Making Sediment "Relevant" to Policy/Decision Makers: Linking Urban Sediment Management to Social Benefits and Sustainability



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> Solving societal challenges; Working with sediments





Communicating Sediment Challenges

SedNet Lisbon 2013 Sediment and Policy Working Group posed the question:

"How could we communicate sediment challenges more effectively to policy and decision makers in a meaningful and understandable environmental management context that fosters greater interaction and interest?"

Where does SedNet go from here?

Urban Sediment Management Platform: Environmental Management Policy / Socio-economic What is the Face of Sediment Management?



Source: Mr Rallentando

11 Greatest Threats facing the World in 2014

- Fiscal crisis in key economics
- Structurally high unemployment/underemployment
- Water crisis (water security)
- Severe income disparity
- Failure of climate change mitigation and adaptation
- Greater incidence of extreme weather
- Global governance failure
- Food crisis
- Failure of major financial mechanisms/institutions
- Profound political and social instability
 - Kim Hjelmgaard, 16 January 2014 USA Today
- and Contaminated Sediments
 - E.A. Stern, 22 April 2015 (Society of American Military Engineers)

Who Cares?

- Aquatic/terrestrial flora and fauna
- Commercial shipping
- Waterfront users/developers
- Local and regional economies
- Tourism/recreation
- Users/providers of potable/agricultural water supply
- Federal/State/local agencies (tax revenues)
- Strategic Forces

US Federal Watershed (Regulatory) Programs that Involve Sediment

- RGGI = Regional Greenhouse Gas Initiative;
- SDWA = Safe Drinking Water Act;
- CWA = Clean Water Act;
- MS4 = Municipal Separate Storm Sewer Systems;
- NPDES = National Pollutant Discharge Elimination System;
- NPS = Non-point Source;
- NRD = Natural Resource Damages;
- CAA = Clean Air Act;
- CERCLA = Comprehensive Environmental Response, Compensation and Liability Act (Superfund)

USEPA/USACE = Dredged Material Management



All six NY/NJ harbor estuary sediment Superfund sites are biophysically linked and will need to share the marine, transportation and treatment infrastructures

The disconnect: Why it does not get done Comparison of Social and Remediation Timescales

Timescales	Typical Duration (Years)		
	Lower	Higher	
Social timescales:			
Political representative terms	2	6	
US Congress bill to law	6	10+	
Development	2	5	
Developer return on investment	5	8	
Superfund process timescales:			
Listing on National Priority List	2	25+	
Remedial Investigation - Studies	2	10+	
Design	1	3+	
Construction	1	7+	
Recovery (human/ecological health)	20	50+	
Total Superfund process	25	95+	

POLICY

Science -Engineering

Stern and Peck, 2014 (Sediment Policy Reform – White Paper)

Bridging Perceptions





What We see

What Policy sees

Emotional Involvement





Source: San Diego Zoo







Biodiversity

Material Placement Site

Role of Sediment:

- Maintaining community health and structure
- Resilience
- Sources of bioactive compounds for cancer medicine

Food Security

World per capita apparent fish consumption has nearly doubled since the 1960s

Role of Sediment:
Stress
Physical damage
Cause disease
Reduce resistance to diseases
Trophic level transfer

Water Security/Water Insecurity

Decreased capacity from sedimentation Accumulation of sediment-borne contaminants Concentrations in water increase as water depth decreases

Climate Change / Adaptation

Source: Deltares EDD - Building with Nature Toolbox

Venice MOSE

Porto Marghera

Hurricane Sandy - Gowanus Canal, NY

Evolution

Historical – Economic Industrial Engine

Present

DISCONNECT

Gowanus Canal – Brooklyn, New York

Land value Neighborhood linkage

Infrastructure upgrades JOBS

Economic Development

"Without the dredging and cleanup of the Kinnickinnic River, this boatyard would be out of business." – Chris Svoboda, Owner, Pier Milwaukee, Wisconsin US

"If not for the river sediment cleanup, we never would have invested in redeveloping the old foundry site." – Dave Ferron, Property and Real Estate Manager, Paul Davis Restoration

Future Advancements: Industrial Ecology

- Waste of one process becomes the resource for another
- End-of-pipe view to a market-led substitution:
 - Zero energy systems
 - Material substitution
 - Reduced Raw Material Consumption
 - Functional Economy (jobs)

Ex-situ Technologies/Beneficial Use

CEAMaS – NL, UK, Ireland, Germany, Belgium, FR

Cement-Locktm – Volcano Partners, LLC

- Envisan Jan Du Nul France
- TREVI/3V Green Eagle Italy
- **SETARMS France**

Business Case – Elevating to Policy

- Defense against climate change impacts
- Ensuring adequate supply of water and food
- Reduced health costs
- Increased waterfront property value
- Increased tax revenues
- Reduced corporate liability costs
- Reduced port/marina maintenance costs
- ✓ Employment/niche industries

Closing Thoughts We end how we began...

- It's Not about Sediment
- It is about
 - Economics local revitalization
 - Jobs
 - Climate adaptation
 - Drinking water
 - Fisheries
 - Air quality
 - Ecosystem services
 - Sustainable use of energy and resources
 - Innovation (technology)

Thank You!

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Trends...

- It's Not about Sediment
- It's about:
 - Economics local revitalization
 - Jobs
 - Climate adaptation / restoring interrupted supply
 - Drinking water supply
 - Biodiversity/ Food security
 - Infrastructure
 - Ecosystem services
 - Sustainable use of energy and resources