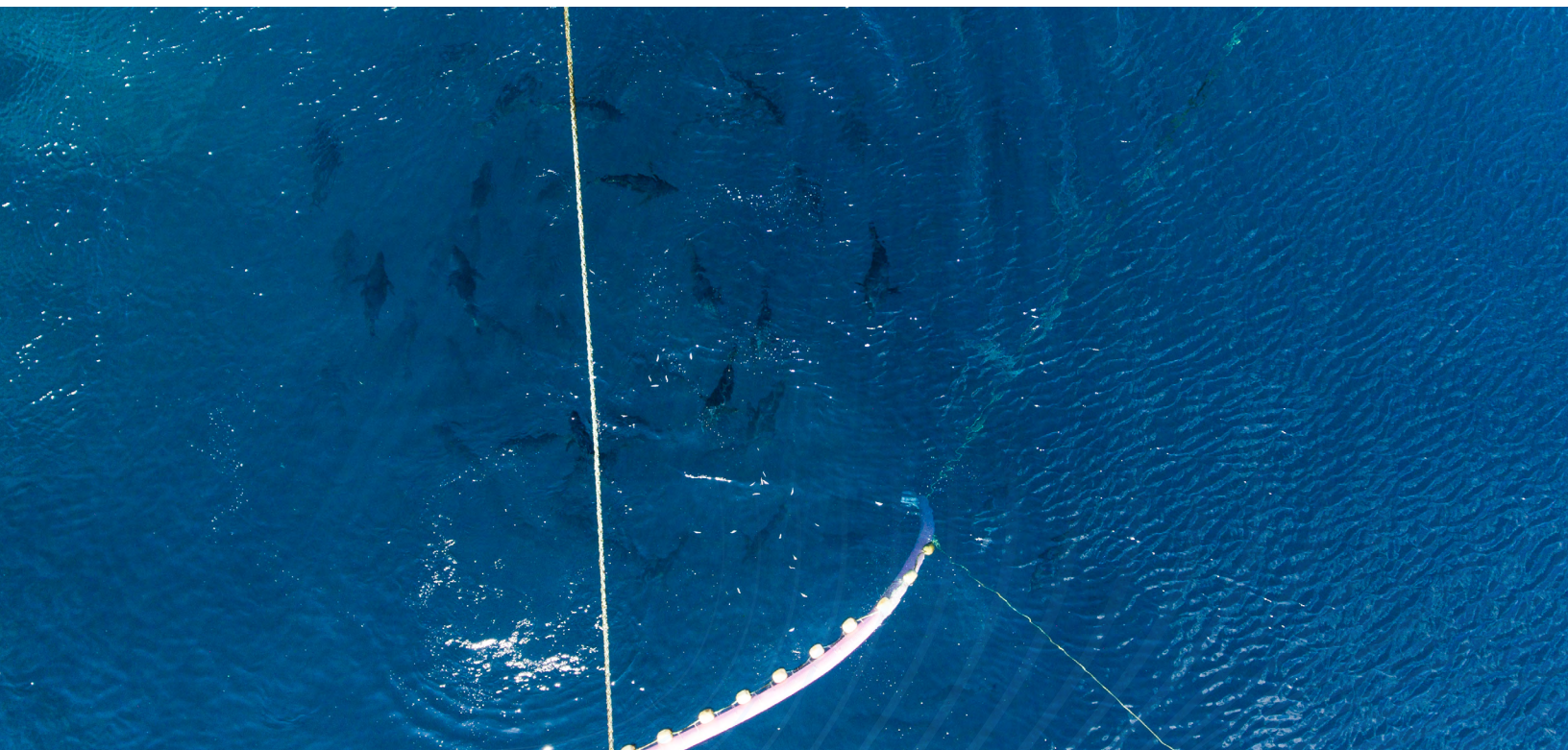


A broadening of issues associated with sustainable seafood is increasing the number of sustainability initiatives. In addition to the historic natural environment concerns, over the last decade, addressing concerns about communities, human rights and labor have become part and parcel of the definition of “sustainable seafood.” The emergence of the term “polycrisis” is pointing to the need for sustainable seafood initiatives to address issues such as plastics and climate change where the initiatives have little historic experience. The transformation system for sustainable seafood is indeed enormous and highly complex, and the need for deeper, broader and more transformative action is increasing.

The efforts for sustainable seafood are ancient, but the modern era arose after World War II with the increase in commercial catches. An historical perspective reveals that we are now entering a new change paradigm that can be considered a whole systems, or transformation systems, one. Hallmarks of this include the 1982 Law of the Sea as the apogee of the government change paradigm and the founding and growth of organizations such as SeaBOS, Global Seafood Alliance, the Global Hub of the Conservation Alliance for Seafood Solutions, the Marine Stewardship Council, Fishery Progress and others. Increasingly, initiatives approach their work with “ecosystems” strategies. These represent moves to align the local to global nature of communities, oceans and markets with sustainable seafood efforts.

This report recommends nine elements that will support accelerating the move into a whole transformation systems change paradigm. The basic challenge is to shift from a firefighting mode around particular species and hotspots as they become evident, into a more audacious approach to describe in evolving detail a desired sustainable seafood future and designing transformation system pathways to its realization. Rather than simply retrofitting and adding on to historic approaches, this shift requires new mental models, processes, capacities, relationships and structures. The change paradigm shift is urgently needed not just for the oceans’ sake, but for their potential to contribute to feeding a burgeoning population with their highly sustainable bounty.

The following recommendations are made for those wishing to accelerate development of both sustainable seafood and the emerging transformation system paradigm.



RECOMMENDATIONS OVERVIEW

1. Support the Emerging Transformation System Change Paradigm

Sustainable seafood efforts can be categorized into four change paradigms:

1. Freedom of the Seas (roughly to the 1950s)
2. Government Leadership (1950s through the 1980s)
3. Multistakeholder Strategies (1990s to today)
4. Whole Sustainable Seafood Transformation System Strategies (2020s -)

The new paradigm is emerging because of the expansion of issues associated with “sustainable seafood” and shortcomings of the multistakeholder paradigm. The new paradigm is grounded in whole systems thinking and approaches that are distinctive from the multistakeholder one. It has enormous new potential, but it also requires deep innovation in mental models, strategies, tools, processes, and structures.

2. Use Vision and Values as the Collaborative Foundation

Powerful whole system collective action is built upon shared vision and values. However, rather than thinking of a grand vision and values for the whole system, a transformation system strategy emphasizes the importance of continual evolution, deepening, adapting, and broadening the vision and values. Alignment emerges through continual iterations to make the vision and values relevant to diverse circumstances while incorporating the broader whole system realities. They are defined with specificity appropriate for a time and place to provide the basis for collective action, and adjusted as those actions clarify the possibilities.

3. Act on the Sustainable Seafood Transition as Dilemma Resolution

Sustainable seafood action requires the current system to maintain the financially sound production of seafood while simultaneously undergoing transformation. There are at least seven other important dilemmas. Unlike paradoxes that require “living with” tensions, these dilemmas *must* be addressed, or seafood systems will collapse.

4. Organize Around Issue Systems

Issues, such as traceability, artisanal fisheries and climate change provide a potent focus for organizing subsystem components of the sustainable seafood system. Many initiatives already include themes around some of the 11 issues identified. Creating collaborative action around them provides greater power to address them with better use of resources. Their development as “sub-systems” of the whole transformation system will lead to capacity for whole system action.

5. Address Deep Systems Challenges

Six impediments commonly arise for transformation efforts. They demonstrate the need to develop innovation systems, new finance approaches, an evaluation-as-learning systems approach, new governance and organizing structures, deep collaboration, and new narratives. These are of such scale and importance that they cannot be addressed by a single initiative. They require work by the transformation system as a whole.

All of these deep systems challenges were identified as impediments to seafood transformation, but development of innovation systems and associated capacities was identified as a priority.

6. Create an Evaluation-as-Learning Framework

Metrics, one of the deep systems challenges, has a particularly important role in transitioning to the transformation system change paradigm. Beyond a species-focused evaluation-as-accountability framework, an evaluation-as-learning framework emphasizes a systems impact. That shift supports the basic experimental dynamic of transformation and guides initiatives to increase their contribution to the effectiveness of transformation efforts as a whole system.

7. Generate Systemic Action Benefits

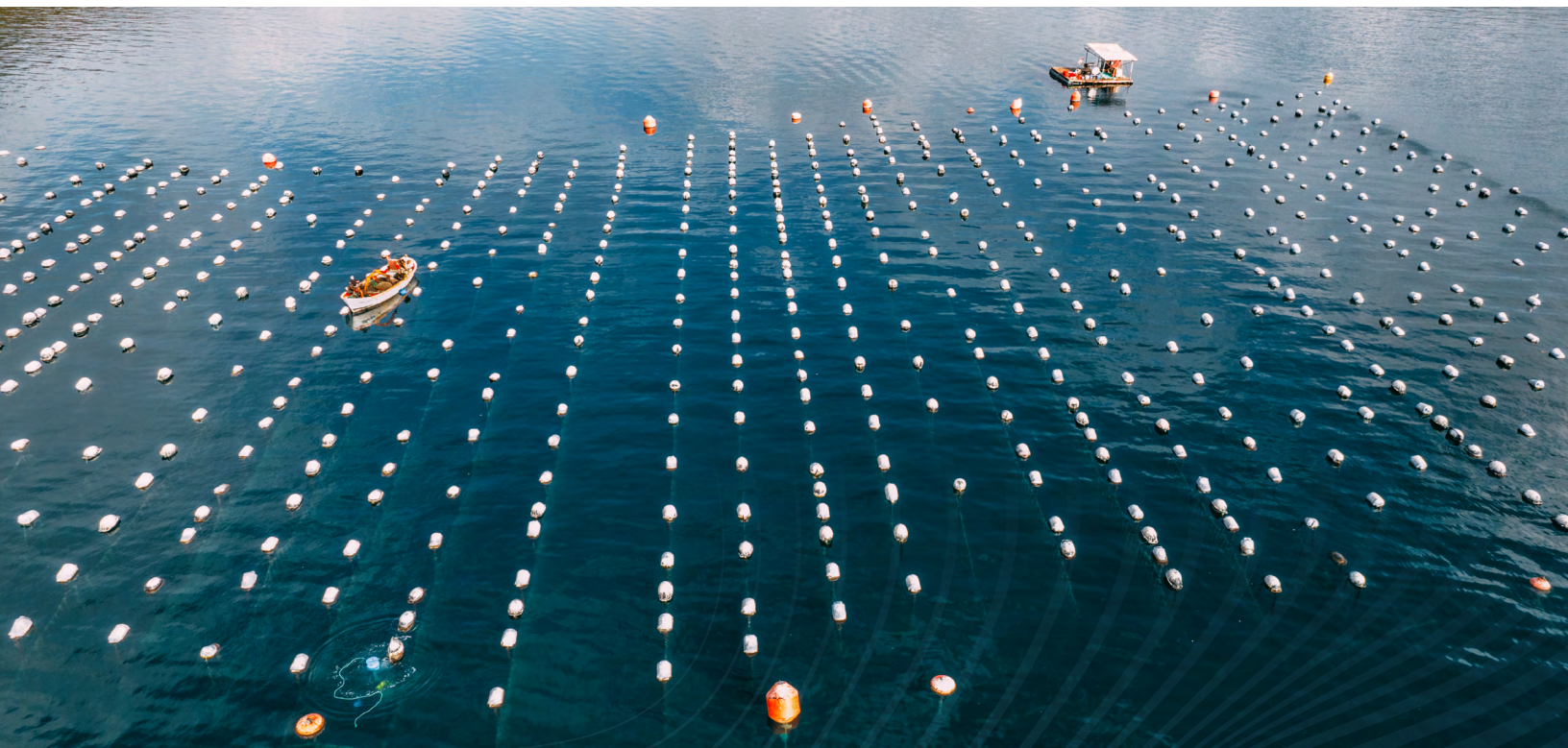
Shifting to a transformation system paradigm will only occur if those in the system can see and develop tangible improvement to their efforts. This is often referred to as creating “synergies”, which can take eight different forms. Generating such benefits requires mapping and describing systems so their participants can see the relationship of their activity and others’ and understand their (sub-) system’s dynamics. The transformation evaluation approach is critical for this.

8. Design Adaptive Pathways

Rather than “planning” that projects actions within a largely understood and accepted framework, a “design” approach that develops frameworks is appropriate for transformation processes. “Adaptation” supports incorporating learning. “Pathways” provide directions for multi-methodological/multi-strategy action based upon an understanding at a particular point. The three provide a firm basis for developing the power of the sustainable seafood system.

9. Commit to Learning

Entering a new paradigm is difficult and confusing. Historic concepts accepted as foundational may be thrown out the window. New language is required. The new ideas and actions to support them may seem confusing and opaque. Experiencing sustainable seafood as a whole system in transformation requires perseverance and audacity. Our future depends on it.



A NEW PARADIGM FOR SUSTAINABLE SEAFOOD STRATEGIES

1. An Audacious Question

Those working for a sustainable global seafood system can point to significant achievements. These are the product of regulation, certification programs, standards, harvest agreements, pre-competitive collaborations, fisheries improvement projects and other tools. However, the health of oceans and fisheries continues to be in peril and new issues arise. The scale and pace of improvement will not come by simply increasing the scale of current sustainability efforts. One reason is that the substantial increase in resources that this would require is unlikely to appear. Another reason is that the complex dynamics of an increasing number of efforts that contribute to the situation cannot be addressed simply by increasing incremental change of current work.

Sustainability efforts are generally siloed around a market, species and/or geography, whereas the oceans are vast global systems and markets are complex international and local interactions involving many factors. The sustainability efforts take the form of programs and projects. Although initiatives' impact can be assessed, there is a vacuum of knowledge about their interactions as a whole and how they impact change in fisheries as a global system. The overall dynamic behind initiatives is a fire-fighting one rather than a truly forward-looking design of a sustainable seafood system.

In this context, over the last 10 years, systems thinking has been increasingly connected to change and transformation. Today systems and systemic change are part of popular discourse. This led to the formulation of the following question: **Is there a way to accelerate the transition to sustainable seafood through a whole system approach?** It was explored from June 2020 to October 2022 through a range of activities. Work began by visualizing the *seafood production system as distinct from the transformation system for sustainable seafood*. The former might be likened to the subject of the latter – all the efforts for sustainable seafood are focused on transitioning the seafood production system to sustainability. Of course, organizationally these two systems are not distinct: Many of the transition efforts are within a business and business networks. Strong connection between the two systems is, in fact, a condition for successful transition. However, the investigation was conducted to test the belief that looking at the two as distinct, but very well-connected systems, could provide an innovative response to the question.

2. Desired Output and Outcome

The investigation was broad ranging, but built upon some core tenets of change and whole systems thinking. The answer to the aforementioned question needs to be:

- Financially reasonable;
- Inspiring with a future-oriented vision;
- Supported by a core group of seafood stakeholders;
- Practical in recognition of the current workloads and commitments of stakeholders;
- Feasible in terms of implementation processes and structures; and
- Effective in responding to the issues, challenges and opportunities facing sustainable seafood.

There are two outputs of the investigation. One is a diagnosis of the situation with learnings and recommendations. The second product is illustrative application of these elements as pathways to accelerate the sustainable seafood agenda.

The outcome goal is to accelerate the transition to sustainable seafood by broadening understanding, action and commitment to a whole systems approach. We hope that the work will find sufficient stakeholder interest to be reflected in their future actions.

3. Project Design

Design thinking is becoming particularly important in systems and transformation work.² It is a process of identifying key elements of a desired future and activities to realize them, grounded in complexity and systems thinking. There are several core elements to the approach as undertaken in this exploration.

3.1 WHOLE SYSTEM

A system is typically defined by its purpose. In this case, the purpose is to rapidly evolve the seafood production system to be a sustainable seafood production system. A second core element of a systemic approach is defining a boundary – who is in and who is outside of the system. This is because systems thinking begins with the understanding that diverse people and organizations influence the workings of a system. Of course, the exact boundaries are fuzzy and shift with changing priorities and insights, and new and existing participants. Recommendation 1 addresses boundaries.

3.2 BUILD ON EXISTING WORK

The project is based on the understanding that there is a large, complex history of sustainable seafood work. A new approach must appreciatively build on that history, rather than pretend that something was “wrong” or that beginning with a new slate is possible. Particularly important for this investigation were:

- [The Global Seafoods Markets Strategy Evaluation Final Report, June 2020, Packard/Walton et al.;](#)
- [Seafood2030 work, such as Seafood2030: The issues shaping seafood's sustainable future;](#)
- [Conservation Alliance's Strategic Plan 2020-24;](#)
- [The Global Seafood Alliance's 2021 Annual Report;](#) and
- [SeaBOS' progress report 2017-22.](#)

3.3 STAKEHOLDER ENGAGEMENT

Successful design – design that is useful for system stakeholders – requires stakeholder engagement and their wisdom. The project team of Bounce Beyond did not have expertise in the sustainable seafood arena. Its experience is with transformation and the question of how intentional transformations can be developed. Seafood2030, sponsor of the work, acted as both guide and liaison to the sustainable seafood world. It played a critical role in creating activities with stakeholders.

3.4 MULTI-METHODOLOGICAL

There is not “a transformation methodology” but rather a vast palette of methodologies that support transformation. Within this array, distinct methods were selected to address key questions required by transformation analysis. These were, of course, influenced by the team’s own capacities.

4. Project Activities

For a detailed description of the activities, go to bit.ly/transformseafood

4.1 MAPPING

The focus here concerns identifying who is in the system, their relationships and the system’s dynamics. In this case, the main goal was to introduce the novel concept of “transformation system” as a real, definable system. **Webcrawl mapping** was used since it is a good way to inexpensively present a system by identifying websites that have hyperlinks to each other. This produces a visual map of the linkages and a list of websites; this methodology is further described with Recommendation 1.

As well, throughout the process we continually developed and maintained contacts with key sustainable seafood actors. This provided an interpersonal way of mapping the system and was the basis for identifying individuals to invite to be participants in the project activities.

4.2 FUTURE THINKING

The core concept of transformation is to move from one paradigm to another. This requires thinking about the desired future. Roadmaps, scenarios, forecasts, and pathways are four groups of methodologies associated with futures thinking. In the case of this investigation into a field with high agency of individual seafood initiatives and high uncertainty, a pathway approach is appropriate.

This project included a “**Three Horizons**” investigation into the sustainable seafood vision. A couple of dozen sustainable seafood participants described (1) the state of the current sustainable seafood system, (2) a future high-functioning system, and (3) current efforts to transition to that future. For a detailed description of the work, go to bit.ly/seafood3H

4.3 STAKEHOLDER ENGAGEMENT

Workshops were conducted to deepen collective understanding of the sustainable seafood transformation system and explore particular ways to accelerate its development from a whole systems perspective. They were also undertaken to develop connections between stakeholders and the project, ground ideas in stakeholders’ reality and advance understanding and support for the evolving transformation systems approach. All of the workshops were virtual; some of them were held as part of conferences and other events.

Stakeholder workshop engagement, in conjunction with ongoing stakeholder conversations, substantially informed workshop design and follow-up debrief sessions.

5. Limitations

There are three main limitations in the project design that warrant recognition. To start, the project was very much an exploration. Although the team had expertise in transformation knowledge, the execution of intentional transformation is still in its infancy. This meant it was very much a trial and modify approach, designing as the project went along.

The project was very modestly funded and required substantial commitment by all involved, far beyond any financial exchange. Had more funding been available, a different approach would have been taken. For example, dependence on virtual workshops impacted the quality.

As well, the resource limitations led to an extended period for the activities over 30 months, beginning in June 2020 with a webinar introducing the concept of a transformation system. Activities were sporadic, which meant stakeholder engagement was very uneven.

Although the system is described as the *global* sustainable seafood system, it is very much the Western sustainable seafood system of North America and Europe. Although that system is indeed global in that seafood is harvested from all oceans for those geographic markets, there was modest engagement of people beyond them. For example, China, a major seafood actor, was not engaged directly.

CONTEXT

1. Evolving Sustainable Seafood Change Paradigms

An historical perspective on the development of sustainable seafood activities reveals that shifts have occurred in the management approach for seafood. It is not a simple story of continuous improvement but rather one with its own cycles of paradigm shifts. These are referred to as **change paradigms**. They focus on the *how* of realizing a sustainable seafood world. Development can be divided into three change paradigms over the last century.

1.1 CHANGE PARADIGM 1: FREEDOM OF THE SEAS

For most of history, oceans have been treated as a commons. Everyone had a right to access and exploit their bounty. There was modest control by littoral states of their waters, and the open seas were treated as areas where “might had right” when disputes arose. This was formalized as a principle put forth in the 17th century essentially limiting national rights and jurisdiction over the oceans to a narrow belt of sea surrounding a nation’s coastline of three miles. The remainder of the seas was proclaimed to be free to all and belonging to none.

But the endless bounty of the oceans became limited as populations increased and fishing fleets grew. Huge technological innovation after World War II brought about a dramatic change in the type of boats, fishing methods and amount of seafood harvests. Increasingly large ships and corporations became dominant. Moreover, pollution and access to underwater resources – particularly oil – became big issues. Frictions rendered the historic commons approach untenable. Individual nations claimed jurisdiction over greater ocean regions.

1.2 CHANGE PARADIGM 2: GOVERNMENT LEADERSHIP

Governments entered the fisheries arena in response to the growing disputes and concerns about access to resources in two ways. On the one hand, they extended their control over their littorals. Within this zone, national governments set the standards and regulations. They also developed councils for regional management. For example, legislation in the US in 1976 provided for eight regional Councils responsible for “conserving and managing fishery resources.”³

The second way governments shifted their role in fisheries was with an array of international conventions and agreements to cover open seas. Governmental control was formalized in the 1982 UN Law of the Sea over a 200-mile Exclusive Economic Zone. The 1982 agreement integrated other inter-governmental mechanisms, with states agreeing to “...as appropriate cooperate to establish subregional or regional fisheries Organizations.” These Regional Fisheries Management Organizations (RFMO) have management powers to set catch and fishing effort limits, technical measures, and control obligations. Today there are over 17. They focus on management of either a highly migratory fish species or fish stocks within a geographic area. Today some are taking an ecosystem geographic approach that moves beyond a fish focus. They have some form of scientific committees and other stakeholder participation but remain under government control.^{4,5}

Unsustainable practices continue. PEW Trust explains that RFMOs “...have failed to prevent overfishing and maintain healthy fish stocks. Because many RFMOs were established when ocean resources were believed to be virtually unlimited, they often are not structured to limit fishing effectively. Members of RFMOs often lack the political will or clear incentives to decrease the number of vessels authorized to fish in a particular area, or to make decisions based on scientific advice that may constrain their national fishing or processing industries. Moreover, several RFMOs have very limited mandates that prevent them from considering and addressing the impacts of fishing on the marine ecosystem as a whole.”⁶

1.3 CHANGE PARADIGM 3: DIVERSE STAKEHOLDER STRATEGIES

Weaknesses in government approaches were a major factor in shifting to a new paradigm. The weaknesses were highlighted with the collapse of the Grand Banks fishery off the east coast of Canada in 1992. Up to then, there was modest engagement of other stakeholders, and the fishery was almost always under the control of government and intergovernmental organizations. Strategies led by other stakeholders — communities, industry, academia, NGOs, and combinations of them – began to emerge. After the fall of the Berlin Wall, such strategies in international issues became much more feasible as avenues for independent action opened.

Stakeholder organizations focus on particular issues and have particular roles in developing sustainable seafood. These roles include research, advocacy, marketing, certification, and harvesting/production; often one organization plays more than one role. For some, such as Greenpeace and WWF, seafood is a subset of broader global environmental concerns. Others are focused on particular species or geographies. Multi-stakeholder organizational approaches are also common. The Marine Stewardship Council, formed in 1998, is a well-known example.

The original focus on environmental concerns broadened towards the end of the 2010s to include social concerns of equity, labor and livelihoods. Slavery and the role of women are now important issues. Both environmental and livelihood concerns have made artisanal fishers, who produce about 40 percent of consumed seafood, an increased focus of action.

Some recent reports give a sense of progress and continuing challenges. The 2020 Global Seafoods Markets Strategy Evaluation Final Report for the Packard and Walton Family foundations described progress in work to influence North American-European-Japanese markets in support of sustainable seafood. It also noted that:

- **There's a need to move beyond those markets.**
- **Key challenges constrain substantial future progress on market transformation, including: (1) fragmented tools and initiatives; (2) fragmented industry leadership and ownership; (3) lack of accountability for results; (4) information gaps (e.g., traceability, ratings coverage, human rights and labor performance); (5) cost and business models issues; and (6) weak governance and enabling conditions.**
- **Some issues, such as climate change and plastics are not being sufficiently addressed.**

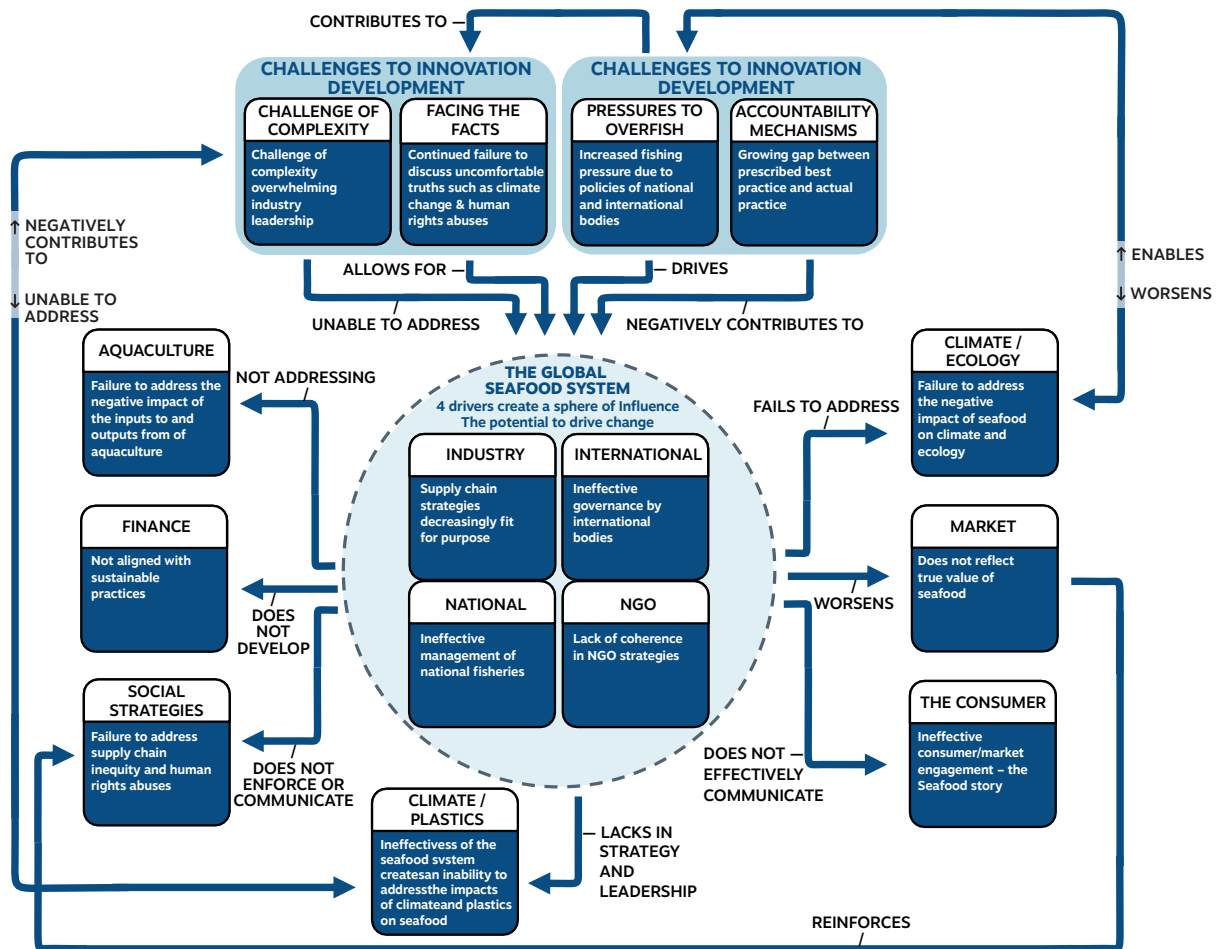
The Conservation Alliance for Seafood Solutions' Strategic Plan 2020-24 noted: "We must learn faster, partner more broadly, behave more efficiently, and focus more strategically than we have in the past."⁸ This led to founding the Global Hub that brings together stakeholders.

SeaBOS is a collaboration of major corporations representing over 10 percent of the world's seafood production. Its Progress Report 2017-22 on achievements on specific issues such as illegal, unreported and unregulated fishing and slavery includes describing challenges as "limited regulatory enforcement in many regions, and engagement with fishers with regards to solutions. A poor understanding of where risks are greatest and the factors that drive them has also limited action." (SeaBOS 2022)

These reports notably bring up organizing challenges as a common theme. They say, "we are agreed in general with the social and environmental outcomes. We know we have to address scale, complexity and time horizons. We must be experimental and try moving beyond our historic practices." They are ultimately suggesting that we have to think in terms of much bigger systems.

This sustainable seafood project also included an investigation into the current system. It created a Three Horizons process (see Futures Thinking in Project Activities) for engaging stakeholders to describe their view of the current sustainable seafood world. Figure 1 summarizes major components of their view. At the center are four types of organizational actors: industry, national governments, inter-governmental organizations and NGOs. Discussion centered on the current shortcomings, yet there are many positive activities that will be presented later. It provides a whole systems diagram of flow relationships with arrows indicating directionality.

FIGURE 1: The Current Global Seafood System



Seafood2030 Three Horizons - 19 May 2021

All of this input and other research may be summarized with five particular changes to the field of sustainable seafood, compared with 30 years ago:

1. **New issues** – The traditional environmental focus now includes plastics and climate change. Social issues such as fair labor, gender, supply chain equity, small scale and artisanal fishers’ livelihood are also now recognized as part of “sustainability.” Traditional tools within the seafood system were not designed for tackling these issues.
2. **Huge growth in the number of initiatives** – The sustainable seafood movement has grown significantly, causing overwhelming complexity. The many thousands of initiatives, including those within national economic zones, generate complexity, conflicts and confusion.
3. **Rise of polycrisis** – Sustainable seafood is one of a set of massive polycrisis that require increasingly urgent action as biodiversity and the broad natural environment speed towards collapse and social-economic discord and injustice greatly limit the ability to respond effectively.
4. **New change infrastructure** – All the activity has produced much greater change capacity, such as with the Global Sustainable Seafood Initiative, Sea Pact, SeaBOS, and the Sustainable Seafood Coalition. Pre-competitive, collaborative business strategies are now an essential element in other industries’ successful efforts. As well, there are new entities like the Global Hub with the Conservation Alliance.
5. **Transformational knowledge expansion** – Thirty years ago knowledge about *how* to undertake transformation to address sustainability and capacity to do so were in early stages of development. The knowledge and capacity have grown significantly.

2. Transformation as a Specific Type of Change

Transition to sustainable seafood requires transformation. *Transformation* is defined in Table 1 in contrast to two other types of change. Each type requires distinct strategies and actions. “Incremental change” refers to change that results from doing more of the same, such as increasing efficiency using carbon fuels by simply reducing the “bads”. (Other people might use the word “incremental” differently, to simply mean some modest change in scale.) This type of change is firmly grounded in current technologies and strategies and is delivered through negotiations with suppliers, for example.

TABLE 1: Types of Change (Adapted from: Waddell 2011)

	Incremental	Reform	Transformation
Core Question	How can we do more of the same? Are we doing things right?	What rules shall we create? What structures and processes do we need?	How do I make sense of this? What is the purpose? How do we know what is best?
Purpose	To improve performance	To understand and change the system and its parts	To innovate and create previously unimagined possibilities
Power and Relationships	Confirms existing rules	Opens rules to revision	Opens issue to creation of new ways of thinking about power
Action Logic	Project implementation, widespread adoption	Piloting, enabling environment creation	Deep experimentation, inventing
Archetypical Actions	Copying, duplicating, mimicking	Changing policy, adjusting, adapting	Visioning, experimenting, inventing
Tools Logic	Negotiation logic	Mediation logic	Envisioning logic

Reform is a change to the rules and organizing of the current system, such as with policy reform to eliminate carbon fuel subsidies or extending regulations to a new fish species. This is characterized by pilot projects organized with proven historic principles and processes but reconfiguring them.

Transformation, on the other hand, is about doing something that has never been done before. For example, we’ve never had a zero-carbon emission society, as we’re now aiming for. **Transformation is characterized by new goals that require changes in power structures** – in the energy case, displacement of a whole range of technologies and phasing out carbon-fuel as a business. This change involves deep experimentation aligned to a new future vision. The experimentation is with new technologies, new mental models, new values, and new ways of organizing.

Transformation success requires action on two fronts. One focuses on technological and learning advances: greatly expanding and deepening innovation in things such as new business models and economic systems. A parallel need is for robust learning systems and dissemination of transformation experiments for widespread adoption. In seafood, this currently is illustrated with traceability.

The second transformation front is to transform the way sustainable seafood transformation work is organized. Section 5 of this report describes transformation from open seas to a period of the 1960s - 80s with government and intergovernmental organization approaches, followed by a multi-stakeholder era lasting through to today. This report arises from the belief that we need a similar scale of change in the approach today with development of a transformation system approach. The type of change associated with sustainable seafood work is *transformation*.

2.1 THREE TRANSFORMATION CHALLENGES

Transformation addresses three particular meta-challenges.

SCALE

Transformation requires engagement with large numbers of people, organizations and broad geography. Without scale, a change is simply an idiosyncrasy of marginal impact and usually snuffed out by the dominant system. In seafood this is demonstrated by the struggle of certified seafood to become the norm. How can transformation efforts engage the necessary breadth, depth and reach?

COMPLEXITY

The scale of transformation is also a driver of complexity. There are many initiatives in sustainable seafood, each with their own dynamic. Sustainable seafood issues are intertwined with no easily identifiable beginnings or endings (there is not a “root cause”); they have multiple pathways to solutions and numerous stakeholders with varying perspectives. Outcomes are emergent and dependent on the actions taken, and pathways are nonlinear and co-evolve. Thus outcomes are inherently unpredictable. How can impactful sustainable seafood efforts be developed in this operating environment?

TIME HORIZON

Transformation of a system like seafood is a long-term proposition. Substantial efforts can be traced back at least 50 years, and a “resolution” is still many years away. How can the transformation efforts themselves be sustained?

2.2 TRANSFORMATION SYSTEMS (T-SYSTEMS)

These questions have given rise to work with “transformation systems”. Just as health care systems have the goal of providing physical and mental health services and seafood systems aim to produce ocean products for consumption, so too there are transformation systems striving to achieve a transition to sustainability.

The sustainable seafood transformation system (T-system) comprises all those efforts in support of the goal of sustainable seafood production. This system currently exists, but it is very poorly organized. This is manifested by such things as initiatives putting sand into the gears of one another, confusing consumers and producers and creating unproductive competition between transformation efforts. Developing a powerful T-system for sustainable seafood requires shifting from organizing as individual initiatives, to developing powerful transformation systems where change initiatives work cohesively and fluidly. In developing powerful collaborative transformation systems, the key mental models and action shifts stem from an initiative, collaboration, network, and/or movement to include a T-system. This provides those working for one initiative the ability to develop synergies, alignment, and coherence with those working with other initiatives. The collective action of all becomes more powerful.

Well-functioning T-systems are not characterized by *coordination*, although they can make that much easier. Rather, the core dynamic is one of *coherence* supported by a T-system *consciousness*. Participants in the system develop a good awareness of other relevant initiatives in the system and organize action to increase their collaborative impact.

A T-system approach produces significant benefits to accelerate transitions. These include:

- Increasing collaborative impact of initiatives;
- Enhancing the impact of individual initiatives;
- More easily prioritizing investment;
- Addressing high leverage collaborative action points;
- Accelerating the learning-informed action agenda; and
- Improving cost-effectiveness of change efforts.

In other words, a T-system approach provides a great way to address the three core operating challenges of transformation: working at scale, maneuvering effectively in a highly complex system and maintaining action for the time horizon that transformation requires.

RECOMMENDATIONS

This report is about two paradigm shifts. One is from the non-sustainable seafood practices of today, to a sustainable seafood world. The other is about paradigm shifts in the *how* to make that world a reality. While understanding the goal is the paradigm shift to a sustainable seafood world, this report focuses on the second paradigm shift that is referred to as shifts in the **change paradigm**. The historical context describes three historic change paradigms for seafood and its sustainability. **Accelerating movement to a sustainable seafood world requires another shift in the change paradigm**. Indeed, it is arguable that without a shift in the change paradigm, a sustainable seafood world will NOT be realized because the current set of activities are simply not up to the task. The broadening scope of concerns and the recognition of polycrisis described earlier make the current activities (the current change paradigm) simply not fit for purpose.

To move to the new change paradigm, referred to as a **Transformation Systems Change Paradigm**, this investigation presents nine recommendations.

1. Support the Emerging Transformation System Change Paradigm

Sustainable seafood efforts are already shifting to a new change paradigm, illustrated with the approach of SeaBOS organizing corporations as “keystone actors” to address “issues”, the issue of traceability producing growing collective response, the Conservation Alliance for Seafood Solution’s focus on capacity in support of ongoing change, and the Global Hub as a network of all stakeholders. These are all organizing responses to the complexity, scale, and time horizon qualities of transformation to a sustainable seafood system.

Although the new change paradigm is emerging, inertia is a powerful force. “If it isn’t broken, don’t fix it” is a common saying that exemplifies this and perpetuates the status quo and historic strategies. Inertia on its own can easily lead over a cliff when the proverbial tipping point ends in collapse.

TABLE 2: Comparing the Current and Emerging Change Paradigms

Dimension	Current Multistakeholder Paradigm	Emerging Transformation System Paradigm
1. <i>Vision</i>	Sustainable (fish) species	Healthy economic-socio-environmental systems
2. <i>Organizing Framework</i>	Multistakeholder action	Issue system action
3. <i>Dynamic</i>	Reactive, firefighting	Co-designing pathways around Issues
4. <i>Tactics</i>	Pressure politics	Principles led
5. <i>Metrics Focus</i>	Geographies, species, sub-systems	Whole systems
6. <i>Unit of Action</i>	Projects, initiatives, organizations, networks	Transformation systems

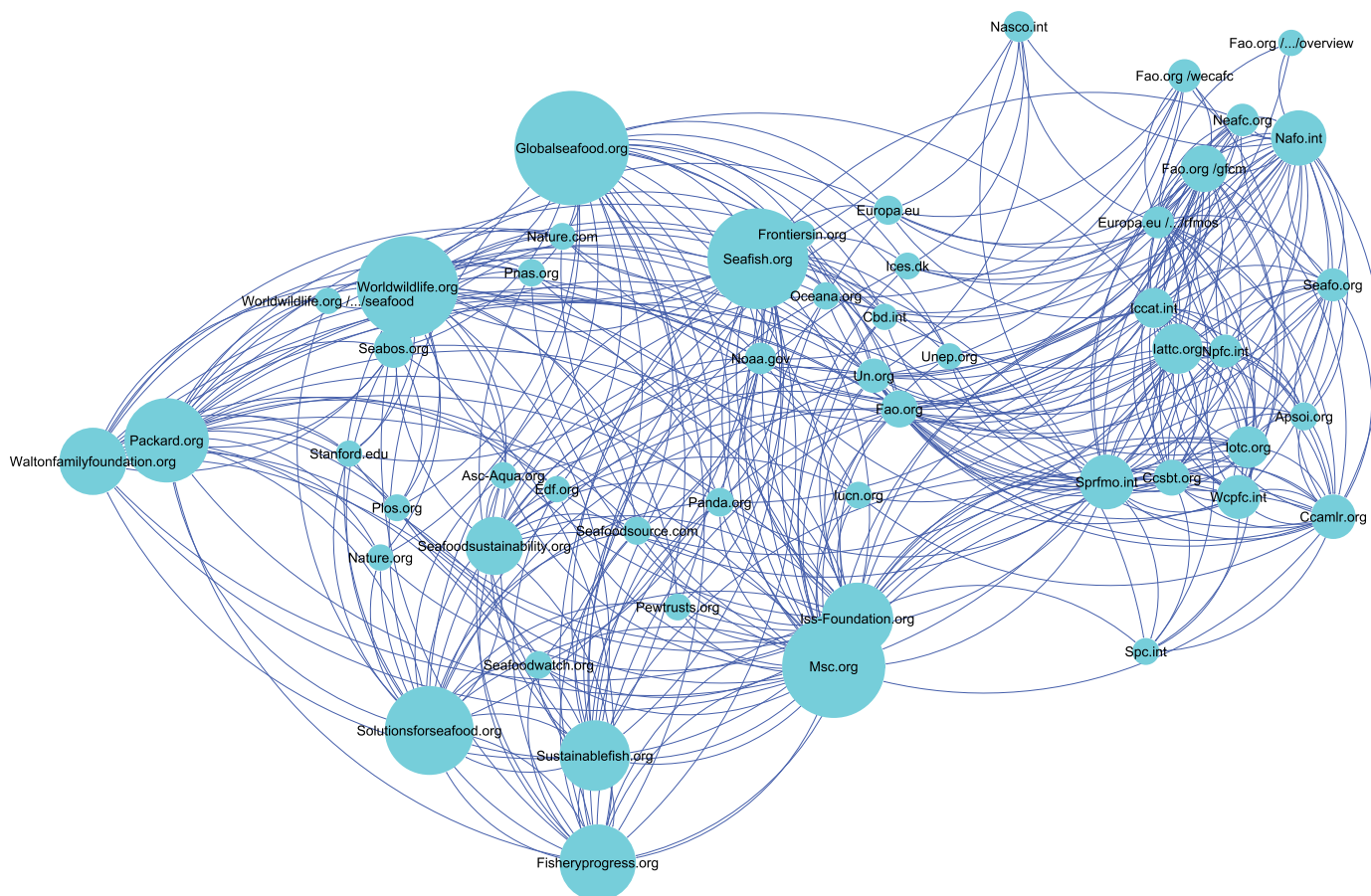
Development of new eras in a traditional organic strategy takes much time, but today’s polycrisis require urgency. Current transformation knowledge suggests ways to greatly accelerate the transition. Naming a new sustainable seafood era is a powerful action if stakeholders can identify and work with it. Disrupting inertia is critical. That is best done with relatively simple core concepts that can be easily applied in diverse circumstances, which this report aims to define. Working with “whole systems” is a cornerstone.

Table 2 distinguishes between the dominant multistakeholder change paradigm and the emerging transformation system change paradigm in six ways.

- 1. Vision:** The third seafood change paradigm, the multistakeholder change paradigm, like seafood markets themselves, is organized around concerns about species or fisheries. The new change paradigm has a much broader focus around economic-social-environmental systems. This has arisen with the broadening of issues like labor and plastics and realization of the fundamental connectiveness of diverse concerns.
- 2. Organizing Framework:** Diverse interests mobilized to take multistakeholder action as governments' regulatory approaches of the preceding change paradigm proved insufficient to address precipitous decline in species. The species focus is growing into ecosystems of action that are increasingly being connected to form much larger collective action undertakings, such as the issues identified by SeaBOS and described in Recommendation 4.
- 3. Dynamic:** Historically action grew out of problems as they arose. There was not a broad, long-term vision other than some very vague concept of sustainability, and even that was framed largely around species/fisheries. This is shifting to dialogues to identify cross-cutting issues, like supply chain equity, that are provoking an understanding of key elements to support a long-term vision and pathways to develop that future.
- 4. Tactics:** The multistakeholder change paradigm is one where everyone gets into the fray to take a stand about what is right and feasible. Reputational costs and pressure campaigns are the stick, and efforts to get higher prices with market differentiation are the carrot. These were treated more as win-lose battles than as challenging dilemmas (Recommendation 5) in the emerging paradigm. The transformation system approach is design driven with a more deeply articulated direction, guided by operating principles (Recommendation 6) to get there.
- 5. Metrics:** Evaluation of sustainable seafood performance has focused on the health of species and the ability of change initiatives to meet their objectives. The emerging change paradigm is including and transcending that, with a systemic understanding of the relationships between the parts and learning for on-going evolution of the collective change efforts' effectiveness. Assessments shift to learning about how to create whole system coherence with synergies and the ability to address shared issues and challenges that go beyond the ability of initiatives.
- 6. Unit of Action:** Sustainable seafood activity is organized around projects, initiatives, organizations, collaborations, and networks. These have been steadily expanding in scale, with the underlying need to take action as a transformation system.

Figure 2 is a visual representation of the transformation system for sustainable seafood. The map is created by software that identifies hyperlinks in one website that points to another website. The nodes are websites and their size reflects the number of their hyperlinks. Lines between them indicate hyperlinks. This mapping identified over 4,000 sites, and only a few of these are on this map. Of course, the map is a snapshot in time. Another map with a much larger number of nodes is in Attachment 2.

FIGURE 2: A Webcrawl Map of the Transformation System for Sustainable Seafood



Although the map is one of virtual reality and dependent on the quality of websites, it is a useful way of *seeing* the transformation system for sustainable seafood. It shows on the right the Regional Fisheries Management Organizations (RFMOs) as one key component. The Packard and Walton Family foundations are on the left supporting a set of initiatives. Some intergovernmental organizations are in between. The Global Seafood Alliance, the Conservation Alliance for Sustainable Seafood and its associated Global Hub (solutionsforseafood.org), Seafish, WWF, MSC, Fishery Progress, Seafish and others on the map have distinct reasons for their size on the map. The map aims to demonstrate that although the scale and complexity of the system is usually overwhelming, tools exist, and more are emerging to address those challenges.

The map – and others with different visualization approaches – are great tools for looking at the totality of sustainable seafood efforts in support of the new change paradigms development, such as design of pathways towards a much more clearly defined vision. They also help illustrate some clear problems, such as the need to develop a *global* sustainable seafood transformation system whereas the current one is basically a Western system.

2. Use Vision and Principles as the Collaborative Foundation

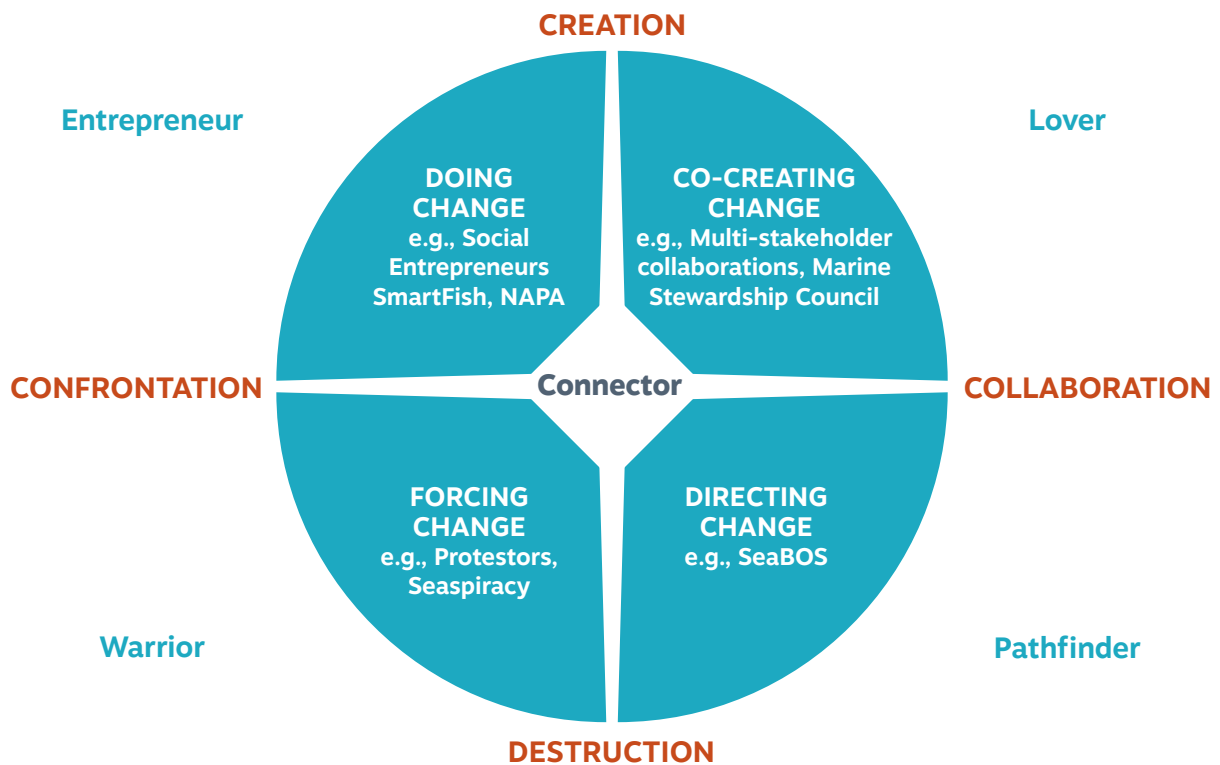
There are many pathways to the future, and those working for sustainable seafood can easily get divided over intermediate goals and the strategy to get there. Transformation *requires* a wide range of intermediate goals and strategies. A shared sense of direction is the basis for developing collaborative energy for accelerating a transformation.

The need for this sense of collaborative direction (and a way to develop it) is exemplified by debilitating debates that arise over four strategies, depicted in Figure 3:

- Multi-stakeholder collaboration co-creating change;
- Entrepreneurs creating examples of the desired future;
- Warriors mobilizing energy and pressure for change; and
- Pathfinders working from the inside of traditional organizations to transform them.

These strategies are all necessary and interact to support one another. For example, warriors create pressure that helps move and create support for other strategies. Entrepreneurs create examples that help demonstrate for traditional organizations new ways forward. This diagram includes the role of a “Connector”. This is a new organizing approach to help create collaboration amongst the diverse strategies. As multi-stakeholder approaches innovated co-organizing tactics in the 1990s, co-organizing across a transformation field of strategies needs developing in the current era. In fact, it is already emerging as “transformation catalysts”, which connect, cohere, and amplify the transformational efforts.

FIGURE 3: Strategies in Support of Sustainable Seafood

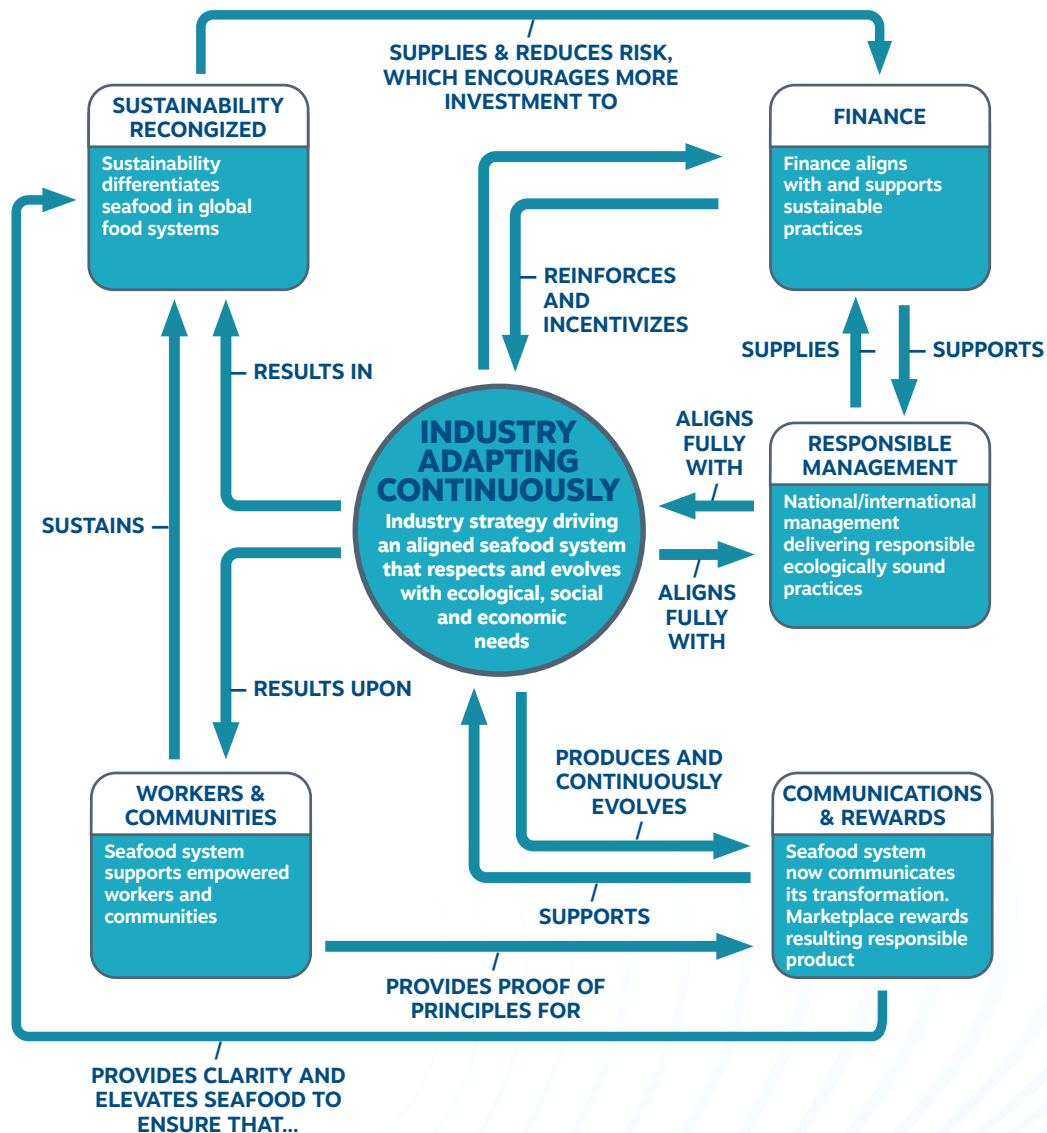


People who perceive important strategic and cultural differences are often surprised to find they can collaboratively identify a visionary future that they share. The Sustainable Development Goals are organized around a visionary future of “sustainability” and what it looks like. They are the product of the first stakeholder-engaged visioning process adopted by nations globally. The goals themselves integrate some controversial issues, such as Goal 8’s promotion of economic growth. Problems arise when Goals are approached as being unquestionable and permanent. When differences in Goals arise such as the controversy of “economic growth” in SDG 8, they should be made the subject of investigation through action. They can become points of on-going discussion and investigation for longer-term “resolution” and action within a broad shared vision. Generative and highly innovative action can produce results that transcend parties’ differences and inherent limitations/obstacles within these goals.

Another example of such vision development is with the Global Alliance for the Future of Food, which is arguably developing a transformation system strategy. Alliance work with Michael Quinn-Patton and Blue Marble Evaluation brought out the importance of describing a vision as a set of “guiding principles” to identify projects and assess them. These were summarized as resilient, equitable, diverse, healthy, inclusive, and interconnected. As Quinn-Patton points out, visionary principles are also critical for evaluation.

A traditional issue with shared vision and principles is that their development is associated with laborious processes that are both time consuming and expensive. Moreover, the product often seems little more than nice words and leaves most people unclear about what to do with it. This sustainable seafood project included a look at the sustainable seafood vision through an innovative approach in its “Three Horizons” work (see Project Activities – Future Thinking). A couple of dozen sustainable seafood participants described the visionary future presented in Figure 4. The boxes describe particularly important elements of the system that contrast with today’s system. The relationship between the boxes is depicted in arrows. The circle captures the core changed dynamic: **Industry is adapting continuously in support of ecological, social and economic needs.** This contrasts with the description of the current state of affairs that participants described as being out of alignment with these needs. There are five components identified in this vision.

FIGURE 4: An Envisioned Sustainable Seafood System



This vision was developed virtually, with a modest number of people who were invited based on their collective variety. This is held to be *one* vision of the future for the whole sustainable seafood system, using a light process that can be repeated with others as the need for collaborative action develops. The vision is not held to be “permanent”, but always evolving. It is not held as something that everyone is supposed to buy into, but as something of a starting point. This evolving vision can be developed around subset issues in sustainable seafood and for different regions as the value of collaborative action is identified for issues and regions.

3. Act on the Sustainable Seafood Transition as Dilemma Resolution

Intentional transformation must deal with a very basic dilemma: how to change the system while maintaining production. Commercial organizations like Polaroid have disappeared when they failed to adapt to changing technologies; others, like Google-Amazon-Microsoft-Apple-Meta (GAMAM) maintain their exploitive position through oligopolistic practices. Power-holding elites and inertia press to exploit a familiar system to produce as much as possible without sufficient regard for social well-being and the health of the natural environment. This dynamic is associated with collapses as varied as the 8th-9th century Mayan civilization, the French monarchy, and the American slave-holding South.

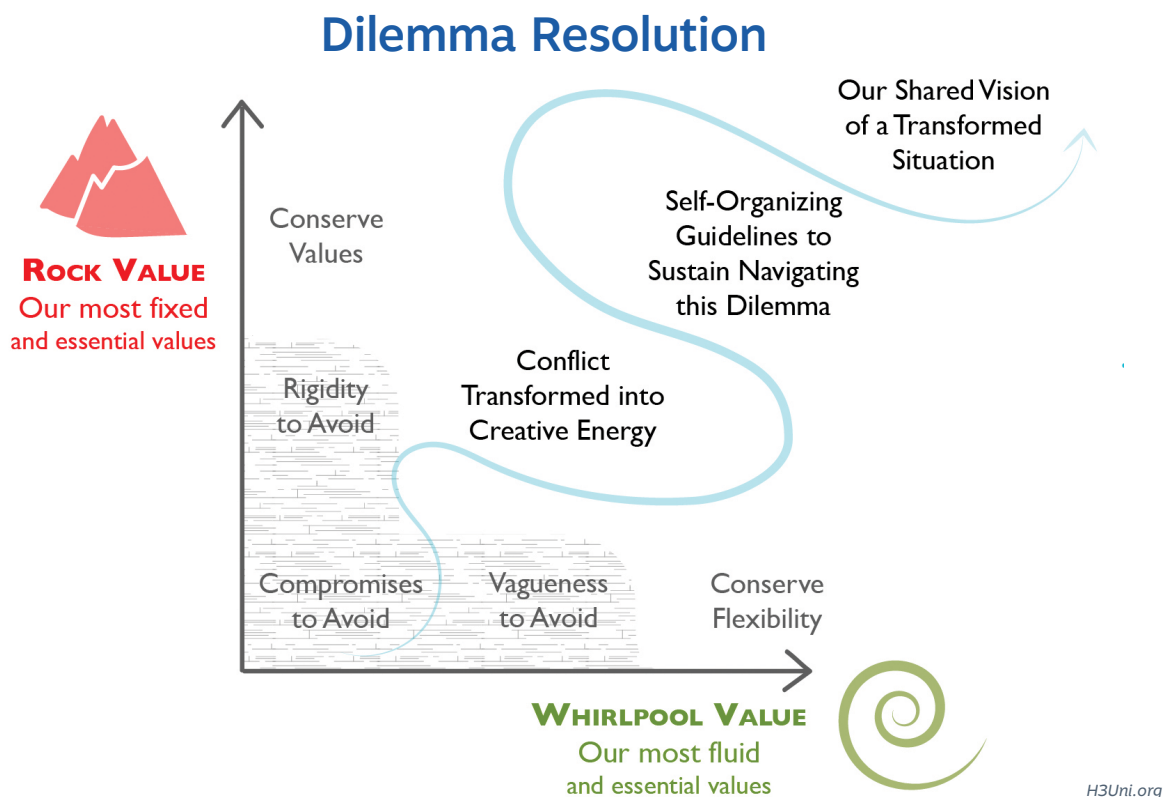
Stay-the-course in seafood is represented by seafood producers who continue with processes that are predictably leading to collapse. This was the story behind the collapse of the cod fishery off the east coast of Canada. While many saw the inevitable collapse, political and economic systems drove it over the edge, decimating the livelihoods of people and species for decades to come. Individuals and whole communities were ruined. The fishery is taking decades to recover.

Moving from the goal of seafood production to sustainable seafood production requires investing in new technologies, developing new organizational arrangements, and creating new capacities with purported, but unclear, benefit. Despite the declarations that everyone will benefit, there will be people who feel the loss of their personal wealth and way of life, while others will experience personal and professional gain as they shift values and work efforts. This is not to say that everyone has the same ability to change; artisanal fishers, for example, often have few options.

Figure 5 presents dilemmas with pressure to exploit the system as the vertical axis, and actions in support of transformation on the horizontal axis. The basic message when working with a dilemma is to create pathways that will avoid compromises while turning conflict into generative innovative action. This can be seen with the sustainable consumption strategy to have consumers pay a modestly higher price for sustainable seafood.



FIGURE 5: DILEMMA RESOLUTION PATHWAYS



The stance necessary to navigate the dilemma has been described as “stewardship”: (1) moving beyond compliance, (2) taking a systems perspective, (3) living with uncertainty, and (4) understanding humans as embedded elements of the biosphere.

Here are seven dilemmas facing sustainable seafood identified in discussion with seafood stakeholders. Several are relevant to the *Global Seafood Markets (GSM)* report.

SYSTEM LEVEL DILEMMAS

- 1. Traditional evaluation versus systems evaluation:** The system tends to evaluate success at the program/project level. This makes it difficult to know if the collective impact is driving toward the intended goal on issues like human rights. Another challenge is individual organizations can demonstrate success engaging companies or developing tools, but all of this “success” can result in multiple industry requests that are not aligned around a common outcome or goal. This drives increased complexity which becomes a barrier for companies trying to engage in sustainable practices. Taking a collective impact or systems approach to evaluating success will help industry identify where to invest in sustainability and will help the NGO community develop strategic collaborative alignment around the most effective drivers for a more responsible and sustainable seafood industry.

This shift in evaluation is critical as the system moves away from a “firefighting” approach – addressing the worst problems and concerns in fisheries, communities, and supply chains – to a more coherent and aligned “fire prevention” strategy to address more systemic challenges including supply chain equity, weak governance and fisheries management, and the impacts of climate change.

- 2. Weak innovation versus innovation as a sustainability driver:** The marketplace for sustainable innovation (certification, FIPs, buyer commitments, etc.) in seafood lacks a compelling value proposition or rationalizing force driving increased adoption of sustainable practices and market coherence.

This challenge, often couched as [Crossing the Chasm](#), is not unique to seafood. Sustainable seafood does have a compelling value proposition for innovators and early adopters in the industry, but not a compelling value proposition for the majority of the industry, which like other sectors, tend to adopt new innovation only when their mission critical business strategy is broken. Indicators of a broken mission-critical business strategy are pain points (loss of market share), emerging needs (regulatory compliance, risk management), or a clear ROI beyond their existing strategy. The system needs to focus more on innovation adoption and less on innovation development. This slow adoption rate results in lower returns for companies investing in sustainable practices, the need for increased resources to drive adoption, and continued exposure to risk and reduced assurance of supply for the sector.

Sphere of Control / High Leverage Issues

(types of issues: traceability, transparency and reporting, buyer commitments)

- 3. Weak Accountability versus Systems Accountability:** For a seafood company, the metrics for success in your existing market are clear: Are you selling more fish? Tracking sales allows a company to (1) *verify* how much product it has sold, and (2) provide data/feedback on what changes to make to increase sales and reduce costs. For the sustainable seafood system, accountability tends to focus more on verification of the uptake of tools like certification or Fishery Improvement Projects (FIPs) and less on learning/driving the uptake of sustainable practices. There are some newer accountability mechanisms in seafood like the [Ocean Disclosure Project](#) (transparency platform) or the [World Benchmarking Alliance](#) (benchmarking platform) that use open source, comparable data to not just verify practices, but also drive improvement.

These three dilemmas combined – lacking systems-level evaluation, ineffective innovation adoption/market rationalization, and ineffective accountability mechanisms – compound the problem of complexity in the marketplace.

- a. The system lacks appropriate evaluation to guide and focus investment in innovation development which leads to over-saturating the “market” with sustainability tools and programs*
- b. The industry lacks a real pain-point or platform/mechanism to drive adoption of the appropriate innovation – so the market remains over-saturated*
- c. The NGO community lacks effective accountability mechanisms to drive adoption of appropriate innovation.*

Developing an “accountability strategy” for the system would have significant value for rationalizing the system and increasing efficiency.

- 4. Reporting Narrative versus Business Value Narrative:** There is not a compelling narrative articulating the ROI for the adoption of traceability, transparency, commitments, and other supply-chain control efforts. The present narrative focuses on the reporting function (up the supply chain) of these efforts rather than the internal business value of a seafood company controlling its supply chain for assured supply and risk. This is true for artisanal fishers and industrial operations alike. The failure of the existing narrative to articulate the internal business value of this work greatly reduces the value proposition for adoption of traceability and, rightly or wrongly, reinforces an extractive model to seafood supply-chains with resources *and information* now being extracted. The present narrative also fails to help companies understand how traceability, transparency, reporting, and supply-chain control work together to maximize value back to the company and how this work fits with the broader ESG efforts.

Sphere of Influence / Medium Leverage

(types of issues: artisanal fishers, IUU, RFMOs, social issues and supply chain equity)

- 5. Tactical Approaches versus Strategic Coherence:** There has been a “tactical” transition from industrial fisheries to small-scale, non-industrial fisheries – adapting “industrial” tactics or tools (certification, FIPs, audits, commitments) and applying them to fisheries that lack the same governance, enforcement, and management mechanisms as their industrial counterparts. Unfortunately, there is a lack of strategic coherence guiding the application of these tactics. There are several efforts to create strategic coherence around specific tactics – FIPs or the alignment of industry asks on social issues – but the increasing number of organizations, efforts, and approaches moving into this space, without some strategic coherence, will likely drive increasing complexity around sustainability for producers and fishing communities. This does not imply a globally coordinated strategy is necessary, reducing complexity and strategic incoherence at the regional or fishery level will reduce barriers to the engagement of non-industrial fishers and increase the value/return to fishers, producers and communities. The [Global Tuna Alliance approach with RFMOs](#) or [SmartFish’s approach in Mexico](#) are examples of the ability to manage complexity at the regional or fishery level.
- 6. Formal Governance versus Deep Collaboration:** There is an overall governance challenge in the sustainable seafood system and it becomes particularly evident at the nexus of artisanal and non-industrial fisheries and work related to IUU, human rights, and supply chain equity. While there are increasing examples of more equitable supply chains, the remnants of an extractive resource model – where resources, value new information, are pulled to the end of the supply chain – still exist in global seafood supply chains. Stability at the producer/fisher level can reduce risk and increase reliability of supply.

Sphere of Interest / Low Leverage

(types of issues: climate, plastics, gender equality)

- 7. Narrow versus Broad Issue Innovation Development:** Tools, tactics, and strategies in sustainable seafood tend to focus on driving change in/through seafood supply chains. The system lacks innovation development models and design strategies that drive impact beyond supply-chains to address challenges like climate change, plastics and aspects of gender equality. The challenge is both developing new tools to increase the seafood industry’s influence outside their supply chains and designing new development and design strategies that reflect the increasing leadership role companies are playing in driving a more sustainable and responsible seafood industry.

4. Organize Around Issue Systems

Today there are few people who can hold the concept of a “sustainable seafood transformation system” as their focus for impact. Although the capacity for holding large, complex systems will grow, right now it is simply too big and complex. There is a noticeable trend, however, for people to organize increasingly large collaborations around issues like traceability and IUU. SeaBOS is organizing around seven challenges identified through industry-science dialogues.

These can provide key building blocks for developing a transformation system approach as the basis for pathways to a full-blown transformation system approach.

4.1 NINE POTENTIAL ISSUE SUBSYSTEMS

This investigation identified issues that are galvanizing interactions among sustainable seafood initiatives, have a specific need for a systems approach, and appear to be significant topics that must be addressed to realize sustainability. The following are presented as an initial draft of issues that must be addressed to realize sustainability.

1. **Artisanal/Small-Scale Fisheries Management:** There is no standard definition for this type of fishing, although it is estimated to produce 40 percent of the consumed seafood and represents 90 percent of the industry's employment (FAO 2022). It implies a simple, individual (self-employed) or family type of enterprise (as opposed to an industrial company). Traditional marketplace tools do not always fit appropriately to this type of management and the Sustainable Seafood System is challenged to develop governance models that create equity in strategic development and decision-making. Given that it is linked to addressing poverty, the Food and Agriculture Organization is involved. However, the field is still quite poorly organized.
2. **IUU Fishing:** Illegal, Unreported, and Unregulated (IUU) fishing includes all fishing that breaks fisheries laws or occurs outside the reach of fisheries laws and regulations. An important part of IUU fishing is illegal fishing, which usually refers to fishing without a license, fishing in a closed area, fishing with prohibited gear, fishing over a quota, or the fishing of prohibited species. The Sustainable Seafood System has worked to foster coherence in the implementation and investment in technology solutions, governments, and civil society efforts.
3. **Traceability:** Traceability is considered a necessary foundation for sustainable fisheries and practices. Along with addressing the technological, cultural and behavioral challenges related to the implementation of traceability, the interoperability of traceability methods and programs has become one of the key challenges in developing more traceable supply chains in the Sustainable Seafood System. This is already a relatively well-organized subsystem. The Global Dialogue on Seafood Traceability is leading standard development.
4. **Plastics:** These are a growing concern for the seafood industry with little support from the traditional NGO market campaigns working in seafood. The Sustainable Seafood System must understand the very complex challenge posed by plastics pollution before it begins to develop new solutions, tools, and transformation strategies.
5. **Climate Change:** Climate change is an issue that has a significant impact on fisheries and seafood production. At the same time, seafood is one of the most "climate-friendly" forms of protein production. This issue is focused on climate's impact on seafood (not seafood's impact on climate). Similar to plastics, climate change is an issue where the Sustainable Seafood System should focus on developing innovative ways for the industry and related stakeholders to have their voice heard in policy, government, and at an international level for addressing climate change.
6. **Fair Labor:** Slavery, forced labor, and unfair labor practices are present in seafood supply chains with significant impacts on workers and communities and are one of the leading drivers of negative images and opinions of the seafood industry. Cultural challenges, economic drivers, poor enforcement, and practices like recruitment that lie outside of the seafood industry's sphere of influence all make labor a difficult issue for the industry to address.
7. **Regional Fisheries Management Organizations (RFMOs):** The governance of RFMOs is such that traditional tools or approaches to impacting sustainable practices, like Fisheries Improvement Projects (FIPs) were difficult to apply. The Sustainable Seafood System is also challenged to send consistent messages to industry about how to address issues related to RFMO management.
8. **Japan/Spain:** Japan and Spain represent two important fishing countries and markets for seafood and both possess influence on fisheries management and governance. They are also two countries that have not engaged with sustainable practices or marketplace tools in a manner like most other countries with industrialized fisheries and large seafood markets (North America and EU). The challenge for the Sustainable Seafood System is similar to that with RFMOs – how to juggle the challenges of developing new innovation or adapting existing tools and strategies to these industries and marketplaces while driving change at a pace and scale that keeps these countries in line with the efforts of other national and international efforts.

9. **Commitments/ESG:** The Seafood Industry has been implementing commitments to sustainability and developing ESG efforts to improve the responsible management of supply chains along with corporate governance. While buyer commitments are an issue that the “seafood system” should have significant leverage over, accountability around implementation of commitments and producer-appropriate design of commitment language seems to be impeding the impact of this tool.

4.2 ISSUES BY SPHERE OF INFLUENCE

The issues are very diverse. When considering factors that are particularly important in developing transformation strategy, the concept of “spheres of influence” came to the fore. Borrowed from its use in the evaluation methodology of Outcome Mapping (IDRC 2010; Outcome Mapping Learning Community n.d.), the issues are grouped into three spheres:

- **SPHERE OF CONTROL:** This is where the seafood industry has great influence over an issue. In this case, it includes issues of IUU, fisheries management, on-vessel social practices, traceability and RFMOs.
- **SPHERE OF INFLUENCE:** This is where the seafood industry has influence, but there are other stakeholders who also have great influence. Labor and engaging artisanal fishers fall into this sphere and non-US/EU market issues.
- **SPHERE OF INTEREST:** Some issues influence the seafood industry, but it is not actively working on the issue and/or other stakeholders have dominant influence. This includes climate, plastics, and equity.

Each of these spheres requires a different strategy. In the sphere of control, a tight, sustainable seafood community-focused management strategy can be evolved. In the spheres of influence, a broader stakeholder engagement strategy is appropriate, although sustainable seafood initiatives have critical stakeholder organizing leadership. In spheres of interest, the sustainable seafood community can have an important role, but it involves stakeholders participating in processes led by other stakeholders.

4.3 ISSUE SUBSYSTEMS AS “FRACTALS”

A fractal is a basic shape that is repeated within itself. It is a mathematical understanding that grew out of analyzing patterns in nature. With water systems at ever increasing scale, each of the following is a fractal of the other: a creek, a stream, a river, a watershed, an ocean and all comprising the global hydrology system. Ferns are also commonly used as examples of fractals, since they are built up from the same basic shape repeated over and over again at ever smaller scales. In the United States, each State can be considered fractals of the national government: they have their own constitutions, elected assemblies, leadership structure (President, Governors) and judicial systems. The Russian matryoshka dolls that fit inside each other are a type of fractal structure. Fractals are *recursive*: level B forms by referencing level A or vice versa.

The sustainable seafood transformation system as a whole has a dynamic pattern generated from successful work of all those initiatives that are working for seafood sustainability. There is a similar, “sub-transformation system” that exists around each of the issues with respect to all those initiatives that are working to address a specific issue. This is a “fractal” of the transformation system that will exhibit similar dynamics as the transformation system as a whole. Within each issue, there may be a similar sub-transformation system organizing in a specific geography. Of course, one initiative may be addressing more than one issue, and in more than one geography – and therefore active in more than one fractal.

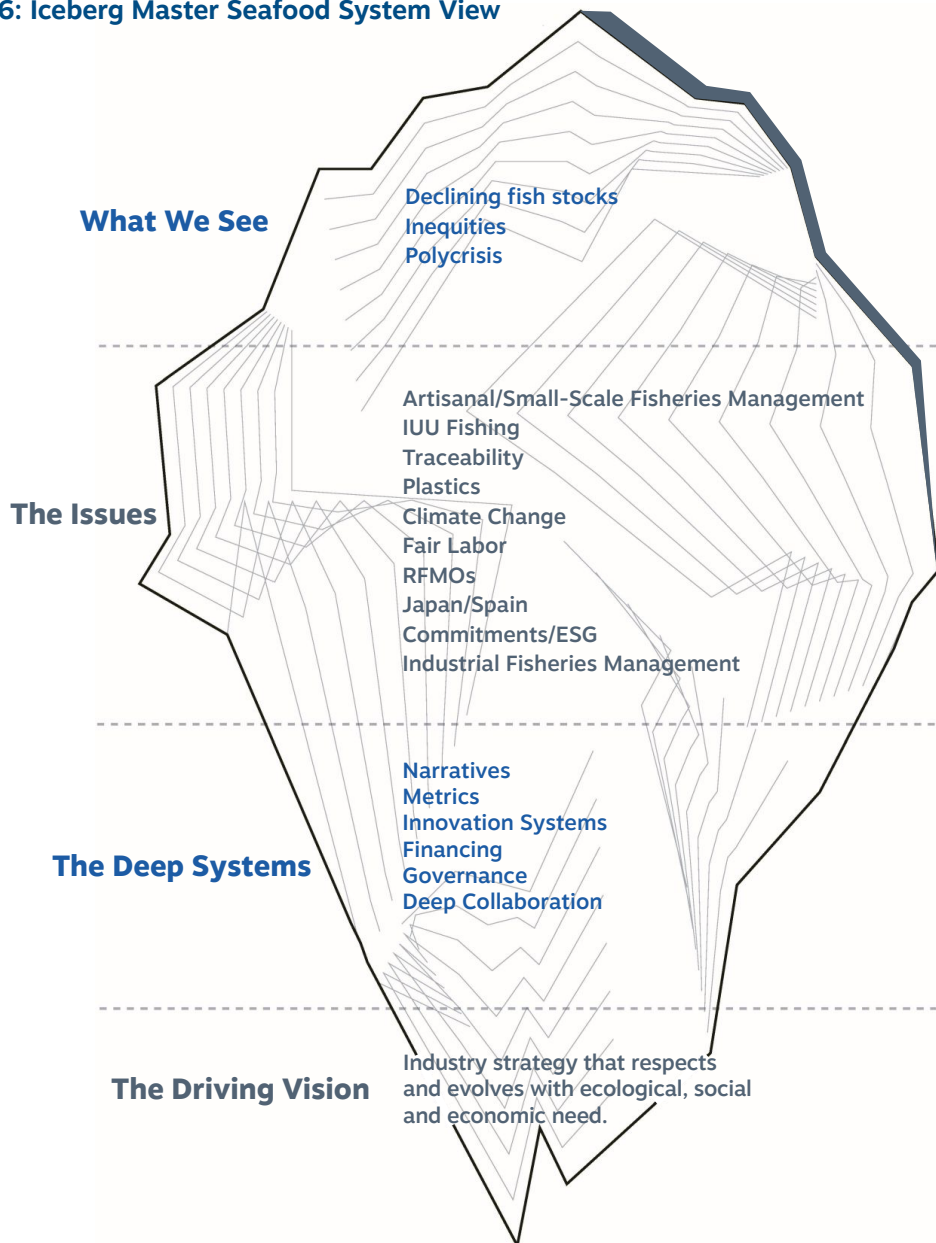
The concept of fractal is critical to addressing scale. Since fractals contain the same pattern of guiding principles for organizing, they can interact easily. The core principles are connected to vision (Recommendation 2) and operating principles (Recommendation 6). Identifying and working with the same guiding principles in each subsystem is the basis for effectively working with the sustainable seafood transformation system.

The principles are not “forced” on initiatives. Rather, they are identified as shared properties that are arising with effective work. They have to be named and refined to guide action that will create a powerful whole system approach. For example, a few principles comprise the global hydrology system such as water runs downhill; water is the product of an evaporation cycle; vegetation along the banks is critical to avoid water erosion; and water will form pools in low points. Treating issues like a watershed subsystem of the planet’s hydrology system (the transformation system) literally allows for global scale.

5. Address Deep Systems Challenges

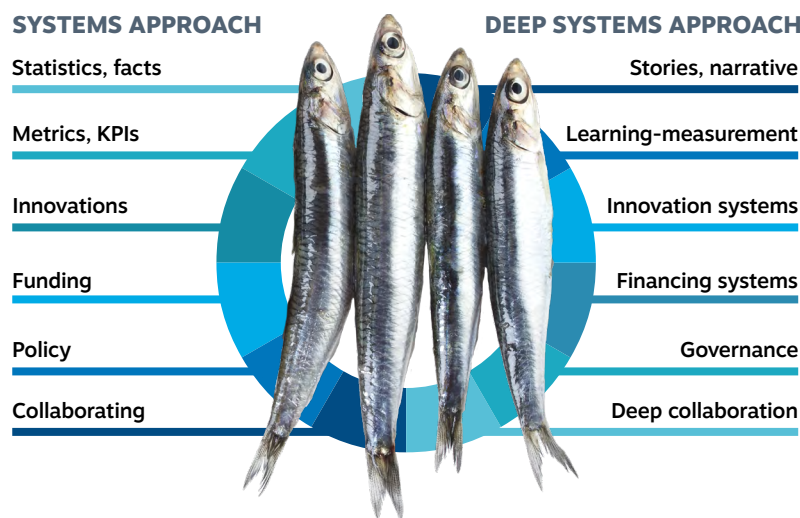
Action for sustainable seafood can usefully be categorized as focusing on two levels. One is the issues of Recommendation 4. The vast majority of initiatives are taking action on these, in one way or another. However, these actions have very substantial assumptions that can limit their effectiveness. For example, enormous effort is put into changing policies, with the assumption that the policy system is actually capable of both adopting and implementing the policies needed to realize sustainable seafood. Sometimes this is true; sometimes this is not.

FIGURE 6: Iceberg Master Seafood System View



Questioning these assumptions leads to the identification of the deep systems that hold the current unsustainable system in place. The concept of “deep systems” arose from asking dozens of transformation agents “what is holding your transformation efforts back from being even more successful?” This was followed by an initial definition of deep systems, working groups formed to address them, and review of recommendations of major reports such as the IPCC’s climate change assessments. Deep systems challenges are experienced across issues and initiatives. They require collaborative, transformation system strategies since changing them is well beyond the ability of any one initiative or organization. These are depicted in the Iceberg Model of Figure 6 as lying beneath the issues of Recommendation 4. They are factors in producing the issues. A generic set of deep systems challenges are present in most transformation efforts. These are summarized in Table 3 by comparing them to the common system challenges counterparts.

TABLE 3: Deep Systems Challenges to Transformation

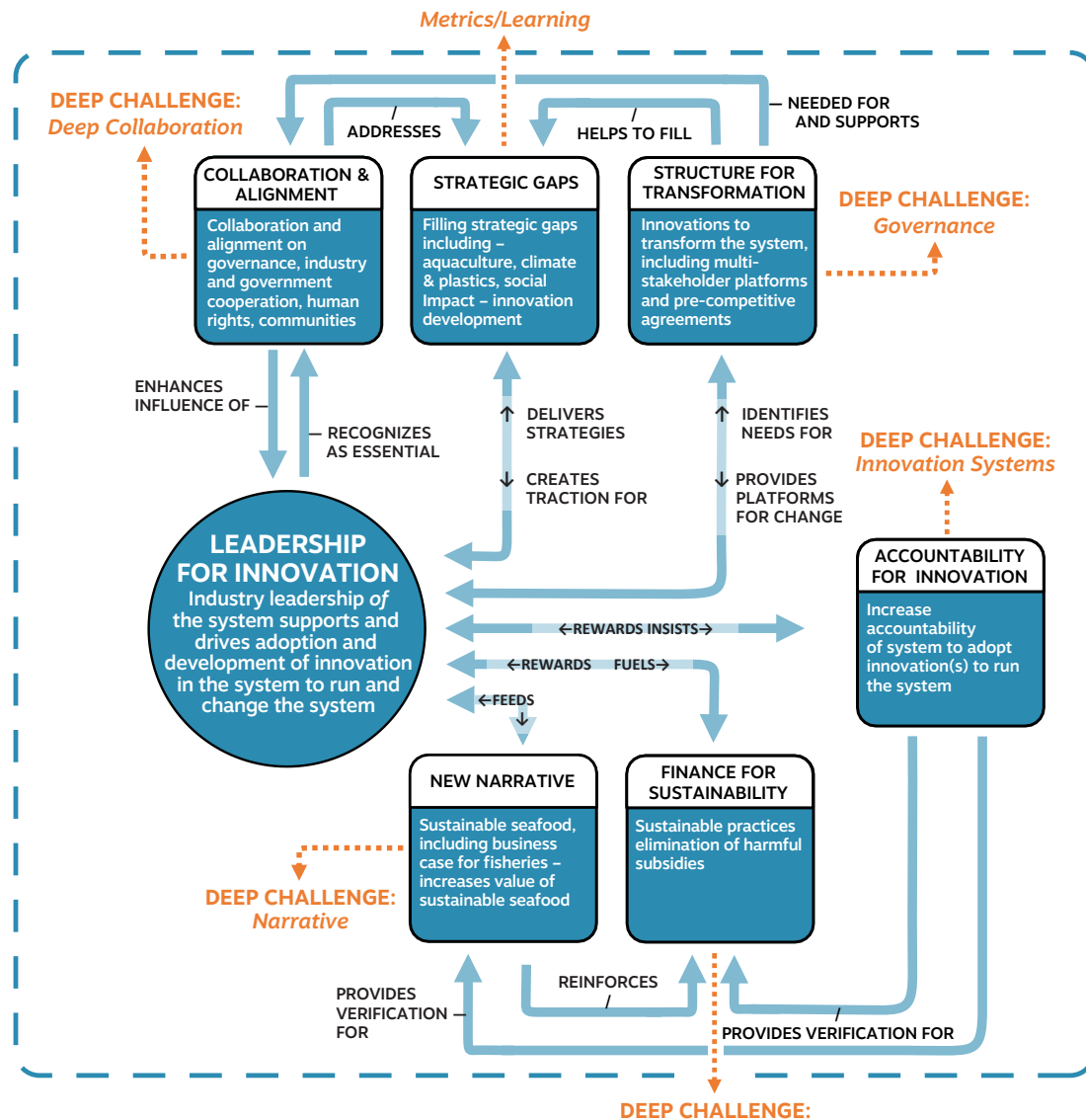


Here is a more detailed description:

- 1. STORIES AND ADVOCACY** to mobilize action for sustainable seafood tend to be statistically driven. Narratives that engage heart, mind and pocketbooks are required.
- 2. METRICS FOR PROGRESS** are usually project or species focused with an accountability and evaluation perspective. The complex interactions of change efforts require a transformation system focus with a learning perspective as described in Recommendation 5.
- 3. TECH FOCUSED INNOVATION** can often produce undesirable social and environmental impacts, such as electronic waste, division between haves and have-nots and social alienation. This raises the need for new types of innovation systems.
- 4. FUNDRAISING** is undertaken in support of action, with the focus usually on foundations, governments, and applicants placed in competitive relationships. Ecosystems for financing transformation are required to transcend the problematic dynamics and broaden the sources of funding.
- 5. POLICY CHANGE EFFORTS** are often thwarted by the governance systems of policy creation. Status quo interests often intervene to prevent policy change. This suggests the need to change the governance systems themselves. But the need for such change is not restricted to government – it extends to all organizations.
- 6. THE BASIC UNIT OF ACTION IS A PROJECT** such as the map in Recommendation 1 indicating there are significant networks and collaborations. But deep collaboration supporting processes for developing transformation system strategies is still very weak.

The investigation team was astonished to find how prominently these deep systems play in the Three Horizons analysis of the sustainable seafood system. That analysis was undertaken without the deep systems in mind. Only over a year later in workshops reviewing Horizon 2 was the deep alignment discovered between the key elements of H2 and the deep systems. In Figure 7 the deep systems are labeled in orange, next to the original H2 labels. Only the metrics/learning deep challenge was a difficult fit.

FIGURE 7: The Deep Systems Challenges for Seafood

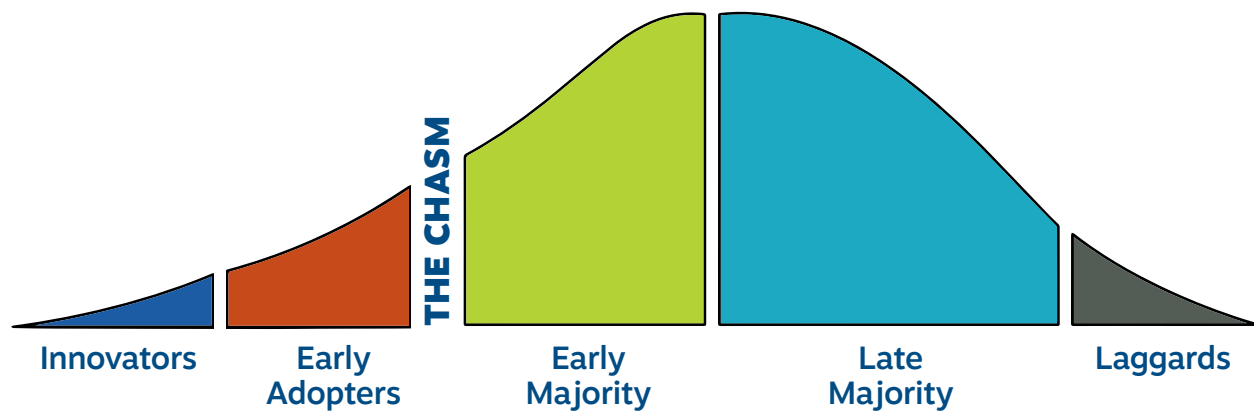


5.1 PRIORITIZE DEVELOPMENT OF INNOVATION SYSTEMS

Figure 7 illustrates that stakeholders identified development of “Leadership for Innovation” as a key activity. In systems thinking language its development is a high leverage point. Two models of innovation are particularly relevant to transformation. One is the “multi-level” model developed in the transitions field from a socio-technical systems perspective developed since the beginning of this millennium. It is associated with technological diffusion and transitions.⁹ This perspective describes innovations and pilots as creating very vulnerable “niches” in the dominant system – early sustainable seafood labeling is an example – because they cannot survive in the traditional operating environment. The core questions in this tradition are about how to move from this status to where the innovation becomes dominant and the traditional technologies fade out. This is referred to as the process of creating a new socio-technical “regime”. It is accompanied by various supportive activities, such as new policy environments, physical infrastructures and markets.

The second approach to innovation describes the movement from innovators to laggards. It is referred to as the innovation-adoption or simply innovation adoption curve. Although it was first formulated in the 1960s from a broad review of social-cultural innovations¹⁰, in the 1990s it became associated with technology innovation¹¹ and in the 2000s with disruptive innovation¹². This approach is associated with Figure 8. In this Figure, moving between the innovators and early adopters to adoption by the early majority is a particular challenge. This dynamic is playing out in sustainable seafood with a variety of innovations, such as those associated with traceability.

FIGURE 8: The Innovation Adoption Curve



The innovation adoption process comprises four strategies:

CONTINUOUS INNOVATION:

This is continuous improvement to the existing way of doing things, such as improvements to traditional vehicle's fuel efficiency. Many sustainable seafood actors engage in this type of innovation.

DISRUPTIVE INNOVATION:

These are almost always relatively small innovations that do not, at their time of launch, threaten the major players. For example, hard disk drives for personal computers did not displace IBM's mainframe computers. Rather, they opened a new market segment. This type of innovation was undertaken with the introduction of sustainable seafood labeling.

DISCONTINUOUS INNOVATION:

These are innovations that introduce an entirely new way of doing something and need the adopter / customer to fundamentally change their behavior to enjoy the benefits of the innovation. In this type of innovation, the chasm plays a particularly critical role. An example of a discontinuous innovation is the electric car. The adopter has to change the behavior to include planning where, how and when to recharge their vehicle. This is exemplified with the introduction of traceability into the sustainable seafood work.

TRANSFORMATIVE INNOVATION:

This is innovation which literally transforms – “changes the shape” – of the field. Sometimes they are a combination of the above categories, as the innovation develops across the curve. They challenge and change the underlying paradigm and all that is built upon it. An example is the displacement of horse-based transport, with mechanized transport. The change required a whole new range of infrastructure, including new types of roads and signage, as well as actual production of the vehicles. This type of innovation is being introduced by large collaborations, such as with SeaBOS. It is also the focus of the workshops and this project to create transformation system approaches that include a broad spectrum of sustainable seafood efforts.

How to develop the quality of the sustainable seafood transformation system as an innovation system is front and center for accelerating transformation.

6. Create a Systems Evaluation-as-Learning Framework

The complex, large-scale, long-term nature of transformation itself makes traditional evaluation approaches inadequate. When aiming for transformation goals like sustainability, using only traditional approaches actually undermines transformational work. They ask too narrow questions, focus on too short time frames, inadequately develop feedback systems, neglect systemic interactions, and give inadequate attention to developing individuals' awareness and relationships.

Traditional approaches should not be discarded. New tools, however, are required to shift attention to collaborative impact of sustainable seafood initiatives as a transformation system and to supplement the current focus on project outcomes and impacts on species. A trend towards ecosystem management in seafood supports this, but it requires expansion geographically and integration of issues beyond the traditional fish stock ones. These additional tools will help people “see” the transformation system and act based on the system's priorities.

Monitoring-Evaluation-Research/Reflection-Learning (MERL) are core activities to accelerate action and develop a powerful transformation system. A MERL approach to evaluation grows out of developmental and systemic evaluation. Table 4 contrasts MERL approach with a traditional approach.

One key element is a *narrative* baseline. This describes the evolution of the current sustainable seafood activities. It reveals mental models – assumptions and ideas that are held about the way the world works and which have a strong influence on holding back sustainability efforts. Three Horizons is one tool for doing this. (See Methodology.)

TABLE 4: Comparing Traditional Evaluation and Evaluation for Transformation

Traditional Evaluation	A MERL Approach to Evaluation
Project focused	System wide focus
Validity oriented	Principles oriented
Command & control driven	Complexity driven
Adapting and generalizing	Contextualizing

A second core element in transformation evaluation is principles, described in Recommendation 3. Rulebooks are useful for simple issues with certainty and predictability, but the complexity, novelty, scale, very limited predictability, and diversity of context associated with transformation make guiding principles much more appropriate. Principles are statements describing how people should act for moral reasons and/or to achieve a certain outcome or set of outcomes. Guiding principles express the shared values of a transformation system and provide a way to diagnose and assess strategic interventions that can help realize the vision. The assumption is that if the principles are consistently applied by those working towards transformation, this will increase the chance of success.

A second type of principle is needed for implementation actions. Quinn-Patton refers to these as Operating Principles. Both the Outcome and **Operating Principles** reflect values and should meet the GUIDE criteria:

- **GUIDING** – give direction, “do this” to be effective;
- **USEFUL** – for informing choices and decisions, pointing the way towards desired results, and for translating knowledge to action;

- **INSPIRING** – expressing ethical premises which make them meaningful;
- **DEVELOPMENTAL** – supports ongoing development and adaptation; is context-sensitive and adaptable to real-world dynamics, but also enduring, applicable over time, not time-bound, in an ever-changing world;
- **EVALUABLE** – documenting and judging whether it is actually being followed, and the results from the principle; it should be possible to determine if following the principles takes you where you want to go.¹³

Bounce Beyond has developed operating principles to address the three challenges of transformation: scale, complexity and time horizon. Their definition is the product of looking at many transformational efforts and the work of Bounce Beyond. Below is a list, and in Appendix B is a more detailed description.¹⁴

1. MAINTAIN A VALUES-DRIVEN CHANGE PROCESS – *The Long-Term Challenge*

1. Orienting to shared desired futures and principles
2. Generating participation and co-creativity
3. Including oneself, as well as the system

2. PROVIDE SYSTEM STEWARDSHIP – *The Scale Challenge*

1. Designing for audacious travel
2. Creating value for transformation system participants
3. Attending to the deep system challenges
4. Acting with humility
5. Engaging all transformation strategies

3. CREATE SYSTEMIC AWARENESS – *The Complexity Challenge*

1. Cultivating a whole transformation system approach
2. Designing for continuous learning and evolution
3. Acting cosmo-locally/globally

These principles should be treated as illustrative, rather than simply the right ones to adopt. Those in sustainable seafood should develop ones they feel are appropriate.

The third core element is that a MERL approach emphasizes the importance of creating a learning system. Traditional evaluation is usually focused on issues of accountability and achievement around pre-determined outputs and outcomes. Those foci are supported by MERL, but the major focus is on creating feedback loops to support adaptive pathways to address the complexity and novelty associated with transformation. The process supports individuals' internal development and ability for self-transformation with shifting mental models, behaviors and relationships; it also supports identifying and developing roles and capacities in a more traditional skills building approach. The skills may be ones that need "inventing" given transformation involves innovation.

7. Generate Systemic Action Benefits

The benefits of effective collaboration include more effective use of resources and more aligned action that accelerate achievement of a shared vision. The generic benefits are:

- **Creating synergies** (e.g., working across initiative boundaries to create actions where 1+1>2)
- **Addressing redundancies** (e.g., reducing duplications of effort)

- **Reducing conflicts** (e.g., working collaboratively rather than counter-productively or independently; agreeing upon a common set of measures rather than competing ones)
- **Taking collaborative actions vis-a-vis common challenges that require effort beyond the capacity of one initiative** (e.g., co-creating a collaborative evaluation system for the transformation system or co-developing needed innovations)
- **Identifying and addressing gaps in current efforts** (e.g., identifying the need to address the financing of transformation efforts or address financing transformation efforts)
- **Acting on shifting transformation system priorities** (e.g., reallocating funding from an issue whose funding continues through inertia, although the original issue has been addressed).

There are many processes for realizing these benefits through alignment, even with large systems like transformation systems. The first step is to create processes where people can get together to learn about how their initiative connects to other initiatives as part of a transformation system. This can produce discussion and action steps to develop the benefits of collaboration. This is a core activity of a transformation system approach.

The big elephant in the room in developing systemic benefits is the traditional reluctance of funders and financiers of change to collaborate among themselves. There is a wide range of ways for doing this (see the Financing Deep Systems Challenge). When they do not, the impact is to generate competition and undermine others' collaborative efforts.

8. Design Adaptive Pathways

“Designing” is often associated with “planning”. The differences between the two terms are explained by a blog quoting from The U.S. Army/Marine Corps Counterinsurgency Field Manual Paperback:

“Planning applies established procedures to solve a largely understood problem within an accepted framework. Design, however, inquires into the nature of a problem to conceive a framework for solving that problem. In general, planning is problem solving, while design is problem setting. Where planning focuses on generating a plan—a series of executable actions—design focuses on learning about the nature of an unfamiliar problem.”¹⁵

Designing emphasizes learning and experimentation as core processes in action taking. Academically, it is associated with action research. It describes the stance needed to accelerate transformation.

“Adaptive” in the biological sense is the change process of an organism or species to be suited to its changing environment. In this recommendation, it emphasizes the need for continual adjustment to action plans to integrate new learning. It is a critical quality of successful responses to transformation's quality of complexity.

“Pathways” are directions for multi-methodological/multi-strategy action based upon an understanding at a particular point in time. In transformation the term is appropriate because it provides for a broad set of actions and strategies (such as the four strategies described in Recommendation 2).

“Design adaptive pathways”, therefore, refers to the overall stance required to deal with the many unknowns associated with the scale, complexity and time horizon of transformation. Importantly, however, as those unknowns are significantly reduced a particular transformative activity or innovation, such as traceability technology, shifts to reform and incremental change as described in the Context section on Transformation. Rather than “deep experimentation”, the questions shift to creating the enabling environment, followed by wide-spread adoption.

The project investigated how to design adaptive pathways to sustainable seafood through the lens of six sets of activities Bounce Beyond has identified in transformation.¹⁶

8.1 SIX ACTIVITIES

To shift to a transformation system approach requires connecting, cohering and amplifying the work of sustainable seafood initiatives. These collectively create a flow of action steps. However, the place to begin depends upon the state of the system's development. The activities will overlap, such as with capacity development and undertaking action. As well, it may be necessary to return to a particular step if later steps reveal it was incomplete. Moreover, a specific activity is never "done" for good; it will always be returned to. Dynamics and participants in a system change and require updating. When action turns to a new subset, such as a narrow geography, new visioning is required.

FIGURE 9: Six Activities in Developing Transformation Systems



ACTIVITY 1: Seeing the Transformation System

To understand the system's boundaries, who is in the transformation system, their relationships, the systems structure, and its dynamics makes mapping an invaluable tool. One example of mapping – 18 useful methods have been identified by Bounce Beyond – is webcrawls, as in Figure 2. The mapping:

1. Allows participants to easily see themselves visually as part of the emerging field;
2. Provides deeper understanding of the dynamics and connections between participants in the field;
3. Develops a tentative "design" of the transformation (sub)system(s) necessary for the field's success;
4. Generates a basis for measuring progress in the field's development;
5. Provides an easy way for participants to connect to others with whom to collaborate, align activities, or share learnings; and
6. Allows for the identification of patterns within the system.

ACTIVITY 2: Sensemaking

With an initial definition of the transformation system and who is in it, participants are engaged in “sensemaking” to create an understanding of shared values and principles, goals, and shared interests within the transformation system. This activity can involve virtual and face-to-face events and convenings, using processes such as:

1. **Dialogues**
2. **Learning Journeys**
3. **Three Horizons**
4. **Synthesis Mapping**

These two connecting activities can help lay the foundational understandings and relationships for subsequent activities. They produce collective understandings reflected in this investigation with the Three Horizons process.

ACTIVITY 3: Designing Adaptive Pathways

Convenings – virtual and face-to-face exchanges – are organized to identify opportunities for powerful collaborations. These processes identify actions to generate Systemic Benefits described in and address Deep Systems Challenges described in Recommendation 7.

ACTIVITY 4: Enacting Adaptive Pathways

Activity 4 is referred to as “action” planning, because identifying priority actions is usually accompanied by modest projects and experiments among subsets of participants to explore the potential of collaborative action and get to know each other better. As they work, they gain “system awareness” and clarity about how to develop the whole T-systems transformative potential.

ACTIVITY 5: Co-creating Transformation Capacities

Transformation is about developing innovations, which requires developing capacities. These are developed in each of the activities, but there is a set of generic capacities that requires attention, in particular during the enacting of adaptive pathways. Rather than depending on traditional classroom approaches, communities of practice¹⁷ provide a much more appropriate approach.

ACTIVITY 6: Developing Transformation Infrastructure

Undertaking the five activities described above evolves a new set of relationships, capacities and behaviors. New patterns of interaction, when regular, will develop new structures. For example, communities of practice for the system develop. While they are still in their infancy, transformation catalysts are a new organizing approach to steward the development of these activities.¹⁸

8.2 DEVELOPMENT CYCLES

Development cycles present a useful way to transition to and sustain a transformation system approach. A system as large and complex as sustainable seafood cannot suddenly adopt the approach. Its adoption requires a gradual process of introduction and development. This can occur around specific issues and/or geographies and/or industries, such as IUU in tuna or artisanal fisheries in Central America.

Developing a transformation system approach in sustainable seafood is a very complex activity with significant risk when first attempted. Usually in experimental activities like development of transformation systems, three experiments is strategic. These can be considered “sub-transformation systems” of the whole sustainable seafood transformation system. This approach avoids idiosyncratic conclusions that can be reached with only one experiment, and the right-versus-wrong way to do something that is associated with two experiments. Three adds enough variety to produce relatively generic guidance and infrastructure to provide a sound experiential foundation for subsequent development of other sub-systems.

9. Commit to Learning

Transformation is fundamentally about learning to do things that have not been done before, as has already been noted. Maintaining momentum means persevering with the learning and its continual evolution.

One part of the learning is the business and oceans. These capacities complement some of the Deep Systems Challenges:

- **SYSTEM LEADERSHIP:** Developing capacities for system awareness, collaborative leadership, and other necessary skills.
- **NETWORK DEVELOPMENT:** Creating and sustaining connections within the T-system for systemic actions and exchanges.
- **METRICS:** Emerging holistic measures of T-system performance, evaluation, research, and learning.
- **CHANGE CAPACITY:** Familiarity with, and access to, a growing range of contextually appropriate change tools and methods that enhance transformational change potential.
- **COMMUNICATIONS:** Developing the ability to share information and create narratives within and beyond the T-system.
- **LEARNING ECOSYSTEM:** Evolving the ability to continually develop, share, and disseminate new knowledge and exchanges to enhance the long-term effectiveness of the system.
- **RESOURCING:** Creating a powerful ecosystem for financing T-system development and transformation itself.

The harder part of the learning is living with the ambiguity, paradox and dilemmas that are a part of the transformation process. These qualities can easily cause deep frustration, confusion and divisions. Creating processes for inter-personal dialogue and generative development to transcend differences with deep innovation is critical.

But the most difficult part of the learning is deeply personal. It requires unlearning, as much as learning. Perhaps the recent conversations around decolonization and the treatment of women are good examples where this type of learning is occurring. Assumptions that are so deep that they are not even recognized are challenged, and world views are changed. Mental models about the way the world works and our individual personal belief systems are all in transformation. Personal reflection, inter-personal exchanges and group processes to support the developmental journeys require attention. In the midst of the urgency, patience is also needed. Deep collaboration is core to everything. As the African proverb says: "If you want to go fast, go alone; if you want to go far, go together."

SUMMARY:

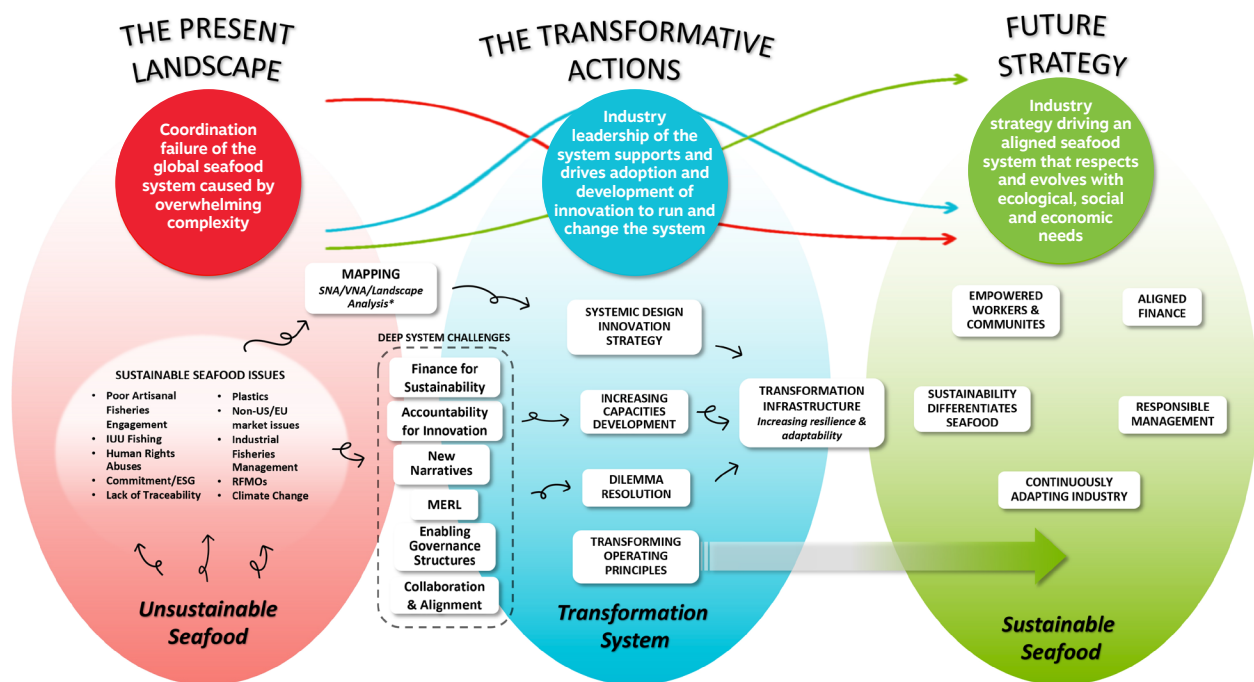
Visual Integration of the Recommendations

This list of recommendations about *how* to approach sustainable seafood from a whole systems perspective of transformation systems development (Recommendation 1) can be summarized in two diagrams. Like the webcrawl map of Recommendation 1, these are both ways to represent the transformation system for sustainable seafood. Bracketed numbers (#) refer to Recommendations.

Figure 10 is a Three Horizons (see Project Activities – Future Thinking) perspective with the circles being the summary statements defined by sustainable seafood participants. It presents the flow from the present landscape where complexity is overwhelming coordination abilities of the multistakeholder change paradigm, to the desired future defined as a continuously evolving industry that responds to ecological, social and economic need (2). At the heart of the present landscape are the issues of Recommendation 4.

Mapping the present landscape in various ways (8.1, Activity 1) is a key activity to develop the transformation system at the center connecting the two, which emphasizes innovation. Working with the six deep systems challenges (5) provides a firm foundation for successful development of the Transformation System. This includes MERL to provide critical evaluation and learning of which the operating principles are a key element and carry efforts into the future strategy (6). The issues of the present landscape are addressed by working on the deep systems, with an emphasis on the innovation strategy and the MERL operating principles to support movement to the desired future. Systemic Design (8) provides the innovation system development (5.1) and the transformation infrastructure (8.1, Activity 6). The success of the transformation activities requires addressing dilemmas (3) and capacities development (9). The squiggly arrows within the Transformation System are meant to imply that all of this activity will be associated with generation of systemic benefits for all stakeholders (6).

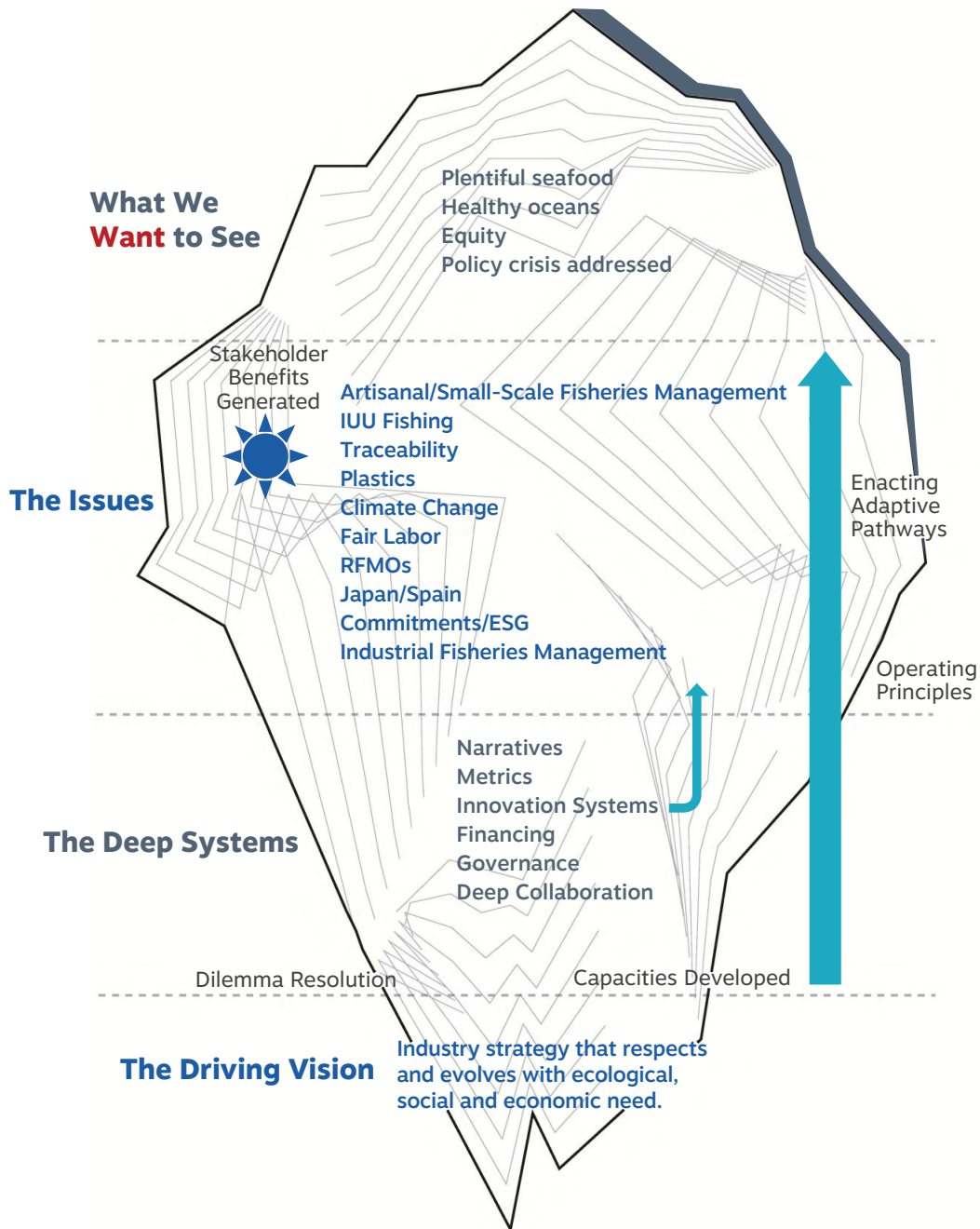
FIGURE 10: Integration of the Recommendations in a Three Horizons Framework



Another representation, less complete, returns to the iceberg model. Figure 11 as a whole can be considered a representation of the transformation system for sustainable seafood. It focuses on the Transformative Actions part of Figure 10 and is an elaboration of the earlier iceberg presentation of Figure 6 (5). In this case, the importance of the driving vision (2) is presented as the foundation to lead to what we WANT to see. Dilemma resolution (Recommendation 3) and capacity development (9) are foundational to address the issues and deep challenges. The activity is organized by designing and enacting adaptive pathways (Recommendation 8) that reflect operating principles (6). Of the deep systems challenges (5), development of innovation systems (5.1) and a transformation metric system (6) are priorities. These provide the basis for addressing the issues (4) to what we want to see. Acting in this way will produce stakeholder benefits (7).

More details about how this can be operationalized are presented in the next section.

FIGURE 11: The Recommendations Summarized in the Iceberg Model



APPLYING THE RECOMMENDATIONS:

An Illustrative Adaptive Pathway to Accelerate Sustainable Seafood Development

To assemble the recommendations more clearly into a concrete set of activities, the following approach is presented. Numbers in brackets refer to the Recommendation reflected in the action.

1. A Multi-Year Time Frame with Three Initiating Cycles

Developing a transformation system approach (1) to seafood will take several years, given its scale and complexity. A series of three repeating cycles is proposed, each containing fractals (4.3) of the total transformation system. This reflects the value of development cycles (8.2). The first cycle aims to generate lessons that can inform the development of a second, which in turn can both inform development of the remaining issues. This all provides for the MERL approach (6) to create learning cycles that build on one another to enhance the cost-effectiveness of investments, rather than simply trying to apply the recommendations across sustainable seafood all at once.

2. A Look At Year 1

Three issues (4.1) are proposed for the first cycle (8.2). The three issues selected to initiate the first cycle (8.2) should be chosen for their variety, to generate a wide range of insights and possibilities. Given the distinction between the three spheres of influence (4.2) for categorizing the issues, one issue in each sphere would make a good choice. Traceability, artisanal fishers and climate change could be selected. **Each is an issue sub-system fractal (4.3) of the sustainable seafood transformation system.**

3. Design and Activate Adaptive Pathways

Development cycles of six activities (8.1) provide the basis for designing adaptive pathways (8). A distinct pathway will be developed for each issue but exploring their interactions will be part of the development process. The pathway for each of the three issues, described in Figure 12, comprises the following:

3.1 MONTH 1: INITIATION: FORMING THE STEWARD AND INITIATING STAKEHOLDER TEAMS

A Steward Team who will lead implementation of the pathways will be identified. An additional Initiating Stakeholder Team of 4-5 people with the following characteristics will be formed:

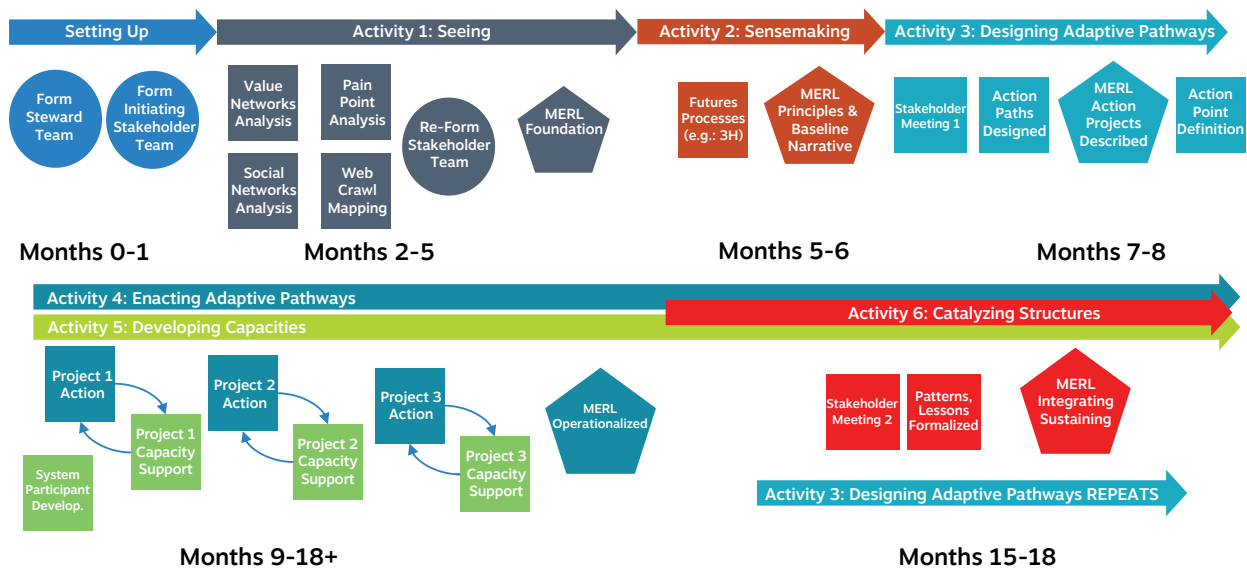
- They have passion for advancing the issue;
- They are well-connected and knowledgeable about the issue;
- They are seen positively and knowledgeable by others;
- They have some time to spend on the work.

3.2 MONTHS 2-5: SEEING: MAPPING

Four analyses will describe the current state of each issue:

1. **VALUE NETWORK ANALYSIS (VNA):** This produces maps of the issue in terms of *roles* (e.g., funder, convenor) and *exchanges* (e.g., money, participants) that are required to make a powerful transformation sub-system. These should be very similar for each issue. This requires website and document analysis, supplemented by a few interviews.

FIGURE 12: Pathways to Sustainable Seafood



- 2. SOCIAL NETWORK ANALYSIS (SNA):** This produces maps that illustrate who is connected to whom in each issue with both an initial list of participants in the issue transformation system and an understanding of gaps in connections. It also provides an interorganizational analysis, by tracking individual organization affiliations. This requires a survey and can generate an inter-active map for issue participants to continue to use to understand who is in their system, their expertise, what they are working on, and other characteristics.
- 3. PAIN POINT ANALYSIS:** This describes what the system participants experience as impediments to making their work even more successful. These are the key points to be addressed in the subsequent work, to co-generate value. This requires interviews and focus groups.
- 4. MENTAL MODEL AND BEHAVIORS ANALYSIS:** This describes how participants think about their work relationally and supportive/inhibiting behaviors. This information can be gathered through the Pain Point Analysis interviews and focus groups.

The SNA provides the basis for reassessing the Stakeholder Teams membership. Each will be increased to 8-10 to provide diverse perspectives. This work will also provide important input to MERL: They provide baseline snapshots at the beginning of the transformation system work to compare with future snapshots with the same analyses.

3.3 MONTHS 5-6: SENSE-MAKING: DESCRIBE FOUR HORIZONS AND OPERATING PRINCIPLES

To understand the historic narrative, another core component of MERL, a timeline of the major events associated with the issue will be developed through a survey. As well, a Three Horizons (Project Activities – Futures Thinking; Context; 1, 5) exercise will identify the current state of the issue system, the desired future (vision and principles of the desired future) and the current transformation system in terms of activities (existing, missing) to realize the vision. This will also produce an initial definition of Operating Principles participants see as necessary to reach their vision. All this can be done virtually through surveys and on-line meetings.

3.4 MONTHS 7-8: DESIGNING ADAPTIVE PATHWAYS: IDENTIFY ACTIONS TO ENHANCE SYSTEMIC ACTION AND ADDRESS DEEP SYSTEMS CHALLENGES

The first face to face stakeholder meeting of 20-30 people in the issue system over three days will identify ways to generate systemic benefits (7) from better collaboration and coherence. To do this they will also use the analyses conducted earlier. They will also discuss the Three Horizons description of their current issue transformation sub-system and Deep Systems (5), to identify priority issues for their whole sub-system and how to address them.

This work will include identifying actions to support development of MERL to accompany the other actions. Connections between the three issue sub-transformation systems and ways to create development of systemic benefits (7) will be identified

3.5 MONTHS 8-14+: AMPLIFYING: ENACTING ADAPTIVE PATHWAYS

Actions identified in the face-to-face meeting are implemented. It is best to focus on three priority actions, although more can be undertaken.

Implementation of MERL will generate new processes for issue system participants to gather and use data to support adjustments in actions and identifying lessons.

3.6 MONTHS 8-14+: DEVELOPING ACTION CAPACITIES

To implement the actions identified will require development of new capacities and expansion of existing ones (9). Rather than teaching these in a traditional class approach, they should be developed through communities of practice and action learning where learning is organized around work of the previous Amplifying action.

3.7 MONTHS 15-18: CATALYZING ISSUE STRUCTURES: CREATING ISSUE PATHWAY STRUCTURES

A second face-to-face meeting for each sub-system will be held. Experiences up to this point will have generated patterns of relationships to do the work, supported by the Steward and Stakeholder Teams. This will be the basis for identifying the longer-term organizing infrastructure necessary to further develop the issue transformation sub-systems.

The meeting will also design the next cycle of development for the individual issue sub-systems and how they will interact. This cycle can be expected to start with Designing Action Pathways, although the mapping and seeing will have to be periodically redone.

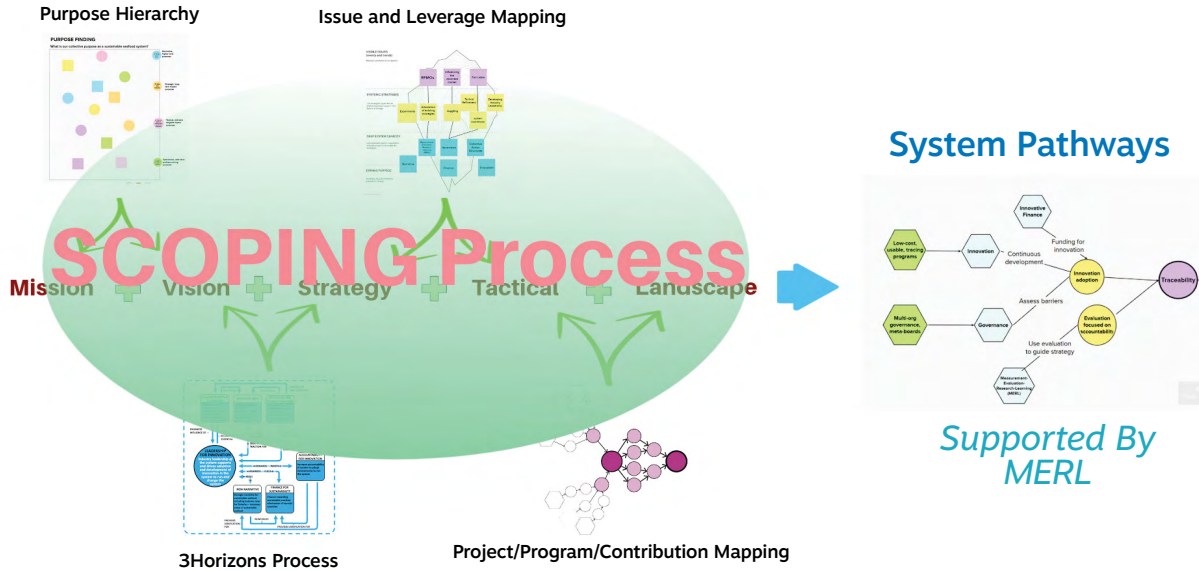
As well, the lessons arising will be synthesized to guide the next round of issues that will be addressed.

4. Additional Batches of Issue System Development

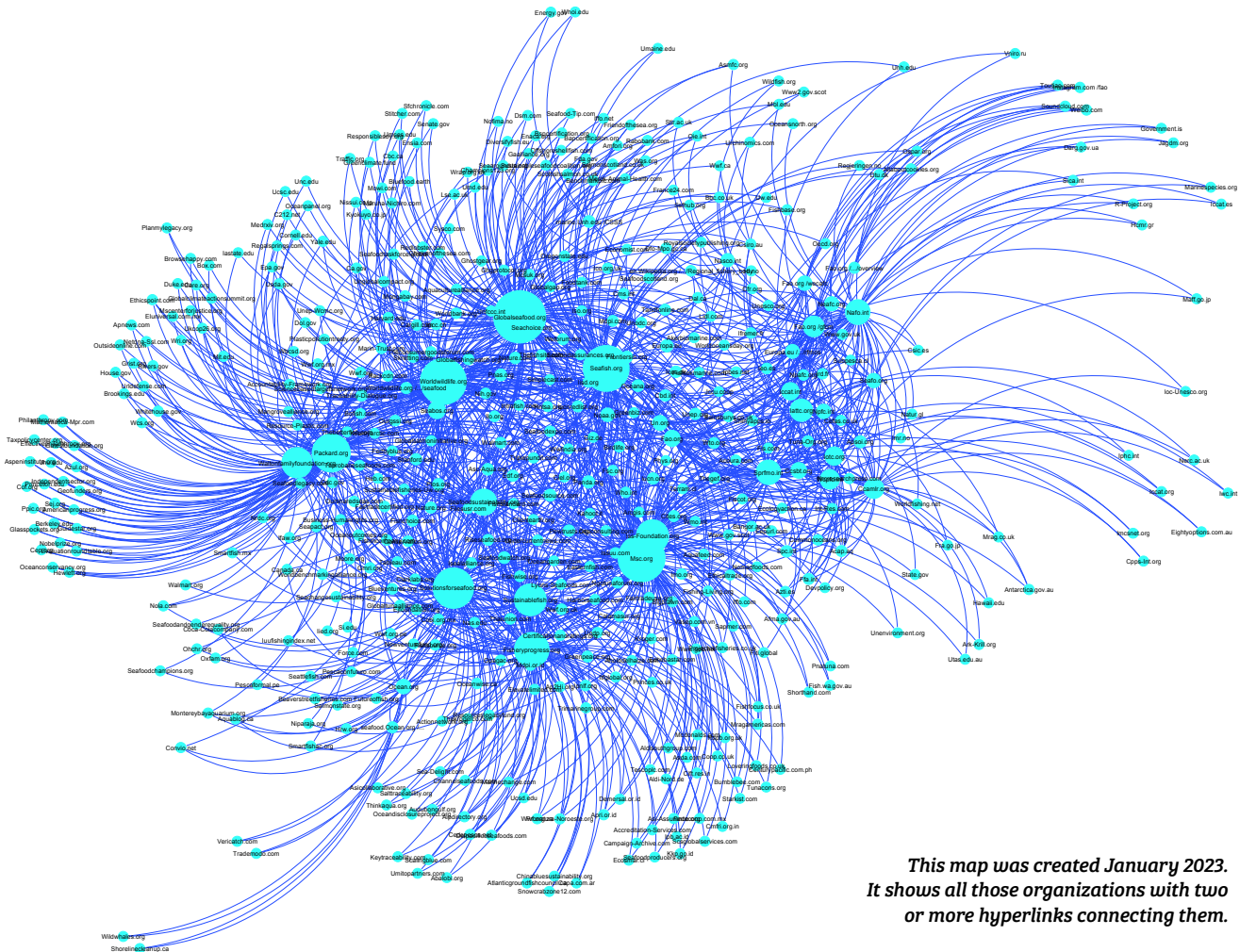
Two more rounds following the same process but redesigned to integrate the lessons from it will be developed. The choice of two rounds arises from the large number of issues – initiating the rest all at the same time would be very challenging. The time between their initiation should be determined based on experience, but initiating all of the sub-systems will likely take three years. At that point the subsystems and their interactions will form the whole transformation system for sustainable seafood. Additional issues may arise, as have social issues and climate recently, and require further issue sub-system development.

ATTACHMENT 1: Stakeholder Input into this Process

Stakeholder input into this process



ATTACHMENT 2: The Global Transformation System for Sustainable Seafood



This map was created January 2023. It shows all those organizations with two or more hyperlinks connecting them.

ENDNOTES

- 1 See for a great brief description: (Goodman 2016)
- 2 See: Systemic Design Association <https://systemic-design.org/>
- 3 (NEFMC 2022)
- 4 (European Commission 2022)
- 5 (Pentz and Klenk 2017)
- 6 (PEW Charitable Trust 2022)
- 7 (Ross Strategic, Global Impact Advisors, and EON Impact Consulting 2020)
- 8 Blasiak, Robert, Alice Dauriach, Jean-Baptiste Jouffray, Carl Folke, Henrik Österblom, Jan Bebbington, Frida Bengtsson, Amar Causevic, Bas Geerts, and Wenche Grønbrekk. 2021. "Evolving Perspectives of Stewardship in the Seafood Industry." *Frontiers in Marine Science* 8:671837.

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9 (Geels 2002; Geels et al. 2016)

10 (Rogers 1962)

11 (Moore 1993; Moore and McKenna 1999)

12 (Christensen et al. 2006)

13 (Quinn-Patton 2019)

14 Quinn-Patton described these operating principles as "excellent".

15 (Farnam Street 2014)

16 (Waddock et al. 2022)

17 (Etienne Wenger 1998; Wenger-Trayner and Wenger-Trayner 2021)

18 (Lee and Waddock 2021; Waddock and Waddell 2021b)