



Environmental Coastal Resilience

On the National, State, and Local Level

Kristin Briggs
Chirine Yamout
Sarai Leon
Carlos Marquez
Marcelo Balladares

Living Coastlines, Local Design and Monitoring

Nature-based infrastructure are key solutions for coastal resilience and addressing coastal development challenges.

- **Living coastlines**, mangrove and saltmarsh restoration, rebuilding barrier islands, and more.
- **Protect coasts** from flooding, erosion, and sea-level rise.
- **Provide ecosystem services** which fuel local economies (tourism, fisheries, natural aesthetic value, etc.)
- **Cheap**, uses natural local resources, and encourages accurate valuation of natural capital.
- **Global and local impact**: carbon sequestration, biodiversity and marine conservation, sustainable.



In action:

- **Must be site-specific**. Preliminary, local assessments of coastal ecosystems are essential to ensure suitable and effective nature-based infrastructure design.
- **Monitoring systems** should be implemented along coastlines to identify areas of concern, assess the effectiveness of infrastructure design and to effectively adapt our management decisions. Data collected should be tailored locally to capture relevant data and optimize usage of funds.
- **Adaptive management** strategies must be implemented, so that stochastic factors, variability in ecosystem response and climate change are responded to effectively.
- **Collaboration** is key: scientists, businesses, local, federal and state entities.

State, Local & Federal Collaboration

- Federal program which provides funding to states based on different local factors that their coastal communities face for the purpose of climate adaptation and resilience
 - Emphasis on communities which are more vulnerable to sea level rise and would be the first to feel its consequences
- Federal and state regulation over the appropriation of funding to ensure that it is provided in a timely manner and to local leaders to allow for community trainings based around adaptation and resilience.
- Risk assessment on a state and local scale in order to understand which of their coastal communities are most at risk due to the climate crisis and will require extra resources
 - Establishes a relationship between the federal and state governments and their local communities, allowing for projects and programs to be designed around their specific needs

Research Funding

In order to establish long-term sustainable projects, federal agencies should provide adaptable resilience grant opportunities by:

- Integrating communities and institutions, as well as non-profit organizations; into climate resilience programs, with providing adequate fundings for quality education with transparent oversight of funding allocations.
- Encouraging and providing technical assistance for specific university program to monitor and conduct climate vulnerability assessments
 - FIU Biscayne Bay Health project
 - Briceno Lab for water quality monitoring
- Promotion of said programs and projects, in order to build capacity in terms of technical skills and evidence-base required to design and evaluate the projects.
- Expanding partnership with the private sector to accelerate innovation, especially technological innovation to include stakeholders from different sectors.
- The federal government should take a leadership role to ensure that intra- and inter-agency coordination helps states, local governments, and tribes to access available coastal resilience resources, and support projects led by scientists and experts within the field.

Corporate Regulations/Preventive Measures

- Encouraging state governments to regulate nutrient management systems within corporations and measure their effectiveness in reducing nutrient rich wastewater that can affect coastal communities through algae blooms that result in fish kills.
- Regular inspections from the state of nutrient management systems within corporations. Inspections can be conducted through the environmental division of state governments.
- Implementation of a set limit of fines on corporations which excessive nutrient levels in wastewater-temporarily suspending business operations after set limit of violations to conduct investigations
- Using fines to create a local relief fund if local coastal/bay community is being affected by algal blooms and fish kills



Implementations

Economic Incentives

Emission Reduction Credits (ERCs)

Cap and Trade



Graph is average cost of Flood Damages beared by citizens in Miami.

Disaster Economic Costs

Facilitate and provide funding to buy-out high-risk or repeatedly damaged homes and other property.

The federal government needs to invest in more data collection of diverse data sets to understand localized climate impacts and responses.

Congress should ensure that all land use planning is designed—and all infrastructure is built—to anticipate and withstand future climate conditions.

