



Advice to Council No: 14-03

Appendix A

During the public review, JPAC heard a wide variety of expert presentations and public opinions and suggestions regarding the role the CEC can play to address the issues raised during the discussions of blue carbon, sea-level rise and ocean acidification. The following themes emerged from these presentations, opinions, and suggestions:

- The rate of **carbon sequestration and storage within coastal systems** (and of soil in particular) **is vast**, far greater than that of land-based systems.
- There is a **need to create more precise science on how to calculate blue carbon** within ecosystems and across different ecosystems. It is also not clear how to account for carbon as it passes from upland to coastal systems.
- Land-based carbon storage calculation methods and protocols developed ad hoc in different countries, had to be retrofitted to fit emerging standards. This approach has generated a great deal of work and misuse of time and resources. This is an opportune moment to **create international (trinational) standards around blue carbon calculation methods**.
- Current Verified Carbon Standard (VCS) methodology in review only applies to restoration of wetlands, so there is no methodology for conserving an area and gaining carbon credits for avoided emissions. Conservation VCS methodology is in the early stages of development, but more funding is needed to finalize the research. CEC should prioritize funding this.
- Looking at carbon-related issues in isolation of other climate change concerns is not a viable method. While it is an exciting new area for research and potentially carbon markets, **blue carbon should be looked through the lens of adaptation to and mitigation of climate change**.
- Scientific collaboration, data sharing, networking, and generally **facilitating exchange of information will save time and money and lead to better results**. Information to be shared should include but not be limited to:
 - Coastal changes
 - Storm impacts
 - Nutrient loads
 - Acidification impacts on species
 - Restoration practices
- **Engaging local communities in meaningful ways around conservation and restoration** is an essential component to the success of such projects. Also, calculating

the benefit to local communities from eventual carbon market benefits is just as important.

There is a strong need to raise awareness about the importance of these topics: their impacts on the economy, on indigenous and vulnerable communities, and on our ability to continue to inhabit and build on the coastlines in the three countries.

These themes emerged from the specific suggestions below. They have been grouped into the following categories: outreach, policy, science and those related specifically to indigenous communities and vulnerable communities.

Outreach: Raise the Profile of Restoring Wetlands

Training and education

- Work towards creating a trilateral education/curriculum outreach material: institutions, educators and students in the three countries could develop and share concepts and curricula.
- Fund trilateral field trips to further curriculum development for youth.
- Fund internships for hands-on training.
- Host conference summits targeting decision-makers and scientists to educate about multi-use role of restoration/creation of wetlands
 - In-person, regional, local meetings
 - Utilize academic community locations
- Devote 50% of NAPECA funding toward pilot projects on climate, carbon, and water education effort.
- Engage local communities in coastal science projects (monitoring, goal setting, etc.)

Corporate partnership strategies

- Create partnerships with corporate entities at all levels:
 - Ensure that responsible parties are at the table
- Engage actors from various sectors: insurance, construction (infrastructure), consumers, etc.

Media strategies

- Fund a promotional video-making contest for university students to talk about the role and importance of blue carbon.
- Use social media to promote all ideas relevant to blue carbon.
- Create an outcome-oriented strategy with goals:
 - Restoration
 - Positive stories/aspects
- Develop media strategies to communicate scientific knowledge about the known impacts of climate change on people, regions, countries, and globally. For example, what do

future scenarios of climate change tell us about its impacts on coastlines and upland communities?

- Showcase examples of successful community relocation/reconstruction after major storms.
- Develop messages that are tailored to specific groups (school children, working professionals, municipal and state-level politicians) and ensure that the messenger is appropriate to the audience. For example, have messages about the economic and employment (jobs) impacts of ocean acidification or sea-level rise be delivered by business managers and targeted toward state-level politicians.
- Create a multi-disciplinary framework to recruit and train spokespersons, both locally and also for mass media.

Policy

Review existing policy and seek to introduce ocean-relevant pieces

- Implement and enforce existing policies pertaining to clean water, clean air and other relevant environmental concerns.
- Determine where blue carbon services can be integrated into existing legislation and policies:
 - Share existing policy studies and, where necessary, create new studies and analyses in order to recommend appropriate changes vis-à-vis carbon capture in soil and aquatic environments.
 - Include carbon services into mitigation plans for building permits. Currently focus is on living resources and ignores the soils.
- Where there is an existing method to assess environmental impact, blue carbon should be a part of this process.
- There are many environmental policies that could potentially include blue carbon (like those in an impact assessment). The US has done an analysis of where blue carbon could fit into national policies. Mexico and Canada could do the same, including examining impact assessments. We need this baseline in all three countries.
- Seek to integrate blue carbon into other coastal land management policy: reconstruction, coastal green infrastructure (natural and nature-based infrastructure), land-use planning.
- Identify and promote policies designed to incentivize post-storm community relocation and/or innovative reconstruction practices.
- There is a benefit to communities that promote open space or littoral conservation, and the CEC could promote the design of coastal development setbacks or “open space” littoral conservation rules that could prevent “coastal squeeze” by creating incentives for setbacks (for example, lower insurance rates) in certain areas and promoting coastal green infrastructure.
- Take into account sea-level rise in land-use planning processes.
- Ensure that disaster funds for reconstruction are implemented under guidelines that promote resiliency and adaptation to future climate conditions.

- Seek to resolve or reconcile the areas in which there are overlapping governmental jurisdictions (such as areas in which multiple federal agencies are involved in addition to state/provincial and municipal governments might be involved).
- Also, promote coordination among agencies that have coastal capability.
- Review upland watershed policies to determine where the leverage points are for coastal health.
- Look at MPA connectivity to ensure wildlife health and carbon sink potential.
- Empower and promote touristic and business facilities in coastal areas with a minimal or neutral impact on the coastal flora and carbon emissions.

Creation of standards

- Create standards and methodologies for measuring and accounting for blue carbon.
- Create standards for measuring and accounting for blue carbon in carbon budget calculations for carbon markets.

Restoration and protection methodologies

- Ensure that new legislation and policies regarding carbon markets and restoration and mitigation avoids perverse incentives (mono-cultural wetlands or cultivating invasive species, for example).
 - Continue development of a protection methodology that allows access to carbon markets for sites that are under threat. (For example, communities might choose to conserve areas that would otherwise be threatened by development; those areas should then count toward carbon budgets.)
- Fund demonstration projects of restoration methodology (the methodology is currently under development).
- Prioritize conservation and restoration sites according to ones least affected by sea-level rise.
- Emphasize the role of mitigation rather than simply adaptation.

Science

Basic research and standardization

- Develop more precise data on blue carbon storage and climate change impacts on the ocean:
 - Fund a study to characterize and understand the drivers of blue carbon degradation.
 - Invest in studies to clarify the variability in blue carbon capture across different environments.
 - Fund the development of trinational methods and databases.
 - Salt marsh sediments are particularly understudied.
 - Identify and establish sister blue carbon sites to pilot blue carbon restoration and protection (for example, Florida and the Yucatán have comparable ecosystems).

- Map coastal impacts of climate change in areas where such data do not currently exist.
- Standardize and commit to measuring/mapping/monitoring blue carbon ecosystems:
 - Seek to achieve a standard unit of measurements across the blue carbon research. For example, how deep should soil samples be in order to measure storage?
 - Account for regional differences.
 - Develop understanding and models to account for how to account for carbon that ends up in coastal system but originates from upland or upstream.
 - Make the blue carbon records public or available on demand.
- Create modeling systems to study and predict scenarios of change.

Collaboration, networks and scientific partnerships

- Support networks of scientific collaboration to foster data gathering and analysis and, through trilateral partnerships, observation networks and modeling systems:
 - Build capacity in the understanding and management of coasts and estuaries via cross-system partnerships and multinational training.
 - Invest in site-specific communities of practice, supported by sustained observations and predictive tools.
 - In Mexico there are lots of private-public partnerships around the coast (MexICOOS, for example). Create a database and facilitate the sharing of information to both public and private actors; link sectors.
 - Semarnat and other agencies are producing research and results that private actors would be well served to access.
- Prioritize analysis of subnational (or binational, but regional) areas in which certain variables can be controlled and altered in order to measure impacts and recommend mitigation and adaptation measures. For example, areas in which nutrient loads might be changed and impacts on acidification measured and monitored over time.

Indigenous Communities and Vulnerable Communities

Information sharing

- Figure out how to share best practices between vulnerable communities. For example, shellfisheries in the three countries will likely face similar challenges as ocean acidification rises.
- Create and implement early warning systems.
- Review treaties with indigenous peoples to glean insights on disaster prevention, mitigation and adaptation.
- Develop greater understanding of indigenous knowledge with regard to prevention rather than correction.
- Find ways to link actors in fisheries affected by ocean acidification to better understand the problems at hand and adaptation measures, if applicable.

- Evaluate public incentives for fishers and indigenous communities in coastal areas to develop mangroves and other coastal flora, like the incentives currently available for forest areas (environmental services) in some countries.

Focus on integrated projects

- Promote and support partnerships between scientists and affected, vulnerable, and indigenous communities to gather and analyze data (co-management, citizen science, etc.).
- Develop models of integrated project design that take into account multiple local factors: legal framework, economic activity and development, environment, ecology, and others.

Risk-based assessment, prevention and mitigation

- Create, share disseminate and implement risk-based assessment with accompanying recommendations on adaptation actions.
 - Take the Communities-at-Risk workbook, simplify and translate it, and make it available to vulnerable communities.
- Engage in inclusive design initiatives that prepare for disaster rather than react to it ex post facto.

Communication with the CEC and participation in carbon markets

- Create a channel for senior/elder native voices to advise the CEC at a higher level.
- Make recommendations on how indigenous and vulnerable communities should benefit from the integration of blue carbon in carbon markets.

JPAC is confident that the recommendations contained herein are highly relevant to the CEC Council's strategic priorities, and is unanimous in supporting this Advice to Council.

**Approved by the JPAC members
15 December 2014**