Pathways toward Equitable Climate Resilience, Sustainable Fisheries & Tenure Security

A Brief for Funders

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Purpose of this Brief

Coastal communities, small-scale fishers and Indigenous People are on the frontline of climate change, bearing the brunt of erosion, extreme weather events, and new water and food insecurities - a global environmental injustice given their negligible role in contributing to anthropogenic carbon emissions. There has been growing criticism that responses to the climate crisis (i.e., funding, policy, action) have failed to account for this reality. Instead, climate responses have been enamored and preoccupied with top-down market solutions and techno-fixes [1,2], including those purported to 'fix' oceans, but when examined critically, are likely palliative [3] and risk exacerbating social and economic existing inequalities [4].

Civil society has raised concerns (e.g., COP 26 and 27 reports) that climate responses are being done *to*, not developed *with*, local communities, small-scale fishers and Indigenous Peoples. Further concerns are expressed around the striking imbalance in ocean and climate funding - of which between 94-99% flow directly to, and through, a handful of powerful groups based in the Global North [5]. There are resounding calls to reshape funding strategies to be more socially relevant, equitable and effective.

The purpose of this Brief is to bring forward strategies and actions that help manage, govern and address the impacts of climate change amongst the most vulnerable social groups, particularly coastal and shoreline communities in the World. The Brief draws together data sets, policies, and published literature, with perspective and grounded experiences of a diversity of experts – these are cited where appropriate.

The Brief lays out (in Section 1) attributes of the current climate funding landscape, including in relation to (Section 2) global commitments made to coasts and communities in climate responses. Section 3 briefly describes five domains of climate impact on coastal environments, fisheries, and communities, and then we synthesize (in Section 4) data on the global distribution of these impacts. In Section 5 we present five investment pathways that are underinvested relative to technology, infrastructure, and biological investments, but that represent substantial opportunity to address the impacts of climate change as they are experienced by the most vulnerable social groups. We briefly note (in Section 6) the barriers that have, to date, stood between more just and effective climate funding and response.

The five pathways we describe in this Brief would contribute toward more equitable climate resilience, sustainable fisheries, & security of tenure and rights. Each pathway is strongly place-based, recognizes interactions between social and ecological system components, aligns to globally agreed policy instruments, and invokes principles of interactive governance, which "*emphasizes solving societal problems and creating societal opportunities through interactions among civil, public and private actors*" [6].

These pathways toward *Equitable Climate Resilience, Sustainable Fisheries & Tenure Security* do not address the underlying, systemic causes of the climate crisis or global climate injustice. But they do position local communities, small-scale fishers and Indigenous Peoples, and their human rights and tenure rights, as central in adaptation and mitigation strategies that affect them and the coastal and ocean spaces that they relate to. As such, these pathways reflect that;

> "*Resilience to climate change is achieved through ecological assets and strong communities', strong social capital, place attachment and a resilience mindset that lead to supportive and flexible governance.*" [7]

This Brief was built upon an analysis of the nexus of tenure rights, climate change and fisheries systems [8] and as such the influence of tenure security (and insecurity) on climate resilience of coastal communities and fisheries systems is a central theme. Tenure refers to the ways in which societies (and the law) define and regulate people's relationships, responsibilities, and associated with land, oceans, shores, aquatic spaces and associated resources. Tenure regimes may be customary (with long histories tied with cultural practices), traditional, and/or contemporary, and are active and recognized by the law in very many parts of the World. Tenure security is experienced when a person or society can be certain that their rights (i.e., to access, use, manage and/or govern) will be recognized by others and protected from imposition, dispute, or approbation.

When people know their tenure rights are secured, they have greater certainty that their engagement, leadership, and agency in determining actions are genuinely respected, and their sustained investments into resource management and/or climate action will have a return to their communities.

1. The Current Funding Landscape

Climate change funding has been growing steadily over the past two decades but is still an emerging field of investment. Of the approximately US$810 billion of total philanthropic giving in 2021, only about US$7.5-12.5 billion (~1%) was earmarked for climate mitigation [9]. Overall climate funding is still a fraction of investment made in education, health, and culture and the arts. Nonetheless, the Climate Works Foundation [5] reports that climate change funding rose 25% between 2020 and 2021 - which is three times faster than the growth in total philanthropic giving in the same period.

The majority of climate funding is directed towards mitigation actions and the clean energy sector, with some growth in other areas including the green economy, green jobs and climate equity issues [9]. Funding for climate adaptation, nature protection or restoration, and just and equitable transitions is low, but increasing [5].

Around half of climate funding goes to International non-governmental organizations, some reports tracing the flow of climate funds suggest less than 1% of climate funding is directed towards indigenous groups [10]. More optimistic accounts suggest up to 7% of the climate funding (in 2021-22) went directly to Indigenous and community organizations. These reports highlight that these allocations remain wildly unjust given the scale and breadth of impacts faced by coastal communities, small-scale fishers and Indigenous Peoples, the adaptations that they will need to make, and the protection they provide to natural terrestrial and aquatic carbon sinks [10].

2. Commitments to people and coasts

The United Nations Framework Convention on Climate Change has recognized the importance of secure tenure rights for effective climate action and called for parties to take action to support secure land and resource rights for local communities, Indigenous peoples, and other vulnerable groups.

There are a suite of other international policy frameworks, protocols and guidelines steering and accelerating responses to climate change. While most are heavily tilted to Global North and science-driven technological options [1,2,4], other policy instruments demand socially-sensitive climate responses and include specific obligations to local communities, small-scale fishers, Indigenous Peoples, and their rights and tenure of coasts and oceans (Table 1). These instruments have had varying degrees of uptake and impact, and there are substantial gaps remaining between their intent and the outcomes experienced by coastal communities – these represent prior-agreed (often well negotiated) opportunities for investment and action.

In sum, these policy instruments (1) recognize (and call for action to protect) the vital role oceans play in climate regulation, adaptation and mitigation, (2) set out socially and environmentally sensitive priorities and approaches to climate adaptation and mitigation strategies; (3) demand increased public and private investments to support, in particular, low income countries and vulnerable parts of society to build resilience and adaptive capacity in the face of climate change.

Table 1. Global policy instruments and commitments that explicitly position the 'social' parts of the system (in addition to physical, economic, or ecological) centrally in the governance of climate change investment, adaptation, and mitigation.

Policy instruments	Key social commitments	Gaps between intent and outcomes, and the action needed to improve policy implementation and outcomes
United Nations Framework Convention on Climate Change (1992)	Recognizes the importance of secure tenure rights for effective climate action and calls for Parties to take action to support secure land and resource rights for local communities, Indigenous peoples, and other vulnerable groups.	At the instrument level, there is a stronger need to integrate tenure in the climate action to build agencies and voice of Indigenous Peoples, and other rights' holders to tackle climate uncertainties and risks
Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security & Poverty Eradication (2015)	Section 9 describes the role of the state to safeguard the interest of small-scale fishers in the context of risks associated with climate change and disaster.	Building community stewardship (knowledge, care and agency mechanisms) will aid inclusive coastal zone planning, community-based management of fisheries and blue carbon systems, and other climate actions toward consideration of community and small-scale fisher co-benefits.
Sendai Framework for Disaster Risk Reduction 2015-2030	Explicitly emphases a breath of measures – many remain sidelined in current climate investments e.g., institutional, political, social measures etc. Emphasizes reducing disaster risk in coastal areas, and with meaningful participation of all relevant stakeholders, including Indigenous Peoples and local communities, in disaster risk reduction efforts.	The work on climate change and disaster without due recognition of tenure and traditional institutional structures will defeat the goal of Sendai framework- "*inclusive economic, structural, legal, social, health, cultural, educational, environmental, technological, political and institutional measures that prevent and reduce hazard exposure and vulnerability to disaster*".
The Blue Carbon Initiative	Recognizes the importance of secure tenure rights in supporting conservation and restoration of blue carbon habitats including coastal ecosystems.	Equity, justice and local community co-benefit concerns will be sabotaged without tenure and community stewardship.
REDD+	Recognizes the importance of secure tenure rights	Community conservation of blue carbon systems is not possible without tenure. Often MPAs are receiving REDD plus benefits (through compliance route) which are at times disenfranchising the local fishers and coastal communities.
Forest Carbon Partnership Facility	FCPF applies to nearshore habitats. The partnership (governments, civil society, other stakeholders) recognizes the importance of secure tenure rights in achieving these goals and supports efforts to strengthen land tenure and resource rights in partner countries.	Carries the same risk of exclusion and displacement of local livelihoods if tenure issues are not considered.
Paris Agreement (2016)	Parties to respect, promote, and consider their respective obligations on human rights, including the rights of Indigenous peoples and local communities, in their climate change action framework.	Fishers, coastal communities, poor, women and children face a disproportionate risk of climate change. For people with no safety, one disaster means a tumble into further hardship. Tenure over resources and land has been one of the most effective strategies towards climate justice by securing both employment source and social welfare measures by different governments.
Copenhagen Accord (2009)	Recognized need for scaled up climate financing mostly for developing countries for adaptation and mitigation pathways.	90% of climate finance is directed toward mitigation, with little focus on adaptation – particularly for marginalized groups (the strength of this trend varies by region). There is need for urgent support for expanding climate finance debate with justice considerations

3. Climate impacts on coasts, fisheries, and communities

The climatic changes observed over the past few decades are projected to accelerate and intensify. The United Nations Framework for Climate Change attributes climate change to human activity that alters the composition of the global atmosphere and that is in addition to natural climate variability observed over comparable time periods. The variability of climates in coastal and marine environments manifests as sea level rise, violent and more frequent storm surges, ocean acidification, ocean warming and marine heat waves. Such events have caused serious loss to marine species, drive abrupt shifts in composition of aquatic ecosystems that may persist for years, decline and collapse of regional fisheries and aquaculture, and reduced capacity of habitat-forming species to protect shorelines [11].

Ocean and coasts are central to climate resilient livelihoods and low emission food systems. Fish derived from sustainable fisheries and aquaculture relatively low carbon footprints among all food commodities [12] and also provide more than 3.3 billion people with at least 20 per cent of their average per capita intake of animal protein [13]. Capture fisheries vary widely in their greenhouse gas emissions, but overall are very low emitters in comparison to other food types and production systems [14]. This underscores the value of sustainably managing wild fisheries to avoid the environmental replacement cost that would be incurred under fish catch declines [15].

The value of capture fisheries, and in particular small-scale fisheries, are recognized as key for food and nutrition security and low emissions food systems (Box 1 outlines how fisheries improvements might be more attuned to climate change and tenure rights). However, at the same time the spaces in which small-scale fisheries operate and the resources on which they rely are impacted directly by climate change, and by increasing demands for those spaces and resources – including from climate-resilient development and climate mitigation [16]. Coastal lands, shorelines, beaches and waters are fundamental to the identity and viability of fishing communities – providing critical ecosystem services not just for fisheries but also for provision of coastal protection, food and wellbeing.

The increasing number and intensity of interests in oceans and coasts leads to increasing urgency for coastal communities and indigenous people to experience security of their tenure rights – including, but not limited to, the rights of access and use for fishing. Tenure influences the right to secure food, housing and settlement rights of fishers, access to and control over traditional or customary fishing, launching, and landing areas, ability or inability to relocate homes or fishing activities, and the certainty of the flow of co-benefits of carbon financing instruments.

In sum, climate change, and responses to climate change, will impact upon rights holders and their tenure over coastal and ocean resources in five interconnected ways (Table 2); (1) changes in distribution and abundance of harvested species; (2) increased intensity and frequency of extreme weather events (3) climate induced displacement of fishing communities, (4) the increasing interest in blue carbon habitats and prevalence of blue carbon finance instruments, (5) governance of the roll out of climate mitigation and adaptation.

Table 2. Five impacts through which tenure over coastal resources relates to climate change impacts, and adaptation and mitigation actions.

	Explanation	Evidence	Key Concerns	Key Tenure Implications
Marine species distribution changes	Climate change leads to changes in species biology (sex rations, spawning times etc.) species abundance, movement and extinction, range contraction/expansion, new species interaction. There is also the possibility of higher occurrence of disease, pests, and invasive species. [22].	By 2030, climate change will force 23% of shared fish stocks to move from their historical habitats and migration routes, if nothing is done to halt greenhouse gas emissions. By the end of the century, that number could rise to 45%. Three-quarters of EEZs will see at least one of their fish stocks move by 2030. By 2100, 81% of EEZs will face the same fate [23].	Access conflicts between losing and gaining territories [23,24] Industrial fishing manipulates the system with the ability to greater access to information, technology, ocean and coastal space and resources. Undermining traditional ecological knowledge and practice. Mismatch between scale of territorial user regime and scale of resources with species mobility [25].	Opportunities for new forms of tenure systems that are more adaptive and flexible. Opportunities for collaborative governance arrangements between different users of marine resources that are designed to address the challenges posed by species mobility and climate change more broadly.
Extreme weather events and coastal defense	Coastal habitats (reefs, mangroves, salt marshes, coastal wetlands) are natural defense to episodic events and long-term protection of coasts and coastal communities (1st line defense for 76 million people)	Nature based solutions can greatly contribute to climate change adaptation and mitigation. Improving coastal resilience can have important co-benefits such as protecting and restoring habitats, reducing pollution, creating jobs, supporting tourism and recreation, and providing financial resources to support conservation and climate action. The contributions of blue carbon habitats to resilience of coastal livelihoods and fisheries are well established. The Secretariat of the Pacific Community [26] also predicts that these changes will lead to a 40% decrease in coral cover and 65% decrease in fish abundance and diversity by 2100.	The frequency of intensity of storms has increased by 40% since 1980 [27] Sixty-six percent of marine habitats experience significant human impacts[28]. Twenty percent of the world's mangroves have been lost since 1980 [29] and 60% of reefs are threatened [17]. Studies suggest that mangrove depletion has led substantial reduction in fishery production including through the reduction in the quality and size of fish [30,31]. Emphasis on hard protection (grey infrastructure response- sea wall, sand nourishment, dikes) and advance response (creation of land above sea, waterfronts) has tested limited success and at times negatively impacted coastal system functioning and ecosystem services [32–34]	Coastal resilience will also benefit coastal communities by achieving a human-centered approach, safeguarding the rights of the most vulnerable people and sharing the burdens and benefits of climate change and its impacts equitably and fairly. A lack of recognition of multiple values can also be linked to limited participation in the governance of coastal interventions [35].

Climate induced displacement	Erosion, flooding and salinization (i.e., the intrusion of salt water into arable lands and water sources) driven by sea level rise and extreme weather events will make some low-lying coastal areas uninhabitable; this will in turn force migration and displacement of coastal communities, Climate change would amplify forced migration.	Emigration and immigration have the potential disputes over land uses (both for human settlement, creation of infrastructure for disaster preparedness such discharge and drainage systems, tourism, and blue carbon investments). Weak tenure acts as a deterrent to rehabilitation planning for people under threat with lack assurance to property and social protection. Weak and informal tenure acts as disincentive to legal claims for compensation and or access to resources both in source and destination areas.	The existing pattern of movement to urban areas causing serious issues as urban centers are already reeling with population and resource pressures. By 2100, 56% of counties could be affected by sea level rise-related emigration and/or immigration[36]. According to a 2019 report by the United Nations Environment Program, 30% of the world's coastlines are highly vulnerable to erosion and inundation, and up to 1.2 billion people are at risk of coastal flooding and related impacts[37]. Seas are foreseen to rise from one to six meters, inundating areas of between one to two million square kilometers which would affect between 100 to 430 million people [29,38]. By 2050, flood damages exacerbated by climate will cost US $1 trillion per year [39].	Tenure issues critical for both in the displaced populations and destination locations and societies to minimize conflict, to respect existing tenure rights, but whilst also avoiding further marginalization and vulnerability of displaced persons
Green Investment and blue carbon markets	20% of the world's mangrove forests may qualify for carbon-credit schemes, and 10% may be profitable, potentially generating US $1.2 billion per year in carbon benefits.[1] Several major international corporations—such as Apple, HSBC, and BHP—have announced their intentions to include blue carbon within their carbon-abatement portfolio, while some countries (e.g., Australia, USA, and UAE) have already incorporated blue carbon into their nationally determined contributions under the Paris Agreement.	There is confusion related to land tenure and how it intersects with the blue carbon market, such as who "owns" the blue carbon and who has the right to transact carbon credits for a given blue carbon project: the landholder, the project developer, Indigenous groups, or the national/sub-national government? For example, rights to carbon credits for REDD+ projects in Indonesia have been contested because land ownership does not always give rights to the carbon [40]. Despite higher interest in blue carbon financing there is a gross mismatch between demand and supply of projects due to the lack of policy and operational mechanisms. According to IMF, the existing financing mechanisms (structured finance (risk guarantee by banks), blended finance (public-private partnership), outcome based sustainable debt instruments (Payment for ecosystem service, payment for success) etc., have failed to achieve desired success in climate change financing space.	Challenges include a lack of knowledge about how proposed activities align with community values, behaviors, and perceptions of risk, what individual and collective capacities are required to facilitate sustainable change, and the role of local and indigenous knowledge in blue carbon projects. Lack of clarity on property and carbon rights Inadequacy in financial instruments to value community co- benefits that meet current and future needs [40].	Recognition of tenure/rights holders in climate change mitigation and adaptation programming Help minimize uncertainties arising out of social (as it aids appreciation of local knowledge and practice) and governance (competing claims, territorial conflicts, participation in conservation and restoration efforts) factors. Opportunities for engaging with tenure holders and their agencies for building capacities to negotiate and participate in complex) and dynamic climate market processes.

Top-down governance and exclusive mitigation	Inclusive governance that is well aligned to the systems at risk from climate change is fundamental for effective adaptation [18]). Adaptive climate governance benefits from synergies between asset, knowledge, agency and flexibility in a given social–ecological context and stimulates governance responses at appropriate spatio- temporal scales [41]. Governance aligned with Indigenous structures and local structures supports successful outcomes that prioritize the concerns and rights of involved communities [42] and better leverages existing social organization (i.e., network structures), learning processes and power dynamics [43] .	Climate governance is marked by top-down decision making, technological intervention and western-science driven policies and practices.	Consideration of Coastal community voice, agency and rights is marginal in economic, conservation and development models adopted by governments. While science driven technological solutions are important, side-lining place-based knowledge and social-ecological connections can cause serious impediments in climate adaptation and mitigation pathways, including by worsening existing social, political, and economic inequities	Secure tenure acts as an incentive to protect and manage blue carbon ecosystems like mangroves, beaches, coastal plantations, wetlands, seagrasses and intertidal zones. Motivation for restoration and management of individual and collective assets with a long-term vision Power and incentives to collective visioning, centering the voice of community, women and marginalized groups. Provides social justice frame to climate action. Strengthen space for experiential and experimental learning, thus provide for empowered space for science-policy and practice dialogue

4. Where, and for whom, are climate vulnerabilities most severe?

The impact on physical and ecological elements of coastal systems causes serious disruptions to live, livelihoods and food systems. Those most exposed include the 680 million people living in low lying coastal areas, and 37% of the global population including 50 million small-scale fishers who derive their livelihoods from coasts and oceans [17]. Fishers and coastal communities are, in many contexts, existing on the social, economic, and political margins, and the impacts of climate change interact with, and intensify, these existing vulnerabilities.

African countries are the most vulnerable to the likely impacts of climate change on fisheries (even though over 80 percent of the world's fishers are in South and Southeast Asia and fish catches being greater in Latin America and Asia) [18,19]. For example, fisheries in Africa alone provide employment for up to ten million women and men and provide a vital source of protein to 200 million people [20]. Semi-arid countries with significant coastal or inland fisheries have high exposure to future increases in temperature (and linked changes in precipitation, hydrology, and coastal current systems), high catches, exports and high nutritional dependence on fish for protein, and low capacity to adapt to change due to their comparatively small or weak economies and low human development indices. These countries whose fisheries are most exposed to the impacts of climate change are Angola, Congo, Mauritania, Mali, Niger, Senegal and Sierra Leone.

Other vulnerable nations include Malawi, Mozambique and Uganda and Asian river dependent fishery nations including Bangladesh, India, Cambodia and Pakistan. Countries such as Colombia, Peru and the Russian Federation are sensitive to climate changes due to their high catches and reliance on exports or high employment from fisheries, but their larger economies and higher human development indices mean they are likely to have a greater adaptive capacity to deal with potential impacts [19,21].

Box 1. Adding tenure and rights to fisheries improvement investment

Many ocean, conservation and fisheries interventions focus principally on improving or maintaining the status of biodiversity, ecosystem, stock, productivity or economic performance as the signs of a sustainable and viable fisheries. This focus leads initiatives to focus on how fishers will need to adapt their fishing patterns and management in response to changing distribution and abundance of fish stocks. Research has shown that management needs to be adaptive, fishing activities flexible, and use rights carefully (re)negotiated as a result.

Yet, fisheries (particularly small-scale fisheries) and the food and nutrition benefits they provide rely as much on the human and social wellbeing of fishing communities as they do on stocks and ecosystems. Fishers and their broader communities are on the front line of climate change – and experience more unpredictable and dangerous fishing conditions, loss of homes and landing beaches due to erosion, salt-water intrusion and even climate mitigation efforts, and increased demands on community resources to adapt and respond to climate change. A people-centred and climate sensitive approach to fisheries seeks to address the question "What are the various ways in which climate change (including cross-sector mitigation and adaptation actions) will impact the viability and vulnerability of fishers and their communities, and how can they best be supported to adapt?"

- Securing rights of fishing communities includes security of access, use, management, and governance over coastal lands, shorelines, oceans and other aquatic water bodies, and may include the right to occupy and use land.
- Bargaining power (economically and politically) of fishers is increased when they have secure and exclusive (e.g., of industrial fishers) rights to an area and a resource.
- Rights and power to access, use, manage and govern are pre-cursers to like co-management and locally-led adaptation.

5. Five pathways toward equity and rights in climate responses

The pathways toward *equitable climate resilience, sustainable fisheries & tenure security* centrally position local communities, small-scale fishers and Indigenous Peoples, and their human rights and tenure rights. These pathways represent opportunities to rebalance the funding landscapes and progress some of the many unmet political commitments made to peoples, rights, and tenure. They also attend to five domains of climate change impact; changes in species and ecosystems, extreme weather, climate induced displacement, as well as emerging climate finance and climate mitigation that currently fail to adequately account for existing rights and rights holders. Each pathway has an emphasis on decentralized governance that centers the voice and agency of fishers, women and marginalized coastal user groups and rights holders in climate action **(Figure 3).**

Figure 3. Five Strategic Pathways that reflect opportunities for strategic investment that would center human rights, human wellbeing, and community processes and co-benefits in climate change.

For each of these pathways, tenure and climate change investments need to follow an iterative and learning approach because so much is yet known, and the impacts and responses are rapidly changing. We propose that each pathway should span institutional awareness, learning and action.

- **Institutional awareness** - General awareness and articulation in the official records, strategy documents of partner agencies. ***Key partners*** include Regional Fisheries Boards, People's network, NGOs.
- **Institutional learning** Climate change is integrated in the work, outreach documents and internal learning mechanisms in place to understand the same. ***Key partners*** include People's network, NGOs, civil society groups and private sector agencies.
- **Institutional action** - change on the agenda, funding, and action agenda- projects in mainstreaming tenure discussion in climate adaptation and mitigation programming and the rights-based forums/programmes integrating climate agenda in their action. ***Key partners*** include People's networks/agencies of marginalized groups (small-scale fishers, women, vulnerable coastal communities), development banks (e.g., World Bank, Asia Development Bank, Africa Development Bank etc.), sustainable financing institutions, private insurance providers, carbon market actors etc.

Strategic Pathway 1 - Support novel tools and collective capacity that amplify voice and agency of local communities, small-scale fishers and Indigenous Peoples in the climate action agenda

There is substantial opportunity to increase the downward accountability of powerful actors (e.g., funders, governments, private sector) to policy commitments and provisions made at the climate change and tenure interface. This will necessarily be complemented by building tenure (and other) rights literacy, open-information technology and platforms (e.g., Tenure Tracking Database), strategic communications and media engagement, and local leadership. Creating public goods and strengthening civic spaces are of immense importance to enhance rights-holders agency and voice. There are examples of the development of such public goods and tools including participatory coastal habitat planning tools that have been used in the United Arab Emirates [44], the legal assessment tool for gender-equitable land tenure developed by FAO, the secure land tenure and property rights tools by USAID, and climate change monitoring and verification tools developed and used by multiple agencies [45–47]. Yet, there is an opportunity for greater consideration of tenure, local governance, and rights in these tools as well as customized tools that build reflection, accountability, and drive learning and adjustment.

- **Develop a community in practice for coastal tenure and climate change** actions by supporting action programmes to integrate tenure discussion in existing community driven climate adaptation and mitigation initiatives and at the same time, bringing climate change discussion to the table to people's rights groups who are working on tenure, rights and social accountability issues related to fishers and people living on coastal resource.
- **improve human resources and social capital base in the right holder groups and agencies:** work towards an accountable and empowered space for women and coastal livelihood groups in climate change governance. It can be done through capacity development and knowledge resource supplement strategies. Strategies like coastal tenure fellowships (grassroot fellowship, leadership fellowship) can be effective in advancing work on climate change and tenure interactions.
- **Support technology platforms and tools that empower local communities** providing them a stronger position in existing policy spaces and planning instruments e.g., participatory planning, coast zone mapping, community driven monitoring processes and outcome-based management processes (mostly adopted in green investment and climate financing frameworks). These tools can be deeply problematic unless there is genuine transparency in knowledge and decision-making and communities are empowered and enabled to within them.
- **Alliance building within and across existing people's network and building narrative on criticality of tenure for climate change action.** Support strategic communications with greater appreciation of multi sectoral communication strategies i.e., building on the existing community structures and channels to pass climate change information to the residents. Campaigns, convenings, effective media and community engagement are important tools to enhance climate change and tenure literacy and influence the attitude and behavior of various stakeholders towards addressing the issues with greater sensitivity to issues with coastal communities, small-scale fishers and Indigenous Peoples. It would be important to support initiatives that help in translating scientific information in an easy-to-understand format and universalizing access and use of such information to enable the programme participants as the driver of change.

Strategic Pathway 2 - Recognize and bolster tenure rights to support local community stewardship of blue carbon environments.

Whilst the emerging carbon finance markets appear promising, ensuring benefits flow to rights-holders will require investment that leads rights-holders to have both capacity and agency to navigate those markets – or resist them - if they choose. This could be achieved via honest intermediaries who work for rights-holders and support project development, verification, certification, and sale of carbon credits in favor of tenure holders. Certain countries have legislation that can (in principle) allow community rights over blue carbon ecosystems (e.g., The Forest Conservation and Management Act, Kenya, 2016), and Tanzania Forest Act, 2002) [48]. There is still a need to build capacity of government and non-government initiatives to ensure those rights are realized, and to also meet the accreditation in the voluntary carbon market [49].

However, carbon/biodiversity market instruments and approaches are largely reductionist to the extent that they do not look at resource systems/landscapes, traditional institutions, and ecosystem services provided by them holistically. The voluntary carbon market initiative principles for market integrity are largely aligned towards buyers' interest and reputation [50]. At the same time, the resource poverty, tenure insecurity and conflicts have always confronted ambitions of economic growth when market-based incentive approaches are brought to these geographies and demographics, resulting in deep trust deficits between buyers and sellers.

It is essential that communities, as the traditional stewards of these landscapes, are presented with unbiased information about the opportunities and risks posed by these emerging markets, and that they have the ability to proactively engage in decisions that affect their lives and livelihoods. Regulatory agencies, corporations purchasing carbon credits and their shareholders also need transparent ways to decipher how fair proposed transactions are for the communities involved.

A caution that this line of investment must simultaneously account for other values and rights of local users over coastal habitats (see below).

- Support initiatives that work on strengthening **community stewardship over blue carbons resources.** This entails strengthening knowledge (tacit and explicit knowledge), care (conservation and sustainable use of resources) and agency (voice, institution, and capacities of communities, particularly women).
- Support interventions that facilitate **community carbon offset projects** with due recognition community co-benefits and improve community access to carbon marketing such as inventory data (baseline), carbon offset certification, verification, trading platforms, capacity for stock assessment and monitoring.
- For both above This would include; (1) Carbon market instruments respect principle of equity and fair benefit-sharing with the frontline actors who contribute to management and conservation of the resource system; (2) Adherence of fee, prior and informed consent for allotment of land and property towards generation of carbon/biodiversity credit, and safeguard against adverse livelihood impacts; (3) Valuing traditional ecological knowledge/ indigenous knowledge (4) Support to institute mechanisms and tools for communities to assess the a**ccountability and commitment of market players** towards restoration and community values and principles.

Strategic Pathway 3 – Strengthen collective action of rights holders in their ongoing work toward resource restoration, management and conservation.

Perhaps more mainstream in the coastal management and conservation space, there is a continued need to support rights-holders to pursue their goals and their responsibilities (i.e., as defined through their system of tenure) in the restoration, management, and conservation of common property resources like fishing grounds, peat lands, sea grass, coastal wetlands that aid mitigation and adaptation actions [51]. In these efforts, it is critical to center place-based knowledge and social-ecological connections that will be richest amongst rights-holders. Such efforts will not only strengthen tenurial rights of local user groups but also help protect and even generate employment for local communities.

Strengthened tenure systems over coastal resources has also potential to promote ecosystem-based approaches to fisheries management and climate resilient food systems. When tenure is secured, that security incentivizes community-driven resource management practices and provides communities with the certainty that their investments in adaptation or management will have a return to their community. Such action would contribute to climate change food system principles, including;- interconnectedness, equity, resilience, renewability, responsiveness, transparency, scale, and evaluation [52,53].

There is sufficient evidence that reversing the global decline of vegetated coastal habitats and recovering the lost area of blue carbon sinks would provide a very large improvement in the ecological status of the global coastal environment. This could result in the recovery of important services, such as their capacity to oxygenate coastal waters, serve as nurseries, help restore fish stocks, or shelter the shoreline from storms and extreme weather events [54,55]. At the same time by stopping the loss and degradation, we would rebuild an important natural carbon sink, thereby contributing to mitigating CO2 emissions and, hence, climate change [56].

- Engage and support existing civil society initiatives, campaigns and advocacy measures to **legislative provisions/reforms** on various dimensions of coastal tenure as explained above.
- Support initiatives that **improve financial flows** at appropriate level (context specific) for restoration and community-based management of fisheries and blue carbon systems.
- Support initiatives that improve the voice **and agency of women** for governance and management of nature-based solutions for climate action.

Strategic Pathway 4 – Rebalance funding access and control to accommodate and respect rights of fishers, local communities & Indigenous Peoples.

There has been growing debate on shifting power with respect to financial flows and funding based on equity principles. Macro policy frameworks such as "loss and damage protocol" and "debt restructuring" support of developing and small island countries have been talked about. While the present support is too little for such big challenge, it also fails to completely reimagine the process of grant making that empowers the people and their agency who are in the front line of climate impact. There is need to restructure core principles of grant making with deeper appreciation to place based, incredibly diverse way of community management of fisheries and coastal resources.

Climate change insurance has the potential to recognize and safeguard tenure rights, which in turn would help communities and individuals to manage risks and maintain their ownership on land and

properties. The United Nations Framework Convention on Climate Change Parties include insurance as a potential element in both disaster risk reduction strategies and risk transfer mechanisms [57]. Whilst sine insurance products have been developed that are tailored toward local communities and communal interests (e.g., the Global Index Insurance Facilities) [58], more widespread access to insurance for climate change impact and adaptation will rely on documentation of tenure rights within and amongst societies, and in turn such documentation will encourage the insurance sector to develop products fit for common assets and properties.

- Grant making must recognize **the due importance of shifting the narrative and look beyond life below water**. Also consider **life above water** as a co-evolving process.
- Greater investment on **social innovation (as described above in Strategic Pathways 1,2 and 3)** for climate action beyond the technological fix.
- Grant provisioning to help market actors to **develop risk sharing mechanisms** and agency of people to improve community access and transparency in insurance and other financial mechanisms to manage risks associated with extreme climate events.

Strategic Pathway 5 - Support collaborative orchestration and co-learning on (genuinely) locally-led climate adaptation and mitigation.

Bridging knowledge is critical to increase the sensitivity of current climate adaptation investments and programs to existing (potential informal) systems of governance, tenure and rights that influence coastal spaces and resources. Bridging learning and knowledge creation across diverse groups has the potential to improve the efficacy and inclusivity of tools and processes such as marine spatial planning, blue carbon market engagements, national climate action planning, disaster risk (including flooding, cyclone and food) management and preparedness. This must avoid tick box participation, and genuinely even playing field for different actors and knowledge systems.

- **Facilitate collaborative orchestration:** support processes that aid the creation of a genuinely shared agenda, beginning with two-way awareness raising including building the literacy of government, industry, NGOs and to existing rights and governance processes, particularly as they relate to coastal communities, small-scale fishers and Indigenous Peoples.
- **Support functioning of climate and tenure policy laboratories**: A Policy Lab (like the EU Policy Lab) can radically improve policy and implementation through design, innovation, and people-centered approaches. It is a cross-disciplinary space that works for addressing key gap in current stakeholder interactions, examine and deliberate evidence concerning the outcomes of policy reforms that builds stewardship, voice and agency of coastal communities and fishers. Building the Policy Lab requires improved the capacity of partners to perform a network connecting role to leverage learning from community agencies, policy researchers and decision makers, rooted in the experiences of field agencies and grassroots coalitions.
- **Support academic and knowledge institutions to undertake transdisciplinary research** on key five impact pathways. To ensure there are feedback loops between knowledge and action this should also entail the establishment of community learning labs/academy to promote lateral learning and exchange among communities in action. Such action will increase integration and interactions with place based, experiential traditional knowledge systems with the formal knowledge systems. It will also help create system actors and champions who have appetite to place the community stewardship agenda at the center of policy and programmatic interventions.

6. Barriers to overcome

In the current governance and funding landscape, there are striking inadequacies to improve local capacity to deal with growing uncertainty and assure vulnerable populations of their rights. Movement along the pathways outlined above requires some major structural barriers to be acknowledged (and dismantled) to realize equitable and just rights, and effective climate action in fisheries dependent contexts. We acknowledge these here.

- Less than 1% Overseas Development Aid is invested in sustainable oceans and support or commitment towards social inclusion is negligible [59]. Further, the development finance that does flow toward communities is not sufficient to bring about (and not complemented by) structural changes that would enable communities of global south to determine intervention pathways for inclusive and just climate adaptation and mitigation action.

- The dominant ecological narrative to climate action views humans as protectors or destroyers of biodiversity, species and ecosystem - this view prefers strategies and spatial allocations focused on protection here, and exploitation there. Critics highlight that these views fail to sufficiently account for social-ecological system or human-environment interactions in more integrated ways.

- Climate change adaptation and mitigation actions are primarily top-down, technological and Western-science driven, with low visibility or respect for other viewpoints, and low engagement, voice and agency of rights-holders [60]. This imbalance sidelines the solution space available at local levels, undermines human rights and ignores resource governance rights and abilities of local rights-holders. There are compelling cases of small-scale, radical climate change interventions challenging exploitative and extractive systems, often they go unnoticed in the larger discussion on global climate actions.

- The techno-economic priorities for climate action (e.g., blue carbon programs, blue economy investments) tend to dominate investment. These are often combined with a lack of recognition of existing governance and tenure systems (i.e., other than state or private ownership models). In combination these can undermine environmental justice, local agency, local innovation, and cultural adaptiveness – particularly when they fail to empower rights-holders with tools and opportunity to engage in new markets.

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