Overview – Dredging and the Environment

- Deltas, Estuaries, Coasts
- Issues
- Environmental Impacts
- Lessons Learned
  - Building with Nature
  - Partnering
  - Stakeholder Involvement
- Jones Act
Deltas: opportunities and challenges

- **Opportunities**
  - strategic location
  - agriculture & fisheries
  - productive ecosystems

- **Challenges**
  - intervention needed
  - vulnerable nature
  - pollution
  - available space
Deltas: human intervention necessary

- Dredging is a tool
- Dredging has impact
  - positive
  - negative
Issues - Protest against port developments

MV2, Netherlands

Melbourne Channel Deepening, Australia
Issues - Remedial dredging in ports

careful removal of contaminated material and treatment, reuse or relocation of the material
Issues - US Marine Transportation System

- System nearing capacity until current downturn
- Cargo volumes projected to double next 20 years
- Channel design already a generation behind

Capacity constraints hamper economic growth

Source: USACE 2009
Impacts - Dredging Process

- short term
- dredging method is important
- best practices
  (e.g. PIANC reports, CEDA/IADC book)

typical impacts:
- removal of habitats
- turbidity
- burial of habitats
- but quick recovery
- emissions
Impacts – Emissions

Footprint global dredging: 6.3 mn tonnes CO2 (est. 2008, seagoing dredgers only)

Est. Global CO2 Emissions per sector in %

<table>
<thead>
<tr>
<th>Sector</th>
<th>Emissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy production / industry</td>
<td>36%</td>
</tr>
<tr>
<td>Road transport</td>
<td>20%</td>
</tr>
<tr>
<td>Manufacturing industry and construction</td>
<td>17%</td>
</tr>
<tr>
<td>Aviation</td>
<td>3%</td>
</tr>
<tr>
<td>Maritime transport</td>
<td>2%</td>
</tr>
<tr>
<td>Other sectors</td>
<td>22%</td>
</tr>
</tbody>
</table>

100%
Impacts – Project, Port Development

- long term
- project design is important
- environment should be THE starting point

typical impacts:
• loss of habitats
• creation of habitats
• environmental pressure from port operations
• lack of integrating the environment within the project
Lessons - Building with Nature

- Ecosystem central to project design
- Integrating functions:
  - Nature
  - Landscape
  - Agriculture
  - Fisheries
  - Safety
  - Transport
  - Recreation & Tourism
  - History & Culture
  - etcetera

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Lessons – Client–contractor relationships

- **Traditional**
  - allocation of risks
  - different interests
  - often sub-optimal
- **Partnering**
  - building on trust
- **Alliance**
  - for complex projects
  - sharing risks
  - focus on project success

Tang et al., derived from Terra et Aqua 113, 2008
Lessons - Stakeholder Involvement

- Culture of dialogue
  - learning from each other!!!
- Broad understanding between stakeholders
- Effective communication
- Early in process
US ban on foreign built dredging vessels

- does not support security
- limits equipment choices
- results in low-tech
- harms the environment
US ban on foreign contractors

- makes dredging expensive
- inefficient use of resources
- limits investments in nature
Lessons learned

• Stop engineering – start thinking
  • Building with Nature

• Stop conflict – start co-operating
  • Partnering and Alliance contracts

• Stop quarrels – start communicating
  • Stakeholder involvement in early stage

For the US specifically

• Stop closed market – start open competition
  • US dredging market open for international competition
For more information on Dredging & the Environment

www.iadc-dredging.com
www.terra-et-aqua.com
www.dredgingaspects.info
www.pianc.org
or www.pianc.iwr.usace.army.mil