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

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9th International SedNet Conference
Krakow Poland
23-26 September 2015

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
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

<table>
<thead>
<tr>
<th>Timescales</th>
<th>Typical Duration (Years)</th>
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<tbody>
<tr>
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<td>Lower</td>
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<tr>
<td><strong>Social timescales:</strong></td>
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<tr>
<td>Political representative terms</td>
<td>2</td>
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<td>US Congress bill to law</td>
<td>6</td>
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<tr>
<td>Development</td>
<td>2</td>
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<td>Developer return on investment</td>
<td>5</td>
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<td><strong>Superfund process timescales:</strong></td>
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<tr>
<td>Listing on National Priority List</td>
<td>2</td>
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<tr>
<td>Remedial Investigation - Studies</td>
<td>2</td>
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<tr>
<td>Design</td>
<td>1</td>
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<tr>
<td>Construction</td>
<td>1</td>
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<tr>
<td>Recovery (human/ecological health)</td>
<td>20</td>
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<tr>
<td>Total Superfund process</td>
<td>25</td>
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</tbody>
</table>

Bridging Perceptions

What We see

What Policy sees
Emotional Involvement
CREATURE FROM THE BLACK LAGOON

Starring RICHARD CARLSON & JULIE ADAMS
Biodiversity

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
Evolution

Historical – Economic Industrial Engine

Present

Gowanus Canal – Brooklyn, New York

Future

Linkage between sediment remediation / restoration and upland economic development

DISCONNECT

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-Lock™ – 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