COAST Evidence Review 4

What are the trade-offs and opportunities for inclusive scaling in coastal adaptation contexts?

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List of acronyms

A&R	adaptation and resilience
ABBS	Asia–Africa BlueTech Superhighway
AF	Adaptation Fund
BCAP	Blue Carbon Action Partnership Programme
CBA	community-based adaptation
CIF	Climate Investment Fund
COAST	Climate and Ocean Adaptation and Sustainable Transition
CSA	climate-smart agriculture
CSO	civil society organisations
FCDO	Foreign, Commonwealth & Development Office
GCF	Green Climate Fund
GEDSI	gender equality, disability, and social inclusion
GEF	Global Environmental Facility
ICF	International Climate Finance
LLA	locally led adaptation
MDB	multilateral development banks
MPA	marine protected area
MSME	micro, small and medium-sized enterprises
NAP	National Adaptation Plans
NBCAP	national blue carbon action partnerships
NGO	non-governmental organisation
PES	payment for ecosystem services
UK	United Kingdom

1. Introduction

This evidence review explores how coastal climate adaptation efforts can be scaled in ways that are inclusive, equitable, and responsive to the needs of the most vulnerable coastal communities. It has been commissioned under the United Kingdom (UK) Foreign, Commonwealth & Development Office's (FCDO) Climate and Ocean Adaptation and Sustainable Transition (COAST) programme to provide an evidence base that can inform COAST implementing partners, policymakers, and funders on the opportunities, trade-offs, and risks associated with scaling adaptation interventions. While scaling is widely recognised as essential given the scale and urgency of climate risks in coastal areas, there is growing concern that poorly designed scaling strategies can undermine participation, reinforce inequalities, and lead to maladaptation. This review responds to that concern by focusing explicitly on the conditions under which scaling can support, inclusive and locally led adaptation (LLA).

The review draws on a structured assessment of 63 academic and grey literature sources, prioritising recent evidence while also incorporating a small number of foundational texts. Further details on the evidence base and quality assessment are provided in the Annex.

1.1. Scaling adaptation within the COAST context

The COAST programme, funded through the UK's International Climate Finance (ICF) under the Blue Planet Fund, is a multi-year initiative that aims to strengthen adaptive capacity, climate resilience, and prosperity for vulnerable coastal communities in selected low- and middle-income countries. COAST seeks to achieve this through the equitable and sustainable management of coastal and marine resources, with a strong emphasis on reaching those most exposed to climate risks and least able to adapt without support. Central to the programme's approach is a commitment to gender equality, disability, and social inclusion (GEDSI), and to advancing GEDSI-transformative outcomes.

As COAST-supported initiatives mature, questions of scale become increasingly salient. Implementing partners are expected not only to demonstrate impact at the local level, but also to contribute to wider systems change, whether through policy influence, institutional strengthening, market engagement, or replication of successful approaches across geographies.

COAST is implemented via three components that address scaling in different ways (see Box 1).

Box 1: COAST components approach to scaling

The COAST Facility combines technical assistance and tailored grants to strengthen governance, coastal stewardship and sustainable livelihoods. COAST Facility is embedding scaling into its core processes at country and grantee level. It requires grantees to address scalability in proposals and applies strategic approaches across COAST's priority countries. It also supports scaling through broader strategies such as strengthening non-governmental organisation (NGO) capacity, amplifying diverse voices in policy, mobilising blue finance, and accelerating nature-based enterprises.

Asia–Africa BlueTech Superhighway (AABS) **harnesses south–south collaboration to pilot and scale evidence-based nature-positive innovations in aquatic food systems.** AABS is exploring systemic approaches to scaling by adapting CGIAR's Scaling Readiness framework to assess seven core innovations, including digital fisheries systems, nature-based aquaculture, solar-powered cold storage and processing technologies, and incentive-based conservation schemes. For each innovation, they evaluate the associated context, stakeholder landscape, evidence base and feasibility of scaling pathways, while exploring routes such as government adoption, commercialisation, and incubation, alongside funding opportunities for scale-up.

Blue Carbon Action Partnership Programme (BCAP) **addresses barriers to high-quality blue carbon projects by catalysing multi-stakeholder conversations on policy, finance and standards.** BCAP is focused on strengthening the enabling conditions for scaling blue carbon initiatives through policy, finance, and scientific credibility. They convene multi-sector stakeholders to co-design action roadmaps, engage private sector actors, and host finance workshops to develop investment pathways. Efforts include improving data measurement, mapping pilot sites, and building technical capacity, alongside inclusive participation and alignment of local and national strategies. A four-pillar roadmap guides these efforts, emphasising science, governance, financing, and stakeholder engagement to ensure equitable and high-quality outcomes.

The **COAST theory of delivery** outlines both independent and interdependent scaling pathways among the three components. For example, AABS pilots innovative approaches to support more sustainable, productive and resilient small-scale fisheries and aquaculture sectors which can be scaled through COAST Facility funding. Scaling approaches is a priority within the programme this year, and programme stakeholders are grappling with how scaling is best pursued. This raised questions in relation to equity, participation, and local agency. There is a need for evidence-based guidance on how different scaling pathways interact with inclusion goals, and how trade-offs between speed, efficiency, financial viability, and justice can be identified and managed in practice.

1.2. Focus and scope of the evidence review

This evidence review synthesises recent academic and grey literature on scaling climate adaptation, with a particular focus on coastal contexts. Rather than treating scale as a purely technical or quantitative objective, the review adopts an analytical lens of inclusive scaling, understood as the expansion of adaptation efforts in ways that deliberately address power relations, social inequalities, and differential access to resources and decision-making.

The review is intended to support COAST implementing partners, programme managers, and funders, as well as policymakers and practitioners beyond COAST who are engaged in designing, financing, or governing adaptation at scale.

The remainder of the report is structured as follows:

- **Section 2** introduces conceptual perspectives on scale and inclusive scaling in climate adaptation, clarifying key terms and analytical lenses used throughout the review.
- **Section 3** outlines a typology of common models for scaling coastal adaptation and resilience, including community-based, locally led, institutional and policy, market-based and financialised, and social innovation and technology-driven approaches.
- **Section 4** examines key challenges and opportunities for inclusive scaling, focusing on financial and structural access barriers, pressures for efficiency and short-term results, institutional and governance weaknesses, and power asymmetries and knowledge exclusions. For each challenge, the section starts by identifying risks inherent in inclusive scaling in order to consider evidence-based approaches to managing those risks.
- **Section 5** synthesises conclusions from the evidence and sets out practical recommendations for COAST stakeholders and others seeking to scale coastal adaptation in ways that strengthen equity, participation, and long-term resilience.

2. Key concepts

2.1. What is scaling?

The conception of scaling within the international development sphere has shifted considerably in recent decades from a focus on technologies to a focus on outcomes (Körner et al., 2021; Wigboldus et al., 2016). Körner et al., (2021) describes the evolution in thinking through three phases. Early efforts largely equated scaling with the widespread rollout of particular technologies or practices, assuming that diffusion alone would deliver broad benefits. This linear, technology-centred logic (visible in large coastal modernisation efforts such as the scaling of satellite- and information and communication technology (ICT)-enabled early warning systems for cyclones, storm surges and coastal flooding) often produced uneven social outcomes and environmental stress. Subsequent thinking broadened the focus from simply pushing out innovations to understanding scaling as a process embedded within wider social, institutional, and market systems. In this second phase, practitioners recognised that achieving lasting change required coordinating actions across multiple actors and governance levels. Körner describes a more recent evolution positioning scaling not as the expansion of a single solution, but as the pursuit of outcomes at scale, supported by portfolios of complementary innovations and partnerships that are continuously adapted to context through learning and iteration.

The literature commonly describes several interrelated forms of scaling – scaling out, up, deep and down. Scaling out involves spreading approaches horizontally to new locations or user groups, while **scaling up** refers to institutional or policy shifts that embed approaches within formal structures and rules (McLean et al., 2019). Some scholars also emphasise **scaling deep**, which focuses on changes in norms, values, relationships, and capacities, essential for embedding resilience in the social fabric and ensuring that interventions endure over time (Lam et al., 2020). Another dimension, **scaling down**, captures the reverse flow, ensuring that higher-level policy commitments can be meaningfully implemented by local actors through resourcing, devolved authority, and space for local adaptation (Sánchez Rodríguez et al., 2021). Evidence from climate-smart agriculture (CSA) and community-based fisheries management initiatives shows that effective scaling often involves combining these dimensions, with local demonstration, policy uptake, and normative change all reinforcing each other (Steenbergen et al., 2022; Vernooy and Bouroncle, 2019).

More recent scholarship interprets scaling as inherently systemic rather than linear. This perspective highlights how the success or failure of scaling efforts is shaped by the broader context of power relations, institutional capacities, histories of governance, and the social conditions into which innovations are introduced (Woltering et al., 2024). Scaling attempts fail when disproportionate attention is paid to innovation attributes and end-users, while the institutional, social and political contexts of scaling are treated as secondary. Coastal research supports this pattern, attempts to scale coastal co-management show that institutional and social 'fit' often matters more than the particular management model adopted (Cinner et al., 2012). A systems approach treats scaling as an iterative and adaptive process that must be considered from the earliest design stages. It emphasises participatory approaches, alignment with local institutions, and the need for 'best-fit' rather than 'best practice' solutions, supported by ongoing adjustment as conditions evolve (Wigboldus et al., 2016).

Transformational adaptation extends this systemic thinking to involve the deeper shifts in the structures and relationships that shape vulnerability. This includes changes in governance arrangements, socio-cultural norms, power dynamics, and human–environment interactions (Kuhl et al., 2021). The literature on 'social ecological systems' has been a key part of this shift in conceptualisation, framing the environmental, social and economic lens as integrative and iterative dimensions that can operate at variable scales of influence depending on the context and drivers (Preiser et al., 2018). Global climate finance institutions reflect this perspective by framing transformational change in terms of large-scale, sustained, and replicable impacts that reshape systems rather than add isolated improvements. The Green Climate Fund (GCF), for instance, emphasises paradigm shifts that extend beyond individual projects, while the Climate Investment Fund (CIF) identifies systemic change, scale, and sustainability as core dimensions of transformation (ibid). This turn towards transformation underscores a broader consensus:

scaling is most meaningful when it contributes to durable, systemic shifts rather than simply increasing the number of outputs or beneficiaries.

2.2. What is inclusive scaling and why does it matter for coastal adaptation and resilience?

Scaling in complex systems can amplify risks and existing inequalities, create unanticipated negative consequences, and ultimately involves trade-offs that need to be navigated and balanced (Körner et al., 2021; McLean et al., 2019). Decisions about whether to prioritise speed or depth of change, reach or inclusion, short-term efficiency or long-term transformation, and financial sustainability or social equity are unavoidable (Brandon et al., 2025; Spierenburg, 2023). In coastal adaptation, where interventions must simultaneously support livelihoods, food security, ecosystem integrity, emissions reduction and justice, competing objectives mean that pursuing scale can disadvantage particular groups depending on how choices are made. These trade-offs shape the effectiveness of scaling efforts and directly influence who benefits and who bears the costs. At the same time, there is an abundance of examples of LLA initiatives that manage these trade-offs well, providing cost-effective and culturally agreeable solutions, such as fishing cooperatives leading mangrove restoration projects in Mozambique that both buffer storms and sustain fisheries (Macamo et al., 2024).

Adaptation initiatives that scale without confronting underlying power dynamics tend to reproduce vulnerability and exclusion at larger scales. Trade-offs in scaling adaptation can lead to maladaptation in which interventions overlook deeper social conditions and unintentionally heighten vulnerabilities, leading to inequitable and failed outcomes (Kuhl et al., 2021; Sánchez Rodríguez et al., 2021; UNFCCC and IUCN, 2022). Marine protected areas (MPAs) can adversely impact fishers, especially women and the most vulnerable, if local-level vulnerability is not properly considered in planning (Mizrahi et al., 2020). When scaling prioritises expansion ('up' or 'out') without addressing norms, power relations and structural inequality ('scaling deep'), exclusion is often reproduced as power, and privilege structures that drive the distribution of costs and benefits remain undisturbed (Kuhl et al., 2021; Water for Women, 2022). Large-scale coastal projects, whether infrastructure, conservation zones or marine protected areas, frequently generate winners and losers, creating opportunities for some while displacing low-income or Indigenous communities (Gupta and Bavinck, 2017). Similar patterns emerge in climate finance, where even progressive mechanisms like the GCF routinely bypass the most vulnerable (Anantharajah and Setyowati, 2022). Market-based tools such as microfinance, insurance, and private corporations can also exclude households with the least financial resilience (Resurrección et al., 2019) or even exacerbate conflicts within coastal communities (Villasante et al., 2025). Across these examples, the same dynamic occurs – without deliberate attention to inclusion, scaling can magnify inequity rather than reduce it.

The concept of inclusive scaling is critical because scaling climate adaptation is inherently political, shaping whose knowledge, priorities, and resilience are prioritised. These patterns highlight that scaling is not a neutral process, but a political one. Innovations reflect the worldviews and priorities of those who design and champion them – often powerful political, corporate or academic actors (Körner et al., 2021; Wigboldus et al., 2016). As a result, scaling can entrench dominant visions of what adaptation should look like while sidelining marginalised groups whose perspectives are less visible in decision-making. An inclusive, or 'responsible', approach to scaling asks instead: 'how, why, for whom and under what conditions does scaling change impact?' (Spierenburg, 2023). For coastal adaptation, where climate risks intersect with poverty, gender inequality and contested resource rights, this is particularly pertinent. Inclusive scaling is foundational to ensuring that expanding adaptation efforts strengthens, rather than undermines, resilience for Indigenous peoples, local communities, women, people with disabilities and other marginalised groups.

3. Scaling coastal climate adaptation and resilience

3.1. Approaches to scaling

Across coastal adaptation, scale is pursued through top-down and bottom-up approaches, often combined and bringing a set of assumptions about speed, efficiency, and justice. Primarily top-down, standardised and finance-driven models which can mobilise large volumes of capital and expand quickly will often prioritise bankability, risk management and uniform solutions over context-specific needs (Anantharajah and Setyowati, 2022; Colenbrander et al., 2018; Kuhl et al., 2021; Venner et al., 2024). Primarily bottom-up and relational approaches are often slower and resource-intensive, centring local priorities, participation and justice, and typically advancing through negotiated, incremental change (Carter et al., 2018; Forero, 2025; Reid, 2015). These are not competing or mutually exclusive routes; in reality, most contexts require a combination of shallow and deep approaches (Claudet et al., 2024). Nonetheless, they entail different assumptions about how scale should be achieved and what trade-offs are acceptable. In particular, choices around speed versus depth, standardisation versus context-fit, and financial returns versus equity shape who benefits, who bears the risks, and whose knowledge and priorities influence decision-making (Anantharajah and Setyowati, 2022; Carter et al., 2018; Kuhl et al., 2021; Venner et al., 2024). Recognising these underlying approaches, and making the associated trade-offs explicit, is essential for ensuring that scaling strategies strengthen rather than undermine inclusion and resilience (Singh et al., 2022).

3.2. Financing scaling

International climate adaptation finance is channelled primarily through a small number of multilateral mechanisms, including the GCF, the Adaptation Fund (AF), the CIF, as well as bilateral development finance institutions and multilateral development banks (MDBs). These mechanisms are largely capitalised through contributions from developed country governments, often reported as part of their international climate finance commitments, with some funds (notably the GCF and CIF) also mobilising private co-finance (GCF, 2022; OECD, 2024). Resources are typically allocated to recipient countries through accredited national, regional, or international entities, based on project or programme proposals that align with fund-specific investment criteria and safeguards. Disbursement most commonly occurs at the national level via ministries, national development banks, or multilateral intermediaries, reflecting strong fiduciary and risk-management requirements (Venner et al., 2024). While some mechanisms, such as the AF's Direct Access modality and the GCF's Direct Access Entities, allow accredited national or sub-national institutions to receive funds directly, access at local and community levels remains limited (GCF, 2022). In practice, funding often reaches sub-national actors indirectly through centrally managed programmes such as COAST. These funds and institutions are formally guided by shared justice-oriented principles, including commitments to equity, country ownership, participation, and prioritisation of the most vulnerable. The UNFCCC principles of common but differentiated responsibilities and respective capabilities (CBDR–RC), alongside fund-specific mandates, underpin their design and implementation.

Within this financing architecture, coastal adaptation is supported through a range of financial instruments that shape scaling pathways and inclusion outcomes in distinct ways. Financing coastal adaptation mirrors broader adaptation finance, and the GCF has identified 11 commonly used instruments across climate adaptation and resilience (A&R) (see **Table 1**). Sumaila et al. (2021) outline three broad categories of financial instruments underpinning investments in a sustainable ocean economy. First, **market-return investments** attract commercial capital for activities able to generate competitive returns, such as sustainable aquaculture, revenue-linked ecosystem services, offshore renewable energy, and climate-resilient port infrastructure. These investments often favour commercially strategic coastlines over poorer areas. Second, **below-market or blended finance** is needed where resilience benefits are clear but financial returns are insufficient; instruments like blue bonds, guarantees and concessional loans help scale

sustainable fisheries, coastal ecosystem restoration and marine conservation by sharing risk between public and private actors. The Seychelles' Sovereign Blue Bond presents an example of this, a publicly issued sovereign debt instrument, supported by the World Bank and Global Environmental Facility (GEF), and designed to mobilise private impact finance for ocean conservation, sustainable fisheries and related climate-resilient coastal economic activity by channelling bond proceeds through a combination of grants and loans (Bennett et al., 2024). Finally, **public and philanthropic finance** remains essential for adaptation measures that generate no direct financial revenue, such as community-based adaptation, early warning systems, and marine protected areas. This is critical for ensuring that adaptation reaches highly exposed, low-income coastal communities that private capital is unlikely to serve.

At the same time, the growing reliance on market-based instruments in coastal adaptation reflects a broader process of financialisation with important implications for inclusive scaling. Governments and municipalities increasingly use market-based instruments such as green bonds, resilience bonds, insurance products, and tradable credits to fund adaptation (Venner et al., 2024). While financialisation can expand the overall pool of available capital and enable rapid scaling, it also introduces equity risks that must be actively managed. Capital tends to flows towards high-return projects and 'bankable' coastlines rather than towards the most vulnerable communities; administrative complexity can exclude local actors with limited capacity; and market-based mechanisms risk monetising ocean spaces in ways that marginalise Indigenous peoples and small-scale fishers (ibid). For inclusive scaling of coastal adaptation, it is therefore critical not only to expand financing volumes, but to also match instruments to local priorities and ensure governance arrangements explicitly safeguard equity, participation, and rights (see section 4.1).

Table 1: Description of financial instrument types for climate adaptation and resilience

Instrument	Description
Structuring approaches	
Blended finance	A strategic combination of catalytic capital from public or philanthropic sources to increase private sector investment in sustainable development. The concessional element helps to de-risk investments, making them more financially viable and more attractive to private investors.
Debt swap	An agreement between a government and one or more of its creditors to replace existing sovereign debt with one or more liabilities (a new debt with different terms or equity) that entail a spending commitment over time towards a specific goal, such as climate action, environmental conservation, or development goals.
Disaster risk finance	Supports countries' financial resilience to natural disasters and helps them address fiscal impacts and economic losses caused by them.
Financial instruments	
Bond	Debt security instruments issued by governments, municipalities, corporations, and other entities to raise money from investors willing to lend capital for a certain amount of time at a specific rate of interest. Issuers must repay the principal value of the bond at maturity.
Concessional loan	Below market-rate loans offered by major financial institutions, such as development banks and multilateral funds, to developing countries. Concessional loans have more generous terms than market loans, including lower interest rates and/or longer grace periods.

Equity	The market value of assets owned by shareholders with an ownership stake in a company or project after all debts are paid off. By buying a share of the venture, equity investors provide finance and share in potential profits and losses.
Grant	Non-repayable funds provided to a recipient for a specific purpose, such as a project or programme. Grants are often used for initiatives that may not generate financial returns but have significant social or environmental benefits.
Guarantee	A legally binding agreement in which a guarantor assumes responsibility for the debt or performance obligations of the borrower in the event of default. Guarantees can reduce the perceived risk of an investment and encourage lending among risk-averse investors.
Insurance/risk transfer	A means of protection from future financial losses incurred due to specific events, such as natural disasters or project failures. An insurer agrees to compensate the insured for those losses in exchange for a premium, providing a financial safety net.
Market-based loan	Loans provided by development banks or financial institutions on commercial terms rather than concessional terms, reflecting the borrower's market conditions and creditworthiness.
Payment for ecosystem services (PES)	Payments in cash or in kind to participants (typically landowners or communities) who voluntarily provide ecosystem services. Payments are conditional on agreed natural resource management practices such as ecosystem protection or conservation, rather than on delivery of a market service.

From 'Scaling Finance for Climate Adaptation' (Brandon et al., 2025)

3.3. Six common scaling models in coastal A&R

A range of scaling models appear in the literature and apply to coastal climate A&R. These are not mutually exclusive; some describe pathways (e.g. policy and institutional change, market-based approaches, knowledge diffusion), while others are models that combine several pathways (e.g. community-based and LLA). In practice, successful coastal adaptation efforts often blend elements from multiple models as they move from pilots to wider systems change. Below we outline six prominent models emerging from the literature, how they work in coastal contexts, emerging evidence on their impact, and the types of financing that commonly support them.

3.3.1. Community-based adaptation (CBA) scaling models

CBA is an empowerment-based approach that puts local communities, especially marginalised groups, at the centre of assessing climate risks, identifying priorities and implementing solutions (Mfitumukiza et al., 2020; Reid, 2015). Scaling CBA can involve a combination of scaling out (replicating community-level initiatives across more sites), scaling up (mainstreaming CBA principles into local and national plans, policies and programmes), and scaling deep (shifting norms, practices, and relationships so that CBA approaches are sustained). Early CBA efforts were often stand-alone NGO projects, limited by their disconnection from higher-level governance processes and broader drivers of vulnerability (Reid and Huq, 2014). More recent practice demonstrates how CBA can scale through integrated pathways. In the Philippines, community-based marine reserves expanded to more than 1,600 sites, driven by tangible livelihood and conservation benefits for local communities and peer-to-peer learning (Bennett et al., 2021). Other examples demonstrate scaling up through institutionalisation, such as the inclusion of vulnerable groups and communities in National Adaptation Plans (NAPs), including the planning and implementation of adaptation measures, in Bhutan, Marshall Islands and Zambia (Albinger, 2024). Large programmes such as the Triple-F model in coastal Bangladesh,

which combines mangrove restoration, livelihood diversification, and awareness-raising, demonstrate how scaling up, out and deep can occur simultaneously (Mfitumukiza et al., 2020).

CBA is predominantly financed through public, grant-based funding combined with direct access mechanisms. Funding typically comes from bilateral donors and multilateral climate funds (Brandon et al., 2025), sometimes complemented by direct access funds, savings groups or small-scale microfinance. For example, the AF introduced the LLA funding aggregator programme so that implementing partners could administer grants to local entities without fund accreditation (Adaptation Fund, 2024). Where CBA is embedded in government planning, resources can be devolved through national budgets and institutional arrangements, enabling finance to reach local actors through decentralisation and local adaptation funds. The Nepal LAPA framework, for example, is a devolved funding mechanism in which 80% of the funds reached the local level, financed primarily through grant-based international climate finance from the UK and European Union (Fenton et al., 2016). Direct access modalities within multilateral climate funds seek to institutionalise similar approaches, enabling accredited national or sub-national entities to channel flexible, grant-based finance closer to communities while maintaining alignment with national fiduciary, planning, and accountability systems (Brandon et al., 2025).

3.3.2. Locally led adaptation scaling models

LLA approaches scale resilience through decentralised or hybrid governance models that shift decision-making power, resources, and accountability towards local actors (including local governments, customary institutions, community organisations and Indigenous peoples groups) while maintaining supportive links to national and international systems (ASSAR, 2019; Mfitumukiza et al., 2020). These models often combine administrative decentralisation with new or strengthened institutions, such as local adaptation committees, co-management bodies for fisheries and MPAs, or hybrid arrangements that connect customary and formal governance systems (Baron-Aguilar et al., 2025; Ouma et al., 2018). Scaling occurs through replication across localities, horizontal networking and peer learning, and vertical integration into policy and planning. Examples range from international initiatives, such as the High-Level Panel for a Sustainable Ocean Economy, which supports co-produced ocean plans with Indigenous and local knowledge holders, to national and sub-national networks, such as MIHARI in Madagascar. MIHARI links locally managed MPAs across coastal communities, enabling peer learning, collective advocacy and engagement in policy processes (MIHARI Network, n.d.). Evidence suggests that when it is well-resourced, decentralised governance can improve responsiveness, participation and context-fit, scaling through coordination rather than standardisation (ASSAR, 2019).

Financing for LLA is typically grant-based and designed to support devolution and local decision-making rather than returns. Resources flow through pooled funds (such as national climate funds with devolved windows or local adaptation funds), sometimes supported by direct access mechanisms (such as within multilateral climate funds) (Brandon et al., 2025). In practice, successful LLA networks like MIHARI rely on long-term donor and philanthropic support to sustain activities. Sub-national governments may also access concessional loans where legal and market conditions allow. In all cases, evidence suggests that LLA only delivers inclusive scaling when decentralisation mandates are matched by genuine fiscal devolution, so that local actors control not just implementation but also budgetary decisions (Carlitz, 2017).

3.3.3. Institutional and policy scaling models

Institutional and policy scaling focuses on embedding adaptation into laws, policies, plans, and organisational mandates so that resilience is pursued systematically rather than through isolated projects (Ouma et al., 2018). Scaling occurs through mainstreaming coastal adaptation into national climate policies, sector strategies (e.g. fisheries, coastal infrastructure), local

development plans or social protection systems. It also includes creating or strengthening institutional spaces and processes for participation and learning (see section 2.1), such as cross-ministerial committees, multi-stakeholder platforms, and data-sharing systems (Vernooy and Bouroncle, 2019). The aim is to shift the 'rules of the game' so that climate risk and inclusion are part of routine decision-making (Moore et al., 2024). In coastal contexts, institutional and policy scaling can be seen in the integration of community experiences into NAPs, coastal zone management frameworks, or fisheries and marine conservation policies. For example, the NAP Global Network's work with Lensational in Kenya and Ghana used participatory photography to bring women's experiences of climate impacts into NAP processes, helping to make adaptation planning more gender-responsive (Chiu et al., 2022). Similarly, regional spatial planning processes, such as MPA networks, illustrate institutional scaling in which multiple sectors and stakeholders are coordinated around shared conservation objectives (Kabbadj et al., 2018).

Financing for institutional and policy scaling is predominantly public and grant-based, drawing on domestic budgets complemented by international climate finance from bilateral and multilateral donors (Brandon et al., 2025). Resources are typically channelled through government ministries, planning authorities or national climate funds, supporting policy development, institutional reform, coordination mechanisms, and capacity building rather than direct service delivery. While this model can unlock scale by leveraging government systems, its inclusive potential depends on sustained investment in implementation, accountability and local capacity (ibid). However, funding for larger governance and institutional change initiatives can be hard to secure (Bennett et al., 2021).

3.3.4. Market-based and financialised scaling models

Market-based and financialisation approaches scale adaptation by reshaping incentives, value chains, and investment flows so that climate-resilient and ecosystem-friendly practices become attractive to the private sector. In coastal systems, this can include sustainable fisheries and aquaculture value chains, eco-labelling and certification schemes, tourism levies, blue carbon markets, or risk transfer products such as insurance for coastal hazards (Sumaila et al., 2021). The logic is that when adaptation and conservation generate returns, markets will adopt and scale them. For example, responsible seafood value chains can link small-scale producers with buyers, financiers, and technical support (Vernooy and Bouroncle, 2019). Similarly, coastal risk insurance schemes, such as parametric insurance for reefs and beaches, link tourism revenues to ecosystem restoration and rapid-disaster response (such as the Quintana Roo reef insurance scheme in Mexico) (Schelske et al., 2021).

Market-based scaling models are typically supported by private and blended financial instruments. These include blended finance, combining concessional public or philanthropic capital with private investment to de-risk deals; equity and market-rate loans for commercially viable enterprises; insurance and disaster risk finance for risk transfer; and payment for ecosystem services (PES) to reward conservation by communities or landholders (Brandon et al., 2025; UNFCCC and IUCN, 2022). Larger-scale infrastructure or nature-based solutions (such as offshore renewable energy, port upgrades, and large-scale coastal protection) are often financed through bonds, guarantees, and climate funds. Project bonds are well-suited to infrastructure assets, while sovereign bonds are used to finance marine conservation and sustainable fisheries at national scales, including through blue bonds and debt-for-nature swaps (FOA and WEF, 2020; Standing, 2023). These instruments give market-based models high potential for rapid scaling (Brandon et al., 2025).

3.3.5. Social innovation and technology scaling

Social innovation and technology models focus on scaling technologies, practices and organisational models that change how coastal actors relate to climate risk and resources. They often combine hardware (e.g. early warning systems, new fishing gear, nature-based and hybrid

'green-grey' infrastructure) with software (e.g. new business models, cooperatives, social enterprises and governance arrangements). Scaling is not simply about diffusion but about embedding innovations within a system of institutions, behaviours, and relationships so they are sustained (Sánchez Rodríguez et al., 2021; Spierenburg, 2023). In coastal settings, examples include ICT-based early warning systems for cyclones and storm surges, integrated mangrove restoration-seawall systems, and enterprises that improve fish processing, cold storage, and market access for small-scale fishers. Evidence suggests that integrated approaches combining engineered and nature-based solutions can be more robust, cost-effective and multi-benefit than either alone (UNFCCC & IUCN, 2022).

Funding for innovation and technology scaling typically follows a staged pathway that includes public, private, and blended models. Early phases are usually supported through public and philanthropic grants and technical assistance for piloting, research, and development due to high uncertainty and limited returns (Brandon et al., 2025; FOA and WEF, 2020; UNFCCC and IUCN, 2022). Where business models emerge (such as social enterprises, digital platforms, and resilient infrastructure), blended finance, concessional loans, equity, and in some cases market-rate finance can support growth (FOA and WEF, 2020; UNFCCC and IUCN, 2022). An enabling environment (i.e. supportive regulation, cross-sectoral partnerships, and stable public co-financing) is important for these innovations to move from pilots to scale, which requires public and concessional financing to address systemic barriers (see section 3.3.3 for more detail) (UNFCCC and IUCN, 2022).

3.3.6. Knowledge and information scaling models

Knowledge and information models aim to scale adaptation by improving who has access to which information, and in what form. This includes climate services, ICT-based advisories, community monitoring, and multi-stakeholder learning platforms. In agriculture, ICTs and agro-advisory services have been used to deliver weather forecasts, market information and technical advice at scale (Vernooy and Bouroncle, 2019); similar models are emerging for coastal fisheries, storm warnings, and coastal hazard mapping. Multi-stakeholder platforms and learning alliances bring governments, researchers, communities, and private actors together to co-produce knowledge, test options, and spread learning. Evidence from CSA and adaptation suggests these platforms can help diffuse innovations and coordinate action (ibid).

These models are typically funded through grants from governments, climate funds and philanthropies, often embedded in larger programmes. As they mature, elements such as digital climate services can attract blended finance, and in rare cases, equity investment (e.g. start-ups providing climate analytics or advisory services), while public agencies may finance core services via budget allocations or concessional loans for upgrading observation and communication infrastructure.

Across the six scaling models, clear patterns emerge. Models most closely aligned with financial, technological, and efficiency-driven logics (such as market-based and innovation-led approaches) tend to scale more rapidly and attract larger volumes of capital, but they also carry heightened risks of exclusion when equity, participation and local context are not explicitly designed in. In contrast, relational and governance-led models (such as CBA, locally led, and decentralised governance, and institutional and policy scaling) are better suited to supporting inclusive, context-responsive change, yet they face structural constraints related to financing, capacity, and political support. These trade-offs are explored in more detail in the following section.

Table 2: Table of scaling models identified in the literature and suitable financial instruments

	Blended finance	Debt swap	Disaster risk finance	Bond	Concessional loan	Equity	Grant	Guarantee	Insurance / risk transfer	Market-based loan	Payment for ecosystem services
Community based	◐						✓		◐		✓
Locally led	✓				✓		✓	◐	◐		
Policy and institutional	✓	✓		✓	✓		✓	◐	◐		
Market-based and financialisation	◐		✓	✓	◐	✓		✓	✓	✓	✓
Social innovation and technology	✓				✓	✓	✓	◐		◐	
Knowledge and information	◐				◐		✓				

Key: ✓ = strong alignment between financial instrument and scaling model ◐ = partial alignment or supporting role

4. Trade-offs and opportunities for inclusive scaling in coastal adaptation

Efforts to scale coastal climate A&R are shaped by a set of recurring trade-offs that influence who benefits, whose knowledge counts, and which pathways are prioritised (Körner et al., 2021). While scaling is often presented as a technical or managerial challenge of expanding 'what works', the literature reviewed in this section shows that scaling is deeply shaped by financial structures, organisational incentives, institutional capacities, and power relations. These dynamics are not neutral: they can enable rapid expansion of adaptation efforts, but they can also entrench exclusion, reinforce inequalities, and generate maladaptive outcomes. By understanding *how change is happening*, trade-offs are made visible and can be actively managed, leading us to practical strategies for strengthening inclusive scaling (Gupta and Bavinck, 2017; Spierenburg, 2023).

4.1. Financial and structural access barriers

4.1.1. How do financial structures produce trade-offs for inclusive scaling?

Financial and structural access barriers are among the most significant constraints on inclusive scaling in coastal adaptation. These barriers arise when the financial tools, services, and resources required to participate in, or benefit from, adaptation efforts are inaccessible to local actors, marginalised groups, community organisations, or small and medium enterprises. This happens because financing options for scaling, whether public, private, or blended, tend to privilege bankability, risk management, and project scale over vulnerability, equity, and locally defined needs (Venner et al., 2024).

Private and blended finance actors face structural incentives to prioritise projects that can demonstrate financial returns, predictable revenue streams and lower risk, leading to systematic exclusions (Körner et al., 2021; Zetterli, 2023). As a result, investments gravitate towards commercially strategic coastlines, larger infrastructure, or nature-based solutions with monetisable benefits. While these large-scale investments are essential for the scale of climate risk, ensuring that finance also flows to poorer coastal communities, informal settlements, and local enterprises requires deliberate design choices beyond market-based incentives. Even microfinance and insurance products exhibit these biases and can exclude women, the very poor, and those in high-risk areas (Resurrección et al., 2019; Zetterli, 2023). In coastal contexts, market-based instruments can further marginalise communities by monetising ecosystems, imposing formal tenure requirements that exclude customary users, or relying on economic valuations misaligned with local value systems (Claudet et al., 2024).

The structure of climate finance continues to systematically exclude local actors and community-led initiatives from accessing public and philanthropic capital despite strong inclusivity commitments. Despite commitments to LLA and CBA, less than 10% of international climate finance has historically reached the local level, hindered by rigid eligibility requirements, reliance on internationally accredited intermediaries, and complex bureaucratic processes (Forero, 2025; Mfitumukiza et al., 2020). The GCF, for example, despite equity-oriented mandates, favours 'large-scale and investment-ready projects', illustrating the structural barriers for community-led solutions (Anantharajah and Setyowati, 2022). At the same time, a growing proportion of adaptation finance is delivered in partnership with the private sector, primarily as loans, deepening indebtedness and shifting decision-making power towards financial institutions that prioritise profitable, investment-ready interventions (Venner et al., 2024). Research on the GCF, for example, demonstrates a tension between its emphasis on private sector finance and principles of country ownership, transparency and civil participation (Kalinowski, 2024). While the financial system's default logic favours standardised, capital-intensive interventions, conscious design choices and appropriate financial instruments can reorient capital towards slower, locally rooted and justice-oriented projects (Forero, 2025).

4.1.2. How does this impact common scaling models in coastal A&R?

Financial barriers undermine inclusion in different ways across scaling models, by misaligning financing structures with the conditions required for each model to scale equitably. Financial barriers to inclusion are the most pronounced in market-based and financialisation models and social innovation and technology scaling, where access to capital determines which innovations can scale and whose priorities are represented. Market-oriented approaches tend to scale fastest where risks can be priced and returns captured, conditions that rarely present in the poorest coastal areas (Venner et al., 2024). Social innovations that lack monetisable benefits, or that rely on relational and institutional change, struggle to meet investor criteria (Zetterli, 2023).

Financial barriers also restrict CBA and LLA models, which depend on flexible, long-term, and devolved financing. When adaptation funds channel resources through centralised institutions or complex fiduciary systems, local organisations may not be able to access them (Mfitumukiza et al., 2020). Institutional and policy scaling can mitigate some of these disparities, but only when national systems explicitly prioritise equity and devolved financing. Without such safeguards,

institutional scaling can reproduce the same access barriers at a larger scale (Colenbrander et al., 2018).

4.1.3. What are the opportunities and strategies for promoting financial access in scaling?

Despite these challenges, the literature points to opportunities to redesign financial systems and instruments to support inclusive scaling. Körner et al. (2021)'s central question, *'is profit a means to an end, or an end in itself?'* helps reorient financing strategies towards equity and long-term resilience rather than commercial viability alone. Several strategies emerge from the literature:

1. Create dedicated financing windows and flexible instruments for high-risk, low-return coastal groups: Examples include small-grant facilities, micro-investment platforms, or climate risk guarantee schemes tailored to micro, small and medium-sized enterprises (MSMEs), women, and climate-exposed livelihoods (Zetterli, 2023). Community Innovation Funds, such as those piloted by ICRAF in Vietnam, illustrate how devolved financing can support local experimentation when formal financial services are inaccessible (Vernooy and Bouroncle, 2019).

2. Integrate equity, gender, and justice principles directly into financing mechanisms: Gender action plans, weighted funding formulas, and equity impact assessments can help ensure that adaptation resources reach groups historically marginalised in climate finance, such as women, Indigenous peoples, and informal coastal workers (Forero, 2025; Hageer, 2025).

3. Reduce structural barriers by simplifying access procedures and investing in capacity building: Strengthening local institutions, clarifying impact metrics, and standardising terminology can reduce investor risk perceptions and enhance the ability of local actors to access funds (Forero, 2025; Songwe et al., 2022).

4. Expand the use of grants and concessional finance for non-market or socially essential adaptation: Given the justice rationale and the unsuitability of loan-based instruments for low-income coastal communities, grants remain essential for CBA, LLA, social protection-linked adaptation, early warning systems, and ecosystem restoration (see Box 2) (Sumaila et al., 2021; Venner et al., 2024).

Box 2: Global Fund for Coral Reefs (GFCR) (FOA and WEF, 2020)

The GFCR is designed to strengthen the resilience of coastal reef ecosystems, communities, and economies. It uses a blended finance structure featuring two components: one fund managed by the United Nations provides grants, technical assistance, and concessional finance, while an equity fund invests in commercial projects. This dual structure ensures critical conservation efforts (which typically lack returns) receive funding alongside commercial activities

5. Align financial inclusion efforts with climate resilience needs: Inclusive financial systems, such as savings groups, insurance, PES and credit products tailored to climate risk, can empower vulnerable households and women to pursue their own adaptation strategies (see Box 3) (Zetterli, 2023).

Box 3: Innovative Climate Risk Insurance (InsuResilience Solutions Fund) (Brandon et al., 2025)

The fund provides grants for designing, pilot-testing, and launching innovative climate-risk insurance products in developing countries, specifically targeting households, SMEs, humanitarian organisations, and governments vulnerable to climatic shocks like floods, droughts, and storms. The use of grants for product development reduces the risk associated with creating new inclusive financial products.

6. Leverage social protection systems as delivery channels: Because they already reach vulnerable groups at scale, social protection programmes can serve as conduits for adaptation finance, especially in shock-responsive or climate-linked forms (Zetterli, 2023).

7. Reorient financing frameworks towards justice and locally defined priorities: Embedding climate justice principles, supporting local participation in financing decisions, and adopting context-sensitive mechanisms can help address structural inequities and avoid maladaptation (see Box 4) (Forero, 2025; Nor and Moge, 2024).

Box 4: Sustainable Blue Economy Finance Principles (FOA and WEF, 2020)

The principles were developed to drive value in ocean finance while mitigating negative impacts on the marine environment and the livelihoods of people who depend on them. The framework aims to promote and guide sustainable investing, including: '**Inclusive:** We will support investments, activities and projects that include, support and enhance local livelihoods, and engage effectively with relevant stakeholders, identifying, responding to, and mitigating any issues arising from affected parties.'

4.2. Pressure for efficiency and short-term results

4.2.1. How does pressure for efficiency and short-term results produce trade-offs for inclusive scaling?

Pressure for efficiency and short-term results is in tension with the time-intensive processes required for inclusive scaling in coastal adaptation. Pressure for efficiency and short-term results is a pervasive constraint on inclusive scaling in coastal adaptation. Many of the processes required for inclusive scale – such as building trust, shifting social norms, strengthening local capacity, and addressing entrenched power relations – are inherently time-intensive (Sánchez Rodríguez et al., 2021). These requirements sit in tension with dominant funding flows, organisational incentives, and project structures that prioritise rapid delivery, cost-effectiveness, and short funding cycles, often reinforced by narratives of urgency around climate impacts (Brandon et al., 2025; Sánchez Rodríguez et al., 2021; Venner et al., 2024).

There is a core trade-off between the urgency of climate action and the need for context-specific, socially embedded solutions. The literature highlights a recurring dilemma: while climate risks demand timely action, an exclusive focus on speed and efficiency can crowd out solutions that are context-specific, demand-driven, and socially embedded. Scaling approaches that privilege 'quick wins' or fast-transferable solutions risk locking in interventions that appear effective in the short term but prove unsustainable or exclusionary over time (Körner et al., 2021). Linear scaling logics, when applied to complex social–ecological systems, may exacerbate environmental degradation and social risks by failing to account for complexity (ibid).

Efficiency-oriented definitions of scale shape both who delivers adaptation and where it is implemented, often privileging speed and coverage over equity and legitimacy. Efficiency-driven interpretations of scale often equate success with maximising beneficiary numbers in the shortest possible timeframe. In practice, rapid large-scale rollout typically relies on established corporate or institutional actors that can deliver speed and coverage but introduce forms of exclusion through intellectual property rights, non-competition clauses, or vertically integrated delivery models that marginalise small-scale producers and local enterprises (Körner et al., 2021). These logics also shape spatial and governance choices. Approaches such as regionalisation or networked systems (for example, multi-island MPA networks) may reduce

costs and manage ecological risk but can generate resistance where costs and benefits are unevenly distributed, undermining legitimacy and compliance when equity concerns are not explicitly addressed (Kabbadj et al., 2018). At the macro level, similar dynamics play out in climate finance where allocation patterns privilege efficiency and institutional capacity over vulnerability, reinforcing the equity–efficiency trade-off in adaptation funding (Venner et al., 2024).

Short project cycles and output-focused delivery systematically undermine the relational and transformative dimensions of inclusive adaptation. Relationship-building, capacity development, and collective learning, central to inclusive adaptation, are often sidelined when programmes are designed to deliver measurable outputs within narrow timeframes (Hageer, 2025). This is particularly problematic where adaptation requires transformation of deeply embedded social norms or power structures, processes that are resistant to accelerated timelines (Brandon et al., 2025). Evidence from CBA shows that short-term, narrow projects frequently fail to build lasting capabilities, leaving communities without the skills or institutions needed to shape their own climate futures once projects end (Mfitumukiza et al., 2020).

4.2.2. How does this impact common scaling models in coastal A&R?

Across coastal adaptation, this creates a systematic bias towards models aligned with efficiency-oriented funding and delivery logics – particularly market-based, financialised, and technology-led approaches – while disadvantaging slower, relational, and politically engaged models. Market-based and social innovation or technology scaling models are favoured because they can be packaged around clear deliverables, replicable designs, and quantifiable metrics. Within these models, standardised, capital-intensive, and rapidly deployable interventions, such as engineered infrastructure, digital early warning systems, and monetisable nature-based solutions, are more likely to be supported than approaches requiring sustained engagement, institutional change, or social learning. This encourages solutions that 'travel well' across contexts, even where local adaptation needs differ, and can lock in interventions that are efficient in the short term but poorly aligned with local priorities or long-term resilience (Körner et al., 2021).

Pressure for speed and efficiency can also lead to procedural rather than meaningful participation and collaboration in coastal scaling. CBA, decentralised governance, and institutional or policy scaling are not excluded, but are often constrained by short project timelines, narrow output indicators, and delivery models focused on visible results. As a result, participation can become procedural rather than substantive, with limited scope for trust-building, behaviour change, or addressing entrenched power relations. Funding may nominally support bottom-up approaches yet fall short of enabling genuine empowerment or transformation (Mfitumukiza et al., 2020). Donors and governments also prioritise plans, frameworks, or policy outputs deliverable within funding cycles, rather than the slower work of coordination, capacity building, and political negotiation needed for effective implementation. This can result in formal adoption without meaningful change on the ground, limiting the contribution of these programmes to inclusive scaling (Bennett et al., 2021).

4.2.3. What are the opportunities and strategies for promoting inclusion alongside pressure to deliver short-term results?

Despite strong pressures for speed, efficiency, and short-term results, the literature highlights several strategies that can help reconcile urgency with inclusive scaling. Rather than rejecting efficiency outright, these approaches focus on reshaping organisational incentives, funding structures, and evaluation frameworks so that longer-term, equity-enhancing processes are recognised as essential to effective adaptation. The aim is to make inclusion compatible with scale by valuing depth, durability, and justice alongside reach and speed.

1. Adopt longer-term and phased approaches to scaling: Inclusive scaling often requires time for relationship-building, trust, capacity development, and social norm change. Where possible, funders and implementers can adopt phased or sequenced approaches that combine early, visible wins with longer-term investments in institutional change and participation (Körner et al., 2021).

2. Design project timelines and funding structures that allow for participation and learning: Short, rigid project cycles constrain meaningful participation and capacity building. More flexible funding arrangements, such as longer grant periods, adaptive management approaches, and learning-oriented milestones. This creates space for experimentation, feedback, and course correction, particularly in politically or culturally sensitive contexts (ASSAR, 2019; Mfitumukiza et al., 2020).

3. Ensure that value-for-money and effectiveness metrics include equity and sustainability: Scaling frameworks can explicitly incorporate equity, non-discrimination, and 'do no harm' principles as both process and outcome goals, rather than treating inclusion as an add-on (Carter et al., 2018; Sánchez Rodríguez et al., 2021). This includes recognising that reaching the most marginalised may involve higher costs per beneficiary, slower progress, or fewer immediate outputs, and embedding these trade-offs into value-for-money assessments (Carter et al., 2018).

4. Strengthen participatory decision-making around trade-offs: Involving communities and local stakeholders in examining impacts, weighing trade-offs (e.g. speed versus sustainability), and shaping implementation choices can improve both equity and legitimacy (Bennett et al., 2021). Participatory processes can also reduce backlash and improve compliance by ensuring that scaling decisions are perceived as fair, particularly where costs and benefits are unevenly distributed (Kabbadj et al., 2018).

5. Use independent and equity-focused review mechanisms: Independent, third-party proposal reviews that explicitly assess equity risks can help identify exclusionary design features before implementation and enable the application of context-specific safeguards (Claudet et al., 2024). Such mechanisms can counterbalance institutional pressures to prioritise speed and scale over social outcomes.

6. Align organisational culture and leadership with equity goals: At the institutional level, inclusive scaling requires leadership, mandates, and team cultures that explicitly value social equity and reflexivity. Organisational introspection (e.g., revisiting theories of change, incentives, and internal power dynamics) can help ensure that institutions embody the inclusive principles they seek to promote externally (Bennett et al., 2021).

7. Develop holistic monitoring frameworks that capture qualitative and long-term change: While accountability and measurability are important, over-reliance on short-term quantitative indicators can obscure social outcomes critical to resilience. Holistic monitoring approaches that combine qualitative and quantitative indicators can better capture changes in trust, social cohesion, local capacity, and institutional strength, conditions essential for inclusive and sustainable adaptation (Forero, 2025).

4.3. Institutional and governance weaknesses and fragmentation

4.3.1. How do institutional and governance weaknesses and fragmentation produce trade-offs for inclusive scaling?

Institutional and governance weaknesses constrain inclusive scaling in coastal adaptation by limiting coordination across actors and constraining institutions' ability to manage the complexity of equitable climate adaptation. Scaling adaptation requires collaboration across

sectors, levels of government, and knowledge systems, as well as the ability to balance climate risk, equity concerns, and long-term system change. Simplified, win–win framing of ecosystem challenges ignores the trade-offs sometimes required between ecosystem and human well-being. In practice, however, adaptation governance is often fragmented, siloed, and poorly equipped to support these demands (ASSAR, 2019; UNFCCC and IUCN, 2022).

Weak coordination across and within governance levels fragments responsibility and dilutes accountability for equitable adaptation. A first set of barriers relates to weak coordination and collaboration across and within governance levels. Responsibilities for climate adaptation are frequently dispersed across institutions with overlapping or unclear mandates, limited communication, and weak mechanisms for joint planning and implementation (ASSAR, 2019; Ouma et al., 2018). Vertical fragmentation between national, sub-national, and local levels further undermines scaling: NAPs are often too broad or insufficiently translated into operational guidance, while local authorities lack the authority, resources, or information needed to implement them effectively (Ouma et al., 2018). As a result, adaptation efforts remain project-based and disconnected, and marginalised groups are left to manage climate risks without reliable institutional support (ASSAR, 2019; Reid, 2015). Institutional fragmentation also allows existing power asymmetries to shape scaling outcomes. Weak accountability and coordination mechanisms enable powerful actors and sectoral interests to dominate adaptation decisions, sometimes producing inequitable outcomes for coastal communities, small-scale fishers, and Indigenous peoples who continue to be excluded despite stated goals in international agreements for ocean governance (Claudet et al., 2024; Crosman et al., 2022).

Beyond fragmentation, many institutions lack the capacity and competencies required to navigate the social, political, and systemic complexity of inclusive scaling. A second, related challenge concerns institutional capacity to deal with the complexity of inclusive scaling. Inclusive adaptation requires institutions to work across disciplines, engage with diverse stakeholders, recognise power asymmetries, and integrate social equity into climate decision-making. Yet many institutions lack the boundary-crossing competencies, organisational cultures, and technical skills needed to manage these complexities (Körner et al., 2021). This is particularly evident at local levels, where institutions and community organisations are often under-resourced and isolated, limiting their ability to facilitate participation and coordinate actors (Mfitumukiza et al., 2020; Ouma et al., 2018).

These weaknesses create a trade-off between administrative manageability and inclusive scaling. Fragmented and capacity-constrained institutions tend to favour centrally managed, standardised interventions that are easier to coordinate and monitor, while participatory, cross-sectoral, and locally led approaches are harder to sustain at scale. Where participation is encouraged, it may remain procedural rather than transformative, as institutions struggle with the breadth and depth of skills and competencies required (Bennett et al., 2021; Pham and Saner, 2021).

4.3.2. How does this impact common scaling models in coastal A&R?

Institutional fragmentation and weak governance capacity strongly shape which scaling models are viable and how inclusive they can be in practice. Scaling approaches that depend on coordination across sectors, actors, and levels of governance are particularly constrained, namely CBA, LLA, and decentralised or hybrid governance models. These approaches rely on sustained collaboration between communities, local governments, civil society, and national institutions, as well as on mechanisms for learning, coordination, and policy integration. Where institutional capacity is limited or responsibilities are poorly aligned, CBA initiatives tend to remain isolated projects, struggling to scale beyond pilots or influence wider systems (Mfitumukiza et al., 2020; Ouma et al., 2018; Reid, 2015). Institutional and policy scaling models are also undermined by governance fragmentation. Although national policies, plans, and frameworks for coastal adaptation are increasingly common, weak coordination across sectors

and levels of government often prevents meaningful implementation at the local level. This can result in policy adoption without practice, limiting the potential for institutional scaling to support inclusive and context-responsive adaptation (ASSAR, 2019; Ayers and Schipper, 2014).

In contrast, market-based, financialised, and technology-led scaling models are often less constrained by institutional fragmentation because they can operate through narrower delivery channels or private sector actors. However, this apparent advantage comes with trade-offs: these models may bypass weak public institutions rather than being strengthened by them, reinforcing a system that prioritises efficiency and investment readiness over inclusive governance and long-term capacity building (Claudet et al., 2024; Venner et al., 2024).

4.3.3. What are the opportunities and strategies for strengthening institutions and governance for inclusive scaling?

While institutional fragmentation and capacity gaps pose significant barriers to inclusive scaling, the literature also points to concrete strategies for strengthening governance systems in ways that support equity, participation, and long-term resilience. These strategies focus on building coordination, capacity, and adaptive governance practices.

1. Strengthen capacity for locally led decision-making and management: Inclusive scaling depends on institutions that can operate across levels and governance systems (ASSAR, 2019). Investing in the capacity of local governments, customary authorities, and community organisations to engage meaningfully in planning, budgeting, and implementation can improve coordination and responsiveness (See Box 5).

Box 5: Tuvalu Coastal Adaptation Project (TCAP) (UNDP, 2021)

TCAP, a GCF-funded adaptation project, is a coastal defence infrastructure project that intentionally includes capacity building for national governments and local island communities to facilitate participation in adaptation planning and decision-making.

2. Invest in boundary-crossing and systems-oriented competencies: Scaling inclusive adaptation requires skills that many institutions currently lack, including facilitation, negotiation, systems thinking, and multi-actor coordination. Dedicated investment in these 'boundary-crossing' competencies can enable actors to work across sectors, disciplines, and power hierarchies, and to navigate the complexity inherent in scaling adaptation within social–ecological systems (see Box 6) (Körner et al., 2021). Ensuring key actors value local and Indigenous knowledge as a core capability, rather than treating it as supplementary, is central to this shift (Ouma et al., 2018).

Box 6: The Seychelles Marine Spatial Plan (SMSP) (Bennett et al., 2024)

SMSP illustrates how a state-led national planning process can strengthen coordination capacity and enable more inclusive scaling of coastal and ocean adaptation. Led by the government of Seychelles, it was designed to align conservation, climate resilience, and blue economy objectives across sectors such as fisheries, tourism, energy, and biodiversity protection. By providing a single, nationally mandated spatial framework, the plan created a shared reference point for decision-making, reducing fragmentation between sectoral policies and agencies, combining top-down authority with inclusive stakeholder engagement.

3. Adopt adaptive and polycentric governance approaches: Adaptive governance models that emphasise flexibility, learning, and experimentation offer an alternative to rigid, top-down systems that struggle with uncertainty and diversity. Polycentric arrangements, such as co-management bodies, multi-stakeholder platforms, and iterative policy cycles, can enable faster feedback, shared learning, and more equitable outcomes when authority is genuinely distributed rather than merely delegated (Baron-Aguilar et al., 2025; Hageer, 2025; Huitema et al., 2016).

4. Use intermediaries and civil society actors to coordinate across scales: Civil society organisations (CSOs) and other intermediaries can play a critical role in connecting local and traditional actors with national and international systems, coordinating networks, and safeguarding inclusive processes as initiatives scale. These actors can help manage trade-offs, broker knowledge across levels, and sustain relationships over the long time horizons required for institutional change (Wigboldus et al., 2016).

5. Embed adaptive, iterative, and learning approaches into scaling strategies and institutions: Because scaling interventions reshape the systems in which they operate, inclusive scaling requires adaptive approaches that prioritise continuous learning, reflection, and adjustment rather than linear rollout. Evidence shows that scaling strategies grounded in systems thinking, participatory research, and iterative learning are more likely to produce context-appropriate, durable and equitable outcomes, including in complex coastal settings (Körner et al., 2021).

6. Use analytical, planning, and accountability tools to embed equity in scaling processes: Inclusive scaling is more likely when institutions deliberately integrate equity principles and participatory processes into their mandates, planning systems, monitoring frameworks, and accountability mechanisms. Tools such as explicit theories of scaling, systemic analytical frameworks (see Box 7), social and environmental safeguards, and participatory monitoring and evaluation can help organisations anticipate unintended consequences, make trade-offs visible, and identify how power relations and exclusion may shift as initiatives expand (Wigboldus et al., 2016).

Box 7: The PROMIS framework (PRactice-Oriented Multi-level perspective on Innovation and Scaling) (Wigboldus et al., 2016)

PROMIS is a systemic analytical tool designed to support responsible innovation and scaling in complex social–ecological systems. It combines a multi-level perspective on socio-technical change with a structured analysis of economic, social, institutional, political, and ethical dimensions of scaling. PROMIS explicitly foregrounds power, inclusion, and unintended consequences, helping decision-makers identify trade-offs, anticipate negative spill-overs, and reflect on who benefits or loses as initiatives scale. By moving beyond linear, efficiency-driven models, the framework supports adaptive, participatory and context-sensitive scaling strategies that are responsive to system dynamics rather than narrowly focused on speed or replication.

4.4. Power asymmetries, socio-cultural inequalities, and knowledge exclusions

4.4.1. How do power asymmetries and knowledge exclusions produce trade-offs for inclusive scaling?

Unaddressed power asymmetries can turn scaling efforts into sources of maladaptation by reinforcing, rather than reducing, existing social and economic inequalities. Power asymmetries can lead directly to maladaptation when scaling efforts fail to account for local social, gender, and economic relations. CBA is often presented as inherently inclusive, yet evidence shows that without explicit attention to power, scaled interventions can reinforce existing inequalities (Ayers and Schipper, 2014; Kuhl et al., 2021; Reid, 2015; Resurrección et al., 2019). For example, adaptation packages designed to support smallholder farmers in Botswana were captured by wealthier, commercially oriented farmers, while women and poorer households were excluded due to cost, class dynamics, and unequal access to resources (Resurrección et al., 2019).

Reviews of CBA practice consistently find that socio-political barriers, including power imbalances within communities and between communities and institutions, are the most prevalent constraints on success, outweighing technical or environmental challenges (Selje et al., 2024).

Financial and governance power asymmetries undermine inclusive scaling by concentrating decision-making authority and shaping participation in ways that can privilege dominant actors. Financial and governance power undermines inclusive scaling by shaping project design, participation, and decision-making authority. Funding mechanisms for climate adaptation and sustainable ocean governance are highly politicised and controlled by powerful actors, influencing which projects are proposed, how transformation is defined, and which outcomes are valued (Claudet et al., 2024; Kuhl et al., 2021). Even participatory and multi-stakeholder platforms often reproduce asymmetries, as actors enter with unequal resources, influence, and negotiating power, allowing dominant interests to steer outcomes while participation serves to legitimise predetermined agendas (Gupta and Bavinck, 2017; Körner et al., 2021). In fragmented and complex governance systems, these dynamics can intensify exclusion, particularly for women, Indigenous peoples, small-scale fishers, and informal coastal workers (Crosman et al., 2022).

Power shapes inclusion not only through material resources, but also through control over how adaptation problems are defined and which knowledge systems are recognised as legitimate. Dominant narratives (often framed through technical, economic, or Global North perspectives) determine which risks are prioritised, which solutions are considered scalable, and whose experiences are marginalised. Research consortia, funders, and governments frequently frame adaptation challenges in ways that do not align with local understandings or lived realities, limiting the relevance and legitimacy of scaled solutions (Körner et al., 2021). These epistemic hierarchies marginalise Indigenous, local, and experiential knowledge systems, reproducing colonial and post-colonial patterns of exclusion and weakening the capacity of adaptation efforts to respond to diverse coastal contexts (Forero, 2025; Hageer, 2025).

When scaling is treated as a technical or apolitical process, it risks amplifying existing inequalities rather than transforming them. Scaling climate adaptation without confronting who holds power over finance, knowledge, and decision-making can entrench dominant interests, depoliticise adaptation, and scale maladaptation rather than resilience (Venner et al., 2024). The core trade-off, therefore, is not simply between speed and inclusion, but between scaling that reproduces existing power structures and scaling that actively seeks to redistribute voice, authority, and control in ways that support justice and sustainability (Ayers and Schipper, 2014).

4.4.2. How does this impact common scaling models in coastal A&R?

Power asymmetries and knowledge exclusions shape which scaling models gain traction, how they are implemented, and whose interests they serve. Market-based, finance-led, and technology-driven scaling models are particularly vulnerable to capture by dominant actors if not appropriately managed, as they concentrate decision-making authority around those who control capital and technical expertise. In coastal contexts, this can result in large-scale infrastructure, blue economy investments, or conservation initiatives that align with corporate or state priorities, while marginalising small-scale fishers, Indigenous peoples, and informal coastal livelihoods whose knowledge and values are less visible within technocratic or financial frameworks (Claudet et al., 2024; Crosman et al., 2022; Venner et al., 2024).

Participatory and multi-stakeholder scaling models are at risk of reproducing existing hierarchies if power is not explicitly addressed. Actors with greater resources, institutional legitimacy, or political influence tend to shape agendas, define success, and steer scaling pathways, while participation by marginalised groups risks becoming symbolic (Körner et al., 2021; Vernooy and Bouroncle, 2019). As a result, scaling through networks and partnerships can

unintentionally legitimise dominant perspectives. CBA and LLA are especially sensitive to power relations at both local and higher scales. Within communities, entrenched gender, class, or ethnic hierarchies can result in elite capture, while externally driven scaling pressures may override local priorities or undermine customary governance systems (Ayers and Schipper, 2014; Resurrección et al., 2019). At the same time, institutional and policy scaling can dilute community agency when local approaches are mainstreamed into top-down planning processes that privilege standardisation and administrative control over genuine power-sharing (Reid, 2015).

4.4.3. What are the opportunities and strategies for addressing power asymmetries and inequalities for inclusive scaling?

Despite inevitable power imbalances within coastal adaptation initiatives, the literature identifies a set of strategies that can help mitigate risks and support more inclusive scaling pathways when power dynamics are made explicit and actively managed.

1. Undertake explicit power and political economy analysis throughout scaling processes: Inclusive scaling requires recognising that power shapes problem definition, resource allocation, and whose knowledge counts. Upfront and iterative mapping of political interests, power relations, and potential winners and losers can help identify risks of elite capture, exclusion, or maladaptation, and open space to consider alternative scaling pathways that better serve marginalised groups (Carter et al., 2018; Körner et al., 2021).

2. Strengthen the role of intermediaries to amplify marginalised voices: CSOs, NGOs, and trusted intermediaries can play a critical role in bridging power asymmetries by supporting vulnerable groups to articulate priorities, navigate policy and finance systems, and engage with government and private actors. These intermediaries can help translate across knowledge systems and ensure that local perspectives meaningfully inform decision-making rather than being tokenistically consulted (ASSAR, 2019; Mfitumukiza et al., 2020).

3. Redistribute decision-making authority, not just participation: Moving beyond consultation towards shared or devolved authority is essential for addressing procedural and distributive inequities. Co-governance arrangements, Indigenous- and community-led adaptation initiatives, and decentralised governance reforms can help rebalance power when they are backed by legal recognition, sustained financing, and institutional support (see Box 8) (Baron-Aguilar et al., 2025; Bennett et al., 2021; Reid, 2015).

Box 8: Bird's Head Seascape, Indonesia (Jones, 2024; Mangubhai et al., 2012)

The majority of MPAs in the region have been established through community customary declarations and local laws, supported by national laws. This enables co-management structures that allow communities to manage and patrol their MPAs. This is an example of genuine co-governance in which there is joint authority as well as responsibility. The initiative has been financed through a blend of mechanisms. Initial establishment and implementation was supported by international conservation funding, later sustained by the Blue Abadi Fund (a sustainable trust fund) and more recently using a debt-for-nature swap mechanism with the United States.

4. Value and integrate diverse knowledge systems in scaling decisions: Scaling processes should explicitly recognise Indigenous, local, and experiential knowledge as equally valid alongside technical and scientific expertise. Participatory vulnerability assessments, co-produced planning tools, and locally led monitoring can help challenge epistemic dominance and ensure that adaptation strategies reflect lived realities rather than externally defined assumptions (Claudet et al., 2024; Mfitumukiza et al., 2020).

5. Embed equity and power-awareness into organisational cultures and incentives: Addressing power asymmetries requires institutional change, including leadership commitment to equity, internal reflection on organisational power, and accountability mechanisms such as social safeguards, grievance processes, and independent reviews. Normalising learning, transparency, and reflexivity within organisations helps prevent scaling from reinforcing exclusion as initiatives expand (Bennett et al., 2021; Claudet et al., 2024).

6. Support long-term political commitment for inclusive scaling: Scaling inclusive adaptation often challenges entrenched interests and social norms, making political backing essential. Sustained policy and structural reform, legal protections for community rights (e.g. land and marine tenure), and long-term financing are critical to ensuring that inclusive approaches are not undermined as they move beyond pilot or project stages (see Box 9; CIF, 2024; Venner et al., 2024) (Ayers and Schipper, 2014; Reid, 2015).

Box 9: Decentralised Climate Finance in Kenya (CIF, 2024; Venner et al., 2024)

Structural reforms to Kenya's architecture has resulted in increased levels of devolved and decentralised frameworks for climate adaptation finance, which in turn has led to measurable improvements in the allocation of adaptation finance to the most vulnerable districts. Kenya's move has been enabled by national policy reforms, county fiscal commitments, and international and domestic funding channels. The County Climate Change Fund (CCCF) enables countries to receive climate finance from international and national sources. Civil society budget advocacy organisations in Kenya, including national and county-level CSO networks, have played an intermediary role in strengthening accountability and participation in climate and adaptation finance, but there is a recognised need to strengthen capacity.

5. Conclusion

This evidence review shows that scaling coastal adaptation is not simply a technical challenge of expanding effective interventions, but a deeply political and institutional process shaped by finance, governance, power, and time horizons. Across the literature, a consistent pattern emerges: approaches aligned with efficiency, standardisation, and financial return tend to scale more rapidly, while approaches that prioritise equity, participation, and locally defined resilience require more time and face structural constraints. Without deliberate design choices and the right financial instruments, scaling efforts risk reproducing existing inequalities, sidelining marginalised coastal communities, and, in some cases, amplifying maladaptation rather than reducing vulnerability.

The review highlights that different scaling models entail distinct trade-offs. Market-based, innovation-led, and financialised approaches can, in some instances, mobilise large volumes of capital and deliver speed, but often prioritise profitable coastlines, measurable outputs, and dominant knowledge systems, therefore requiring proper management and safeguards to strengthen inclusion. Community-based, locally led, and institutional or policy scaling models are designed to address context, power relations, and social inclusion, yet they require longer timeframes, flexible finance, and stronger coordination across actors and governance levels. Challenges across models – financial incentives, pressure for efficiency and short-term results, as well as fragmented institutions and persistent power asymmetries – can all undermine the depth and quality of the participation needed for inclusive scaling, and therefore risk sidelining or undermining inclusion objectives.

Taken together, these findings suggest that inclusive scaling is less about selecting the 'right' model, and more about how trade-offs are recognised, governed, and mitigated across models. The review has highlighted opportunities, strategies, and examples of this happening in the coastal A&R space. This can help with aligning financing instruments with governance objectives, counter-balancing organisational pressures, strengthening institutional capacities to manage complexity, and actively addressing power and knowledge asymmetries. The pursuit of scaling through combined pathways presents the opportunity to
embed inclusivity objectives within scaling approaches. This can focus attention on who benefits, who holds risk, and whose voices shape decisions, in order to ensure sustainable and just outcomes.

6. Recommendations

The recommendations that follow focus on how COAST and similar programmes can navigate these inclusive scaling trade-offs.

We recognise that COAST components are already leveraging opportunities and applying strategies identified in this review. For example:

- COAST Facility's grant mechanism offers a **dedicated financing window** for scaling established innovations;
- AABS is **integrating diverse knowledge systems** to adapt innovations to local cultures within their efforts to scale out successful innovations;
- BCAP is facilitating the introduction of **polycentric governance approaches** through establishing multi-stakeholder platforms at country level, i.e. national blue carbon action partnerships (NBCAPs).

While recognising that COAST components themselves are best placed to determine how to navigate inherent trade-offs associated with inclusive scaling, and to prioritise which opportunities and strategies to factor into their design and implementation, we offer here some recommendations for consideration:

1. **Make scaling trade-offs explicit and deliberate at programme and portfolio levels:** Scaling choices are inherently political and distributional, yet are often treated as technical decisions. Programmes can explicitly surface and examine trade-offs as part of the process of planning for scale. This could include articulating a theory of scaling that clarifies assumptions about scale, inclusion and risk, using systemic analytical tools to assess exclusion and power dynamics throughout scaling, and embedding reflection on trade-offs into programme reviews and learning processes.

2. **Align financing instruments with objectives for equity and inclusion and ensure suitable safeguards are in place:** Implementing teams can embed equity, gender, and justice considerations into routine funding decisions, for example by prioritising women-led organisations, informal coastal livelihoods, and highly exposed communities, and by protecting the role of grants and concessional finance where market-based instruments are unsuitable. Access for community groups can be improved by adapting application, fiduciary and reporting requirements, expanding direct access or devolved funding windows, and providing hands-on accompaniment to local actors where capacity constraints exist. Where blended or private finance is used, clear social safeguards, accountability mechanisms, and participation requirements are needed to ensure that scaling does not marginalise less 'investment-ready' groups. Where financial inclusion activities already exist, these can be explicitly linked to climate risks so households and local enterprises can use them to support their own adaptation choices.

3. **Rebalance programme and project incentives away from short-term efficiency towards durable and inclusive outcomes:** Pressure for speed and measurable outputs undermine approaches for inclusive scaling. Implementing teams should be make explicit the trade-offs between speed, cost, and inclusion; and consider using phased and adaptive approaches to scaling that combine early, visible results with space for learning, participation, and institutional change. Within existing project timelines, this can include setting learning-oriented milestones and revisiting scaling plans based on learning insights. Further, implementing teams can involve the vulnerable coastal communities that they are seeking to support in decisions about trade-offs and in identifying risks of exclusion. Frameworks, such as value-for-money, should integrate equity, inclusion, and sustainability criteria into performance assessments to incentivise this rebalance.

4. **Invest in institutional capacities and coordination efforts to support inclusive scaling:** Inclusive scaling depends as much on institutions as on innovative approaches to coastal A&R. Implementing partners can build the practical capacity of local governments, community organisations, and customary authorities to participate in planning, budgeting, and delivery, rather than relying on parallel project structures. This includes investing in coordination and facilitation skills – such as negotiation, systems thinking, and multi-actor engagement – within programme teams and local partners, and treating local and Indigenous knowledge as a core input to decision-making. Partners should work through existing multi-stakeholder or co-management platforms, and support civil society or other intermediaries to connect local actors with national systems and support marginalised groups to engage meaningfully with programme decisions. Where possible, programmes should move beyond consultation to share or devolve decision-making authority, including through community- or Indigenous-led delivery arrangements.

5. **Actively identify and manage power imbalances adaptively as programmes scale:** The review shows that scaling frequently amplifies existing power inequalities unless these are made visible and actively addressed. Programmes should be managed adaptively, drawing on evidence to reflect on equity, power dynamics, and unintended effects, and to adjust approaches over time rather than following fixed rollout plans. Implementing partners can incorporate political economy and power analyses to understand who benefits, who loses, and

whose knowledge shapes decisions as activities expand, and adjust approaches where risks of exclusion emerge. Local and Indigenous knowledge should be treated as core evidence in planning and monitoring, and organisations should reinforce this through internal incentives, safeguards, and grievance mechanisms that promote transparency, accountability, and learning over time.

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Annex: Strength of Evidence Assessment

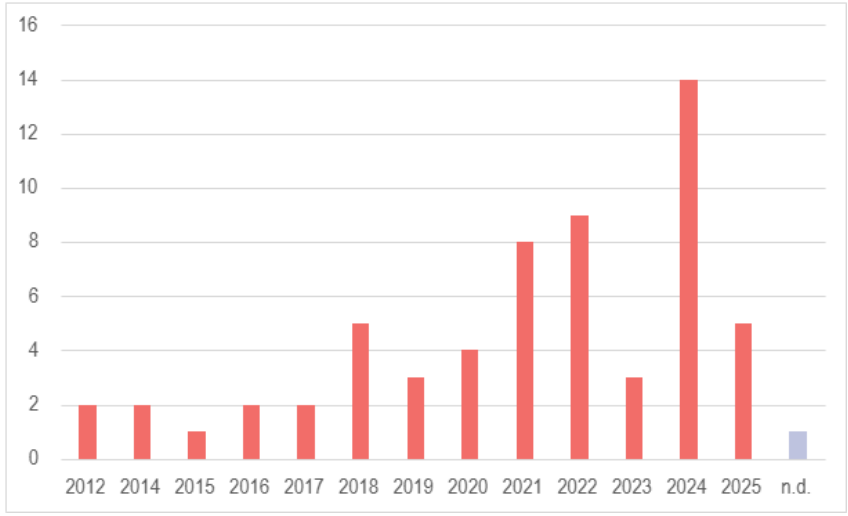
This evidence review draws on a total of 63 sources, comprising predominantly peer-reviewed journal articles (37) and analytical or policy reports (16) (see Graph 1). The review prioritised recent evidence, with most sources published within the last ten years and a strong concentration in the past five years (see Graph 2). A small number of sources published prior to 2015 (four in total) were retained due to their continued relevance or status as foundational theoretical contributions to the literature on scaling, adaptation, and inclusion.

All sources were assessed using the principles of quality scoring framework (see Table 3). Non-research sources, such as websites and descriptive reports without an explicit methodology, were automatically assigned an "amber" score. Overall, approximately two-thirds of the evidence base was assessed as "green", indicating a high level of quality and robustness, with the remaining sources assessed as "amber" (see Graph 3).[1]

Graph 1: Number of evidence sources by types of evidence

Graph 2: Number of evidence sources by year

[1] Green (5-6)=high quality; Amber (3-4)=adequate quality; red (0-2)=poor quality



Graph 3: Proportion of evidence sources by quality of evidence score

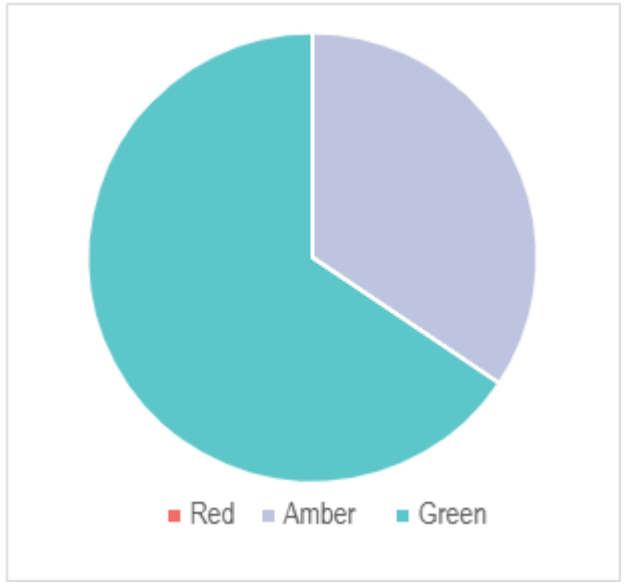


Table 3: List of evidence sources and principles of quality score

Type of evidence	Author(s)	Year	Title	Principles of Quality Score
News or website	Adaptation Fund	2024	Adaptation Fund Board Enhances Access to Climate Finance by Advancing Locally Led Adaptation Programme, Key Partnerships	6
Thesis	Albinger, L.K.	2024	Considerations regarding Vulnerable Groups & Communities in NAPs	4
Journal Article	Anantharajah, K.; Setyowati, A.B.	2022	Beyond promises: Realities of climate finance justice and energy transitions in Asia and the Pacific	6
Report	ASSAR	2019	Effective adaptation needs forward-looking inclusive adaptation at scale in semi-arid regions	6
Book chapter	Ayers, J.; Schipper, L.	2014	Community-based adaptation to climate change: scaling it up	3
Journal Article	Baron-Aguilar, C. et al.	2025	Co-producing ocean plans with Indigenous and traditional knowledge holders	6
Journal Article	Bennett, M. et al.	2024	Blueprint for Blue Carbon: Lessons from Seychelles for Small Island States	6
Journal Article	Bennett, N.J. et al.	2021	Advancing Social Equity in and Through Marine Conservation	6
Report	Brandon, C. et al.	2025	Scaling finance for climate adaptation	4
Journal Article	Carlitz, R.D.	2017	Money Flows, Water Trickles: Understanding Patterns of Decentralized Water Provision in Tanzania	6
Report	Carter, B.; Joshi, A.; Remme, M.	2018	Scaling up inclusive approaches for marginalised and vulnerable people	6

Report	Chiu, C.; Smith, J.; Oloskey, L.	2022	Inclusive Adaptation: A Benefit Multiplier for Climate Action and Women, Peace and Security	5
Report	Climate Investment Funds (CIF)	2024	Transformational Climate Finance: Kenya's County Climate Change Fund	6
Journal Article	Cinner, J.E. et al.	2012	Comanagement of coral reef social-ecological systems	5
Journal Article	Claudet, J. et al.	2024	Advancing ocean equity at the nexus of development, climate and conservation policy	5
Journal Article	Colenbrander, S. et al.	2018	Using climate finance to advance climate justice	6
Journal Article	Crosman, K.M. et al.	2022	Social equity is key to sustainable ocean governance	6
Journal Article	Fenton, A. et al.	2014	Up-scaling finance for community-based adaptation	5
Report	FAO; World Economic Forum	2020	The Ocean Finance Handbook: Increasing finance for a healthy ocean	6
Book chapter / Thesis	Forero, A.M.M.	2025	Climate adaptation finance in coastal cities: a climate justice and gender approach	6
Report	Green Climate Fund (GCF)	2022	GCF Handbook – Decisions, policies and frameworks	6
Journal Article	Gupta, J.; Bavinck, M.	2017	Inclusive development and coastal adaptiveness	6

Journal Article	Hageer, Y.	2025	Bridging equity and resilience: A systematic review of social sustainability	6
Journal Article	Huitema, D. et al.	2016	The governance of adaptation: choices, reasons, and effects	6
News or website	Jones, M. (Reuters)	2024	Indonesia and US seal $35 mln coral reef debt swap	5
Journal Article	Kabbadj, L. et al.	2018	Scaling tropical island conservation planning to the regional level	4
Journal Article	Kalinowski, T.	2024	The Green Climate Fund and private sector climate finance in the Global South	6
Report	Körner, J. et al.	2021	Scaling knowledge and innovations for food and nutrition security	6
Journal Article	Kuhl, L. et al.	2021	Transformational Adaptation in the Context of Coastal Cities	6
Journal Article	Lam, D.P.M. et al.	2020	Scaling the impact of sustainability initiatives	4
Journal Article	Macamo, C.D.C.F. et al.	2024	Mangrove community-based management in Eastern Africa	n/a
Journal Article	Mangubhai, S. et al.	2012	Papuan Bird's Head Seascape: Emerging threats and challenges	6
Book	McLean, R.; Gargani, J.; Chambers, R.	2019	Scaling Impact: Innovation for the Public Good	5
Report	Mfitumukiza, D. et al.	2020	Scaling local and community-based adaptation	6

News or website	MIHARI Network	n.d.	MIHARI: Madagascar's locally managed marine area network	4
Journal Article	Mizrahi, M. et al.	2020	Mitigating negative livelihood impacts of no-take MPAs	4
Book chapter	Moore, M.-L. et al.	2024	Scaling Out, Scaling Up, Scaling Deep	4
Journal Article	Nor, M.I.; Moge, A.M.	2024	Examining critical success factors of climate-inclusive financing	6
Report	OECD	2024	Climate Finance Provided and Mobilised by Developed Countries	6
Journal Article	Ouma, G.O. et al.	2018	Institutional challenges in scaling-up climate change adaptation	6
Journal Article	Pham, H.; Saner, M.	2021	A systematic literature review of inclusive climate change adaptation	n/a
Journal Article	Preiser, R. et al.	2018	Social-ecological systems as complex adaptive systems	n/a
Journal Article	Reid, H.	2015	Ecosystem- and community-based adaptation	n/a
Journal Article	Reid, H.; Huq, S.	2014	Mainstreaming community-based adaptation into planning	n/a
Report	Resurrección, B.P. et al.	2019	Gender transformative climate adaptation	n/a
Journal Article	Sánchez Rodríguez, A.M. et al.	2021	The coordinates of scaling: Facilitating inclusive innovation	6

Book chapter	Schelske, O. et al.	2021	Insuring Natural Ecosystems as an Innovative Conservation Funding Mechanism	4
Journal Article	Selje, T. et al.	2024	Community-Based Adaptation to Climate Change	4
Journal Article	Singh, C. et al.	2022	Interrogating 'effectiveness' in climate change adaptation	4
Report	Songwe, V.; Stern, N.; Bhattacharya, A.	2022	Finance for climate action	n/a
Book chapter	Spierenburg, M.	2023	Scaling in context: Towards responsible scaling in land governance	n/a
Journal Article	Standing, A.	2023	The Financialization of Marine Conservation	4
Journal Article	Steenbergen, D.J. et al.	2022	A theory of scaling for community-based fisheries management	5
Journal Article	Sumaila, U.R. et al.	2021	Financing a sustainable ocean economy	6
Report	UNDP	2021	Tuvalu Coastal Adaptation Project: Interim Evaluation Report	5
Report	UNFCCC; IUCN	2022	Innovative Approaches for Strengthening Coastal and Ocean Adaptation	5
Journal Article	Venner, K. et al.	2024	The Multi-Scalar Inequities of Climate Adaptation Finance	4
Working Paper	Vernooy, R.; Bouroncle, C.	2019	Climate smart agriculture: in need of a theory of scaling	4

Journal Article / Preprint	Villasante, S. et al.	2025	Financial institutions and corporations driving coastal conflicts	3
Report	Water for Women	2022	Leaving No One Behind: Experiences From Water for Women	6
Journal Article	Wigboldus, S. et al.	2016	Systemic perspectives on scaling agricultural innovations	5
Journal Article	Woltering, L. et al.	2024	Supporting a systems approach to scaling for all	5
Report	Zetterli, P.	2023	Climate adaptation, resilience, and financial inclusion	4