

LESSONS LEARNED FROM DEVELOPING AN ECOSYSTEM SERVICES FRAMEWORK FOR POST-HURRICANE SANDY RECOVERY AND RESILIENCY PLANNING ON LONG ISLAND, NY

Nadia A. Seeteram^{1, 4}, Jonathan A. Halfon², John M. Johnston³, and Rabi Kieber³

¹ US EPA/ORD, Computational Exposure Division, Watershed Exposure Branch, Athens, Georgia, USA

² FEMA/Region II, Office of the Regional Administrator, Recovery Interagency Coordination, NY, NY, USA

³ US EPA/ Region II, Clean Air and Sustainability Division, NY, NY, USA

⁴ Oak Ridge Institute for Science and Education (ORISE) Research Participant

Hurricane Sandy

Impacts – Long Island

Hurricane Sandy, 2nd costliest weather event in US History

65+ Billion in damages

95,534 damaged or destroyed buildings in on Long Island

118,000 individuals/households in need of housing assistance on Long Island



FEMA



Interagency Cooperation and Directives

Interagency EPA/FEMA Memorandum of Agreement - 2010

Coordination of activities between EPA's Smart Growth Program and FEMA's long-term disaster recovery and hazard mitigation planning programs

New York State Cleaner, Greener Communities Program - 2011

Regional sustainability plans in 10 regions of the state; local sustainability plans being developed

National Disaster Recovery Framework - 2011

Allows federal agencies to more closely collaborate in support of local disaster recovery

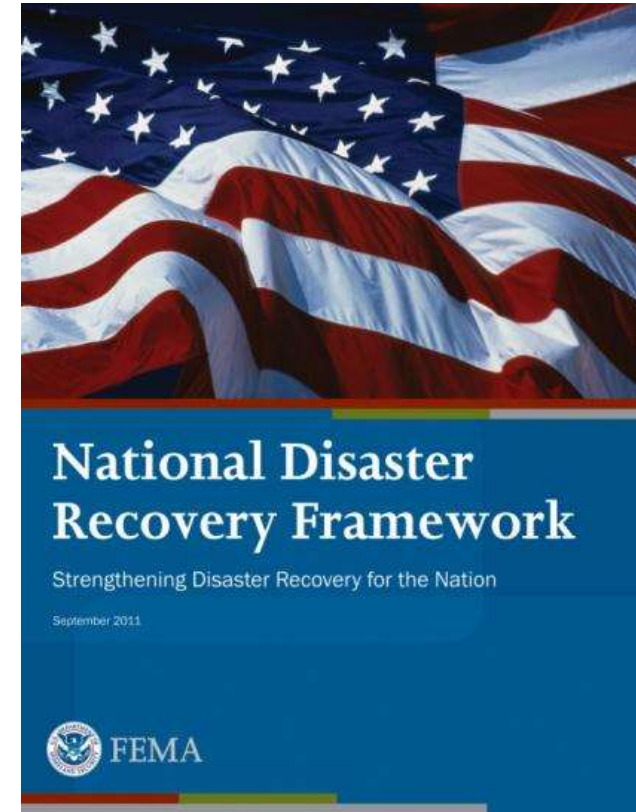
National Disaster Recovery Framework

Defines roles and responsibilities – Establishes Recovery Support Functions

Promotes the establishment of post-disaster organizations to manage recovery

Promotes a deliberate and transparent process that provides well-coordinated support to the Community

Offers strong, focused recovery leadership at the State and Tribal level, supported by strong Federal recovery leadership



Interagency Cooperation and Directives

New York State Community Risk & Resiliency Act - 2014

Incorporates sea level rise, flooding and storm surge into state funding and permitting

OMB Memo: Incorporating Ecosystem Services into Federal Decision Making - 2015

Directs federal agencies to incorporate ecosystem services into planning and decision making

Interagency EPA/FEMA Memorandum of Agreement Update - 2016

Coordination of activities between EPA's Smart Growth Program and FEMA's long-term disaster recovery and hazard mitigation planning programs

Organizational Structure



Organizational Structure



Direct Land Use TA

Health Impacts
Assessment

**Ecosystem Service
Assessment**

GIS Scenario Planning



FEMA



Organizational Structure

Ecosystem Services Assessment Disaster Recovery Project Specific Partners



Stony Brook University



Project Steering Committee

EPA R2, FEMA, NYS

Biophysical Modeling Group (Tech Team)

EPA ORD/ORISE, TNC, SUNY Stony Brook, NYS

Valuation Group

EPA ORD/ORISE, TNC, SUNY Stony Brook,
NYS

Community Engagement

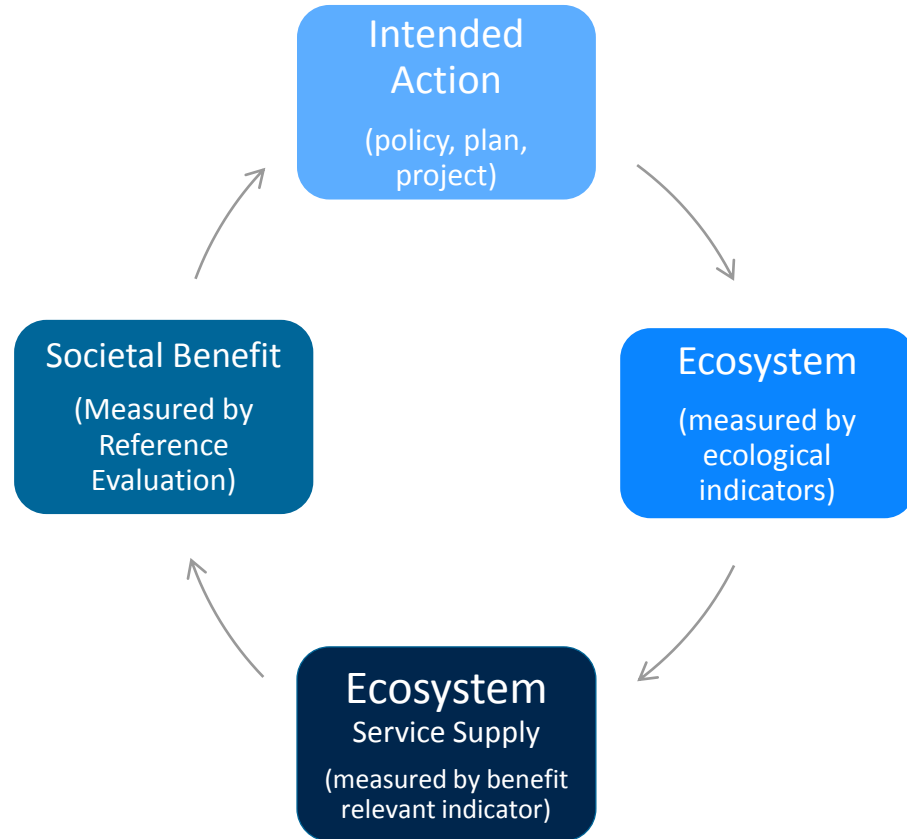
FEMA, EPA R2, NYS



FEMA



Ecosystem Services Assessment Framework



- Adopted the framework from the National Ecosystems Services Guidebook (FRMES)

Defining Keys to Project Success

- Definitive partner buy-in
- Outcome - based consensus building
- Develop and deploy adaptive management
- Produce local economic values for coastal ecosystem services that can be used to inform recovery planning and potentially be incorporated to local Benefit/Cost

Challenges to the Collaborative Approach

- Timelines
- Funding
- Priority Alignment
- Finding Suitable Local Project

Role of the Facilitator

Facilitator:

Independent Voice

Provide structure for
decision making

Hold partners
accountable to deadlines

Mediates if needed

Developing Relationship with Local Partners

How do we approach integration of ES into decision making when partners may not be familiar with this concept?

- Stop talking about Ecosystem Services
- We are the experts – We need to commit to a limited set of outcomes and have the community and local decision makers prioritize
 - Allows us to:
 - Scope Study
 - Set Priorities
 - Allocate Resources (Survey Funding, Focus Groups, etc.)

Now Steps

- Apply FEG-CS to ID potential beneficiaries within a spatially explicit framework
- Compile existing data sources (US Census, NOAA NMFS, NYS Parks Data, etc.) to ID actual beneficiaries

		Area (sq. m)	Area (%)
Land Portion Only (total sq. meters)	24,672,232.08		
Data Sets			
NLCD (2011)			
	Deciduous Forest	142,314.78	0.58%
	Developed, High Intensity	3,495,030.46	14.17%
	Developed, Low Intensity	6,036,419.26	24.47%
	Developed, Medium Intensity	9,559,070.18	38.74%
	Developed, Open Space	3,857,038.35	15.63%
		Total:	93.01%
	Emergent Herbaceous Wetlands	677,159.77	2.74%
	Evergreen Forest	8,797.23	0.04%
	Herbaceous	15,642.91	0.06%
	Mixed Forest	106,309.08	0.43%
	Open Water	273,630.10	1.11%
	Shrub/Scrub	105,813.66	0.43%
	Woody Wetlands	268,109.79	1.09%
	Total	24,545,335.59	98.91%

Marine Portion Only (total sq. meters)		Area (sq. m)	Area (%)
	21,034,905.20		
	Seagrass	365,848.33	1.74%
	Aquatic Beds	75,383.85	0.36%
NWI	Estuarine and Marine Deep water	10,687,910.86	50.81%
	Estuarine and Marine Wetland	9,550,744.01	45.40%
	Freshwater Emergent Wetland	10,667.18	0.05%
	Freshwater Forested/Shrub Wetland	28,873.95	0.14%
	Freshwater Ponds	7,659.68	0.04%
	Total:	20,727,087.86	98.54%
NHD			
	Stream/ River	Total Length of Rivers (meters)	39,227.6



Next Steps

- Partner with Suffolk County Communities
- FEMA HM – BCA
- More Stakeholder Engagements