Blue Carbon Finance Workshop Summary

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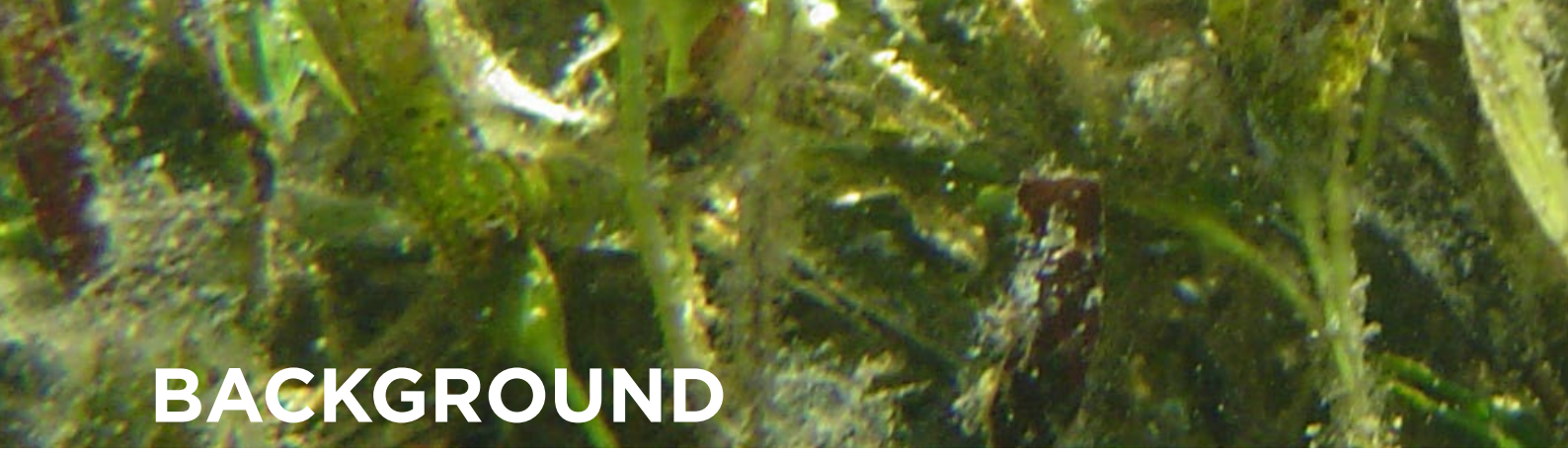
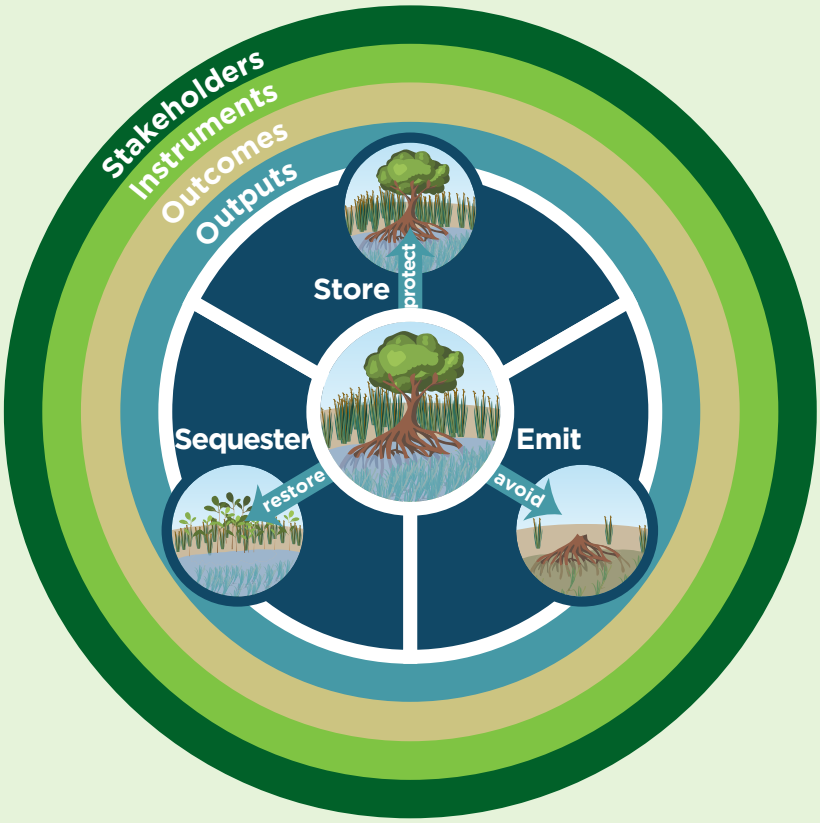


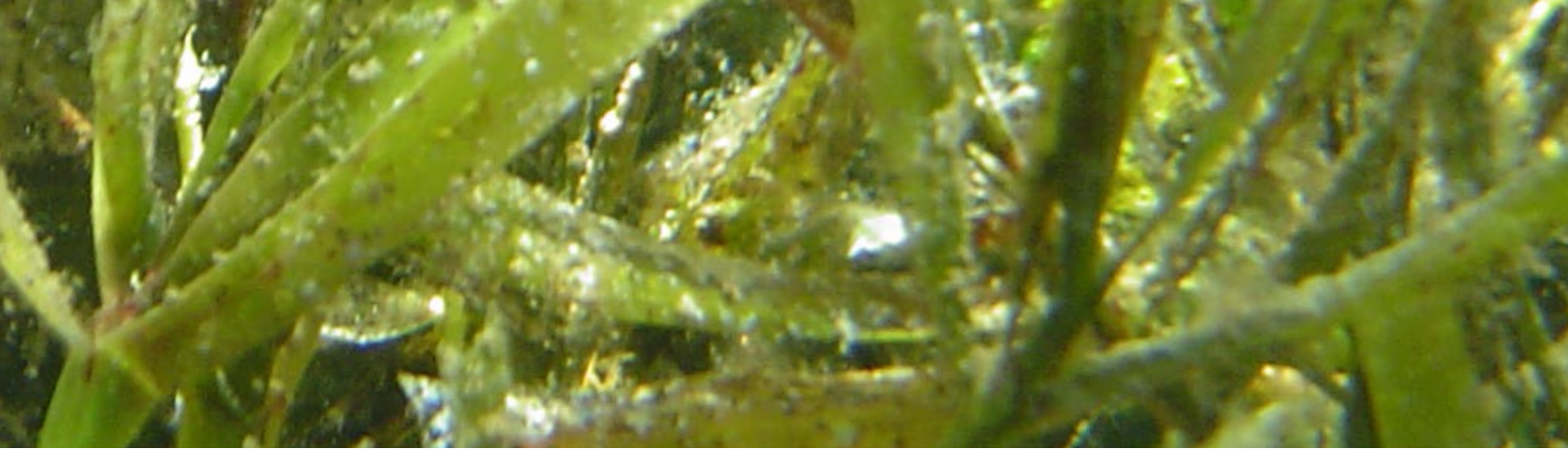
BACKGROUND

Blue carbon ecosystems (mangroves, seagrasses and tidal marshes) sequester globally significant amounts of carbon, support food security and economic self-sufficiency, protect lives and livelihoods through buffering the effects of storms and tsunamis, and more. Yet they are among the most threatened ecosystems on Earth. Because of the high amounts of carbon they store and their high rates of carbon sequestration, the restoration and protection of blue carbon ecosystems has high potential to contribute to emission reduction commitments, which might provide a potential avenue to finance those activities. However, the financial mechanisms and policy frameworks that are needed to facilitate relevant actions are still being developed. Policymakers, investors and other stakeholders are actively exploring the constraints to, enablers of, and opportunities for investment in blue carbon.

Blue carbon ecosystems also generate significant levels of emissions when degraded. These three processes (i.e. storage, sequestration, emission) can be directly or jointly targeted in projects that seek to enhance blue carbon offsets (Figure 1): for example, restoration activities can enhance sequestration, protection of mature ecosystems can maintain carbon storage, and actions can be taken to reduce or avoid emissions.

Figure 1: Conceptual framework incorporating the three primary biogeochemical process relevant to blue carbon, the types of outputs and outcomes expected from blue carbon investment, the finance instruments that might be used, and the various stakeholders with interests in blue carbon.





In this context, a workshop was held in April 2017 to bring together representatives from government, the research sector, potential investors, carbon storage and sequestration practitioners and non-governmental organisations. Participants were tasked with discussing:

- the obstacles that hamper investments in blue carbon;
- the type and level of risk for multiple stakeholders and strategies to reduce risk exposure;
- how to engage the private sector, including what they need to invest;
- what types of frameworks are needed to quantify the broader economic benefits of blue carbon restoration.

This report summarises the main discussions and recommendations of the workshop.

Stakeholders

- Communities: Most in need of protection from climate change. Need to balance trade-offs of project implementation (e.g. impacts on traditional practices).
- NGO's: Support, complement and enhance local capabilities. Help reduce operational risks and increase transparency.
- Governments: Design and implement policy settings and funding mechanisms.
- Investors: Balance returns and risks, promote investment towards sustainable value chains in related sectors (e.g. tourism, insurance).
- Research institutes: Fill in knowledge gaps (e.g. develop and disseminate robust metrics), and help to disseminate best practices.

Enabling factors

- Regulated and voluntary carbon markets.
- Payments for Ecosystem Services.
- Philanthropy, private, and public funds.
- Local networks/capability.
- Social license to operate.

Outcomes

- Emission reduction and avoidance and enhanced carbon capture and storage.
- Climate change adaptation benefits (e.g. reduced damage from extreme weather events).
- Improved provision of ecosystem services (e.g. better water quality and fisheries productivity).
- Business case to generate investment.
- Guidelines, metrics of co-benefits, strategies to balance trade-offs and risks.

Outputs

- Healthy & resilient social-ecological coastal systems.
- Economic growth.
- Social cohesion.
- Preservation of cultural values and sustainable livelihoods.

RECOMMENDATIONS

OVERARCHING RECOMMENDATION

Workshop participants agreed that the overarching long-term goal was to have healthy and resilient social-ecological blue carbon systems (Figure 2). The timeframe needed to achieve this goal is likely to be in the order of several decades, and progress towards it needs to be facilitated by development of a robust investment cycle, which in turn relies on the development of reliable finance instruments—a goal that can be achieved within the next decade. To enable this, investors need confidence that the benefits outweigh the risks.

The workshop participants made the following recommendations to be considered by relevant institutions, such as the International Partnership for Blue Carbon:

- Develop *a long-term (20 years) vision* that incorporates the global, regional, and local dynamics observed in the blue carbon socioeconomic and environmental context.
- Involve regional groups (e.g. the Coral Triangle Initiative, Pacific Islands Development Forum / Forum Secretariat) in the design and implementation of *medium term (5+ years) plans* for blue carbon actions.

Figure 2: Graphical representation of the steps needed to develop investments that will support healthy and resilient social-ecological blue carbon systems.

DETAILED RECOMMENDATIONS

Workshop participants further identified a set of key recommendations, which would help facilitate investments in blue carbon. Some of these can be implemented immediately, but will take some time to mature. These are:

- Implement demonstration projects and document case studies to demonstrate capacity and provide the socioeconomic business case to attract investment.
- Couple the case studies with systematic data collection and modelling to build reliable predictions of carbon yield (and other economic benefits).
- Collect information to reduce uncertainty in key areas (especially understanding carbon yield dynamics through time, and understanding likely return on investment).

Other recommended actions can be implemented immediately and will yield relatively short-term results. These are:

- Run one or more investor round-table discussions to record and understand the motivations of the range of potential investors.
- Write a business case for investors, outlining the broad suite of benefits, trade-offs, and the likely return on investment; such a business case might vary between developed and developing nations.
- Write a guidance document for policymakers to help expedite action and avoid bureaucratic bottlenecks.
- Compile, disseminate or produce best practice guides in plain language for community and practitioners.

WORKSHOP DISCUSSIONS

IMPEDIMENTS TO INVESTMENTS IN BLUE CARBON

Workshop participants identified a number of challenges and constraints that limit investment in blue carbon projects, but also opportunities and enablers that can increase investment success (Figure 3). The challenges include a lack of standardised and reliable methods to estimate blue carbon offsets and co-benefits, uncertainty about financial returns, poor understanding of the type and magnitudes of risks, a lack of finance mechanisms tailored to blue carbon ecosystems, lack of guidance on best practices, and paucity of clear government policy and legal frameworks. While some progress towards addressing these issues has been made, there is still need for coordinated effort to improve existing methods, and financial and regulatory frameworks.

Figure 3: Some of the opportunities, challenges, constraints and enablers of blue carbon projects.

Opportunities

- Build on lessons learned from terrestrial programs (e.g. REDD+, PES)
- Leverage local professional networks

Challenges

- Engaging local actors
- Scaling up projects to achieve economies of scale and risk diversification
- Transparent and standardized return metrics
- Timely access to reliable data on project outcomes and risks

Constraints

- Governance and legal frameworks
- Methods reported in language difficult to understand by non-experts
- Limited local engagement
- Uncertainty about return on investment

Enablers

- Bundled benefits from carbon offset projects
- Supply chains at risk under inaction
- Increasing policy interest

Standardized and reliable methods to measure outcomes

Investors need access to empirically-based, flexible and reliable metrics to estimate blue carbon offsets (losses avoided or gains made), predict survival rates of new or restored vegetation in coastal areas, and quantify risks and co-benefits that might impede or enhance revenue streams. Several guidelines have been developed in recent years to help standardise the assessment of changes in carbon stocks attributable to blue carbon projects and to facilitate access to financing mechanisms (see Bell-James, 2016; Hiraishi et al., 2014; Howard et al., 2014 for some examples). However such guidelines need to be disseminated more widely using language accessible to different stakeholders (investors, project developers, politicians).

During the workshop, participants highlighted that investors need location- and project-specific estimates of rates of carbon accumulation in order to predict cash flows and estimate returns on investment. To provide such information, it is necessary to generate empirically-based measurements and models of carbon yield curves (and uncertainty bounds) for mangroves, tidal marshes, and seagrasses. The development of tools based on approaches widely tested in terrestrial ecosystems, but specific to blue carbon ecosystems, could also facilitate the estimation of financial outcomes, e.g. the Australian Full Carbon Accounting Model (Richards and Evans, 2004)land management and climate variability. To assist in the development of Australia's National Carbon Accounting System (NCAS.

A systematic review of marine coastal restoration projects reported median survival within the first two years after restoration of 65% for saltmarshes, 51% for mangroves, and 38% for seagrass (Bayraktarov et al., 2016). While these estimates may reduce the financial attractiveness of coastal ecosystems conservation or restoration projects, they are comparable to those reported by some terrestrial afforestation (Cao et al., 2011) and forest restoration studies (Cao, 2008; Pareliussen et al., 2006). Furthermore, workshop participants indicated potential limitations of the methods used in reviews of coastal restoration projects. The reported survival rates likely encompass a range of restoration approaches, some unsuitable at locations with different levels of ecosystem degradation. Knowledge of survival rates from best practice implementation needs to be documented and disseminated to avoid costly mistakes. In addition, methods, metrics and tools that will more transparently and efficiently inform project outcomes should be repeatable (yield the same outcome under unchanged conditions), transferable (valid and adaptable to different socioeconomic and environmental conditions), and replicable (be measured using metrics that enable comparison of multiple investment options).

Risks

There was consensus among workshop participants that blue carbon projects are typically riskier than terrestrial offsets projects for a range of reasons. In part, the risk derives from an inadequate evidence base (e.g. investors currently have considerable uncertainty about the return on investment), but also there are some risks that are inherent to the ecosystems themselves (e.g. high exposure to natural events). Here we summarize the discussion along different risk categories.

Market risks. Carbon markets are highly competitive, with oversupply and low demand generating low and highly volatile prices in recent years (Hamrick and Goldstein, 2016). Currently, a significant volume of carbon offset inventories (vintage offsets) is available placing further pressure on carbon prices (Hamrick and Goldstein, 2016). These factors make the estimation of long-term cash flows difficult and may increase financial risks.

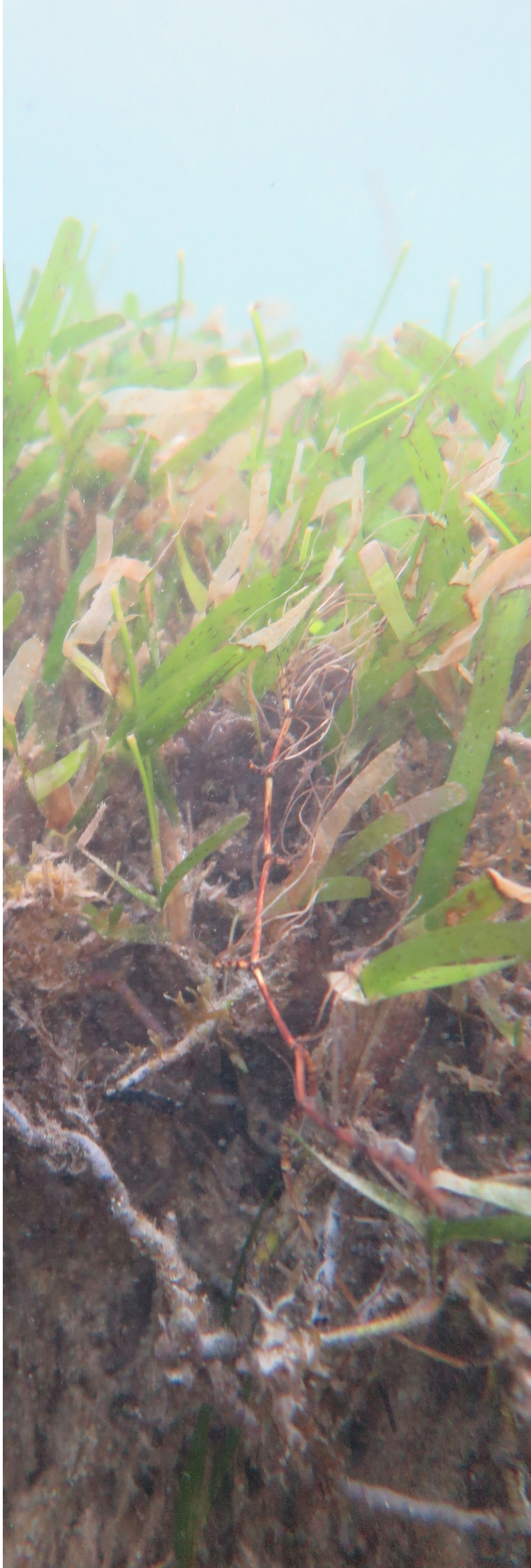
Operational risks. The prospects of financial losses from project management failures (e.g. non-transparent record of carbon offsets revenues and costs), low or short-term commitment of relevant stakeholders (e.g. project abandonment, limited leadership skills), and external events damaging project assets (e.g. natural disasters) could increase risk exposure. Workshop participants with experience in conservation projects highlighted that many local communities in developing regions lack the capability for efficient and successful project management. It was also highlighted that blue carbon projects could be exposed to local and distant threats from anthropogenic activities (e.g. nitrogen pollution from septic systems or agriculture) and to extreme weather events.

Reputational risks. Trade-offs and externalities associated with blue carbon projects (e.g. reduced access to fishing grounds, less land available for coastal residential or infrastructure development, or perceived loss of amenity values if mangroves are re-established) could generate conflicts with local communities (Thomas, 2016). Potential reputational damages to private investors could be large if the support of local communities is not obtained (social license to operate).

Regulatory and policy uncertainty. Due to the long period of time required by coastal ecosystems to reach full sequestration potential (20-25 years for mangroves, 50 years for seagrass restoration and up to 100 years for saltmarsh restoration (Bell-James, 2016)), blue carbon investments are particularly sensitive to regulatory and policy uncertainty. The evolution of government priorities, changes in government-led carbon market mechanisms, reduced availability of public funds for environmental conservation, or relaxation of regulations that directly or indirectly impact blue carbon ecosystems could compromise cash flows and increase risks. Unintended outcomes from inadequate or uncoordinated regulations could also compromise the viability of investments in the sector (e.g. subsidies to aquaculture could lead to mangrove clearing).

Limited financial options

It is estimated that around 77% of the global conservation efforts are funded with public capital (e.g. domestic budget allocations, agricultural subsidies, international aid), 13% by green commodity markets, 7% by direct conservation markets (e.g. offset markets, payments for environmental services) and 3% by philanthropy (Huwyler et al., 2014). These finance mechanisms have different outcome expectations (e.g. profits versus social cohesion), accept different levels of risk exposure, and apply heterogeneous approaches to allocate resources (IGCC, 2017). Most existing finance mechanisms are not easily accessible to blue carbon projects or include requirements that favour investments in other sectors (e.g. renewable energy, waste management, forestry plantations). Although Voluntary Carbon Markets have been used to finance blue carbon activities, current market conditions place limitations on projects that cannot achieve low production costs for carbon offsets (e.g. through economies of scale). In this context, blue carbon projects focusing solely on offsets as a commodity are likely to have low return on investment and may not be a cost-effective and competitive option to offset carbon emissions (Murray et al., 2011). To improve prospects for investment, differentiation strategies should be considered to access funds that pay price premiums for social and environmental co-benefits. Such differentiation could be beneficial even when investors only pay for carbon offsets.



Legal and policy frameworks

Similar to finance mechanisms, the legal and policy frameworks related to carbon offsets need to be adapted to account for conditions specific to blue carbon projects. Property rights over coastal offset sites need to be properly defined within the legal framework. Definitions of such legal rights could be based on procedures and experiences followed through marine spatial planning approaches, such as allocation of aquaculture leases. Contractual arrangements related to additionality and permanence of blue carbon offsets need to consider the long duration that coastal ecosystems require to reach a significant mass of carbon offset and storage.

Reverse bid auctions for carbon offsets allocate contracts based on costs. This might not be the best strategy to promote blue carbon projects. Auctions targeting exclusively blue carbon activities, or differential treatment between terrestrial and coastal offset projects during standard auctions may be needed to reduce competitive disadvantages.

Conservation practitioners highlighted during the workshop that bureaucracy can be a significant obstacle for blue carbon project implementation. Weak regulatory frameworks and overlapping or uncoordinated responsibilities across regulatory agencies could significantly compromise investment on coastal offset projects. Case studies could help identify bureaucratic bottlenecks and design strategies to help expedite action. Prompt dissemination of regulatory changes by and among regulators is likely to help.

Policy and regulatory guidelines for government authorities at all levels authorities could facilitate broader understanding of the benefits of expedited action on blue carbon offsets. Such a document could include strategies to generate a coordinated regulatory framework across geopolitical regions, identify key policy and regulatory gaps (and options to address them), and should be redacted from a government perspective (i.e. highlighting the potential benefits for governments and society of blue carbon implementation).

STRATEGIES TO ENGAGE STAKEHOLDERS AND PROMOTE INVESTMENT

Building on existing capacity

Blue carbon conservation and restoration experience suggests that the outcomes of a project depend substantially on a stakeholder's engagement, site selection, and techniques applied, rather than on money spent (Bayraktarov et al., 2016). Local communities in particular can be either constraints or enablers of project success. Community involvement in the preparation and implementation of blue carbon projects should typically improve the likelihood of successful outcomes — not only in terms of carbon benefits, but also biodiversity, social resilience, and the preservation of cultural values (Vierros, 2017)seagrass beds, tidal marshes and other coastal and marine vegetated ecosystems. At the present time, carbon market mechanisms to compensate those conserving blue carbon ecosystems, and thus reducing carbon emissions, are not yet in place. The ecosystem services provided by coastal vegetated ecosystems extend beyond their carbon storage capacity, and include their contribution to fishery production; shoreline protection; provision of habitat for wildlife and migratory species; flood water attenuation; nutrient cycling, pollution buffering; as well as their cultural, spiritual, subsistence and recreational uses. Because these services are of high economic, social and cultural value, the management and protection of blue carbon ecosystems could build collaboration between climate change and biodiversity practitioners on the national and international level. Such collaboration would also allow for the transfer of lessons learned from coastal management and conservation activities to carbon mitigation projects, and would include the need to work closely together with indigenous peoples and local communities. Resulting management activities on the local level could utilize and strengthen traditional knowledge and management systems related to blue carbon ecosystems, and increase both the resilience of biodiversity and that of coastal communities, as well as provide for long-term storage of blue carbon. While the challenge of scaling up local initiatives remains, some concrete examples already exist, such as the network of locally-managed marine areas (LMMAs. However, workshop participants expressed concerns that community-based ownership of blue carbon projects might constrain investment if it is difficult to identify a responsible party guaranteeing project outcomes, best practices, and timely flow of information. In such circumstances the presence of third parties (e.g. NGOs or research institutes), who assume the responsibilities of feasibility assessments, project development, execution and evaluation might reduce operational risks and facilitate transparency.

Generation and dissemination of tailored information on the potential benefits of blue carbon projects for the supply chains of multiple industries (e.g. tourism, fisheries, insurers, banks), could also incentivise private investment. Lessons learned from REDD+ (Gordon et al., 2011), Payments for Ecosystem Services (PES) (Hejnowicz et al., 2015; Locatelli et al., 2014), and blue carbon projects worldwide (Thomas, 2014; Wylie et al., 2016) could guide the development of blue carbon investment frameworks.

Risk management

Project management by experienced organisations with capacity and longevity could reduce operational risks. However, long-term strategies to enable communities to own and drive the process on their own should be in place. Mechanisms applied for land-based conservation projects could orient the design of strategies to reduce the impacts of project failure. One example is applying discount rates to generate a *risk of failure buffer* that could cover potential losses if committed outcomes are not realised. The strategies applied by the Australian Emission Reduction Fund (Australian Government, 2014) to determine discount rates for land-based projects could be adapted to account for uncertainties and risks specific to blue carbon offsets. However the impact of discount rates on returns on investment for blue carbon projects should be carefully assessed to avoid reducing the already limited investment in this type of project (Bell-James, 2016). Public funds to subsidise carbon offset price floors (i.e. guaranteed minimum price for carbon offsets) could reduce financial risks from price volatility. Government-funded collaterals could also improve the risk and return profile of blue carbon projects making them more competitive in the conservation market.

Environmental credit stacking

Additional financial support for blue carbon restoration and protection might be generated through mechanisms to obtain payments for social and environmental services generated by blue carbon activities. Options for credit stacking could be pursued through finance mechanisms that focus on outcomes such as improving water quality, protecting habitat of endangered species, conserving biodiversity, reducing the impacts of extreme weather events on coastal communities, and so on. Transparent reporting of methods that measure such co-benefits should be implemented to reduce concerns of double-counting. Workshop participants encouraged learning from REDD+, PES, and other experiences to guide the design of finance mechanisms for blue carbon that account and pay for bundled environmental services. Industries that directly or indirectly benefit from coastal conservation actions (e.g., tourism, fishing, insurance) should be encouraged to participate in the design and funding of such mechanisms. The significant potential to generate social and environmental co-benefits should be considered within national strategies to achieve Sustainable Development Goals and carbon reduction commitments.

Site selection

Not all coastal ecosystems can be cost-effectively protected or restored under existing mechanisms and market conditions (Murray et al., 2011). Adequate site selection could improve significantly the prospects of project success. In addition to considerations of tenure and regulatory frameworks, locations with suitable hydrological and climatic conditions that support natural recruitment should be preferred if carbon offset additionality is not compromised. Locally-sourced plant propagation material might improve survival rates (Bayraktarov et al., 2016). Adequate access to healthy seedlings or seeds should be considered during site selection. Although some experiences provide evidence of the profitability of low-scale conservation projects (particularly in developing regions with low land and labour costs), large-scale projects might be more cost efficient and competitive. Joint implementation of projects across regions with different environmental and social conditions could also help improve the chances of success (project diversification). Reliable and up-to-date maps of blue carbon hotspots (i.e. places where restoration or protection is most needed, cost-effective and where likelihood of success is high) could orient targeted investments to regions with potential to generate large social, economic and environmental gains.

Building the evidence base with demonstration projects

One of the key recommendations of workshop participants was implementation of 'no regrets' investment in demonstration projects. Such demonstration projects (or case studies) are likely to help build investor confidence, provide the evidence needed to mobilise private and public investment and expedite changes to regulatory frameworks. They can also be the platforms to develop tools to reduce transaction costs, expose challenges and risks, tailor existing methods and calibrate estimates of carbon offset yields and co-benefits. In some cases, they will likely highlight where there are policy gaps. Results will probably be influenced by location-specific socio-economic and environmental conditions, the degree of each stakeholder's engagement and techniques applied. Therefore to provide more representative results and flexible and transferable guidelines and tools, case studies should be implemented across different regions and coastal ecosystems or across environmental gradients that encompass heterogeneous conditions.

Corporate stewardship, philanthropic investment or voluntary markets could be targeted—initially at least—to fund case studies. Such financing mechanisms are more accessible to small-scale community type projects (Wylie et al., 2016). Development of case studies should involve experienced agencies with deep networks in target regions, and prioritize the bundling of co-benefits, climate change adaptation and mitigation capabilities, and the development of sustainable livelihoods. Case studies in developed countries (with emphasis in Australia) are also needed and should complement documented experienced from developing regions.

Importantly, development of demonstration projects should occur in combination with other approaches to gathering the required evidence. These should include systematic collection of biogeochemical and biological data from existing projects (e.g. rates of carbon accumulation) and model-based integration of biogeochemical, social and financial data to aid predictions.

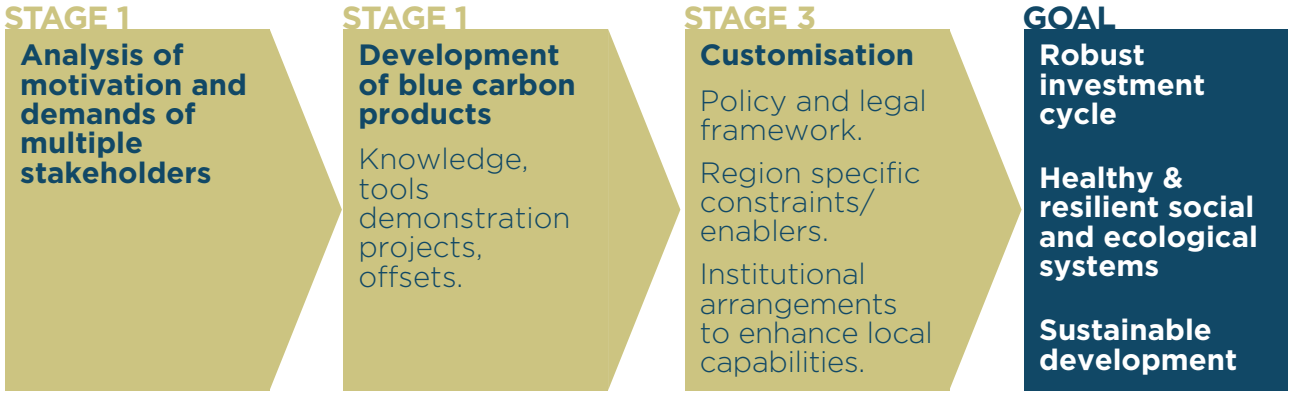
A FRAMEWORK TO EXPEDITE ACTION

Workshop participants developed a three-stage plan of action to support the steps highlighted in Figure 2 to demonstrate the benefits from blue carbon, connect funding with stakeholders, enhance the investment cycle and ultimately generate healthy and resilient social-ecological coastal systems (Figure 4). The first stage consists of analysis to understand and inventory the motivations, demands, and expectations of potential investors. The second stage includes the development of tailored products that meet the expectations of investors and that would support blue carbon restoration or protection. (Such products could include demonstration projects, transferable tools to reduce transaction costs, mechanisms for external auditing, risk management strategies, and so on.) The third stage involves refining and customising investment products to address socioeconomic, environmental, institutional and regulatory heterogeneity. This process could be implemented in parallel, and case studies could significantly enhance it.

The implementation of such strategy should involve:

- Clarifying the role that multiple stakeholders would play to achieve the selected priorities (e.g. balancing trade-offs, developing a legal framework to enable actions, support and develop local capability).
- Empowering stakeholders to help convert concepts into actions through generation of a business partnership platform to test different strategies, develop tools, standardise reporting mechanisms, and share experiences.
- Develop a market intelligence platform to provide insights into relevant projects, potential partners, updates on the state of the carbon offset market, funding options and best practices.
- Using, improving and refining existing finance instruments.
- Development of tools (guidelines, software, etc.) that investors could use to assess the conditions under which a project could be profitable (e.g. range of yield variations, carbon offset prices, risks exposure).
- Verifiable and robust quantification of values for clients (outcomes for investors, communities, governments, etc.) and target outputs (sustainable development indicators).
- Guiding changes to policy and legislative frameworks through providing the appropriate evidence base, including identification of the main regulatory hindrances, full accounting of post-disturbance emissions associated with environmental impacts of coastal development.
- Development of strategies to maintain long-term collaboration and policy frameworks (i.e. reduce policy uncertainty).
- Engaging and increasing base membership (private investors, NGOs, scientists, and governments).
- Coordinating the development of funding proposal for cases studies in Australia and overseas.

Figure 4: Three-stage strategy to expedite action.



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