Dredging and the Environment

Lessons Learned

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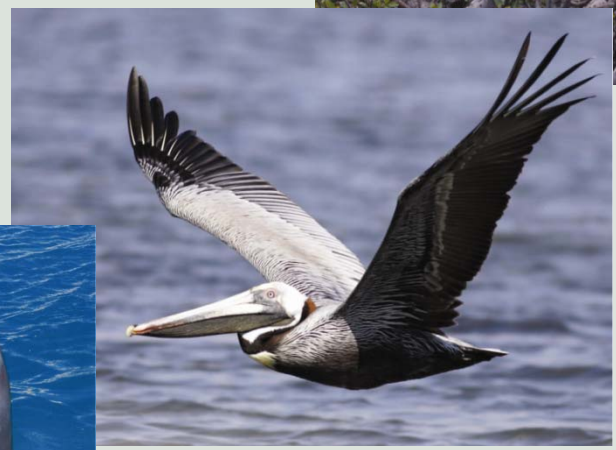
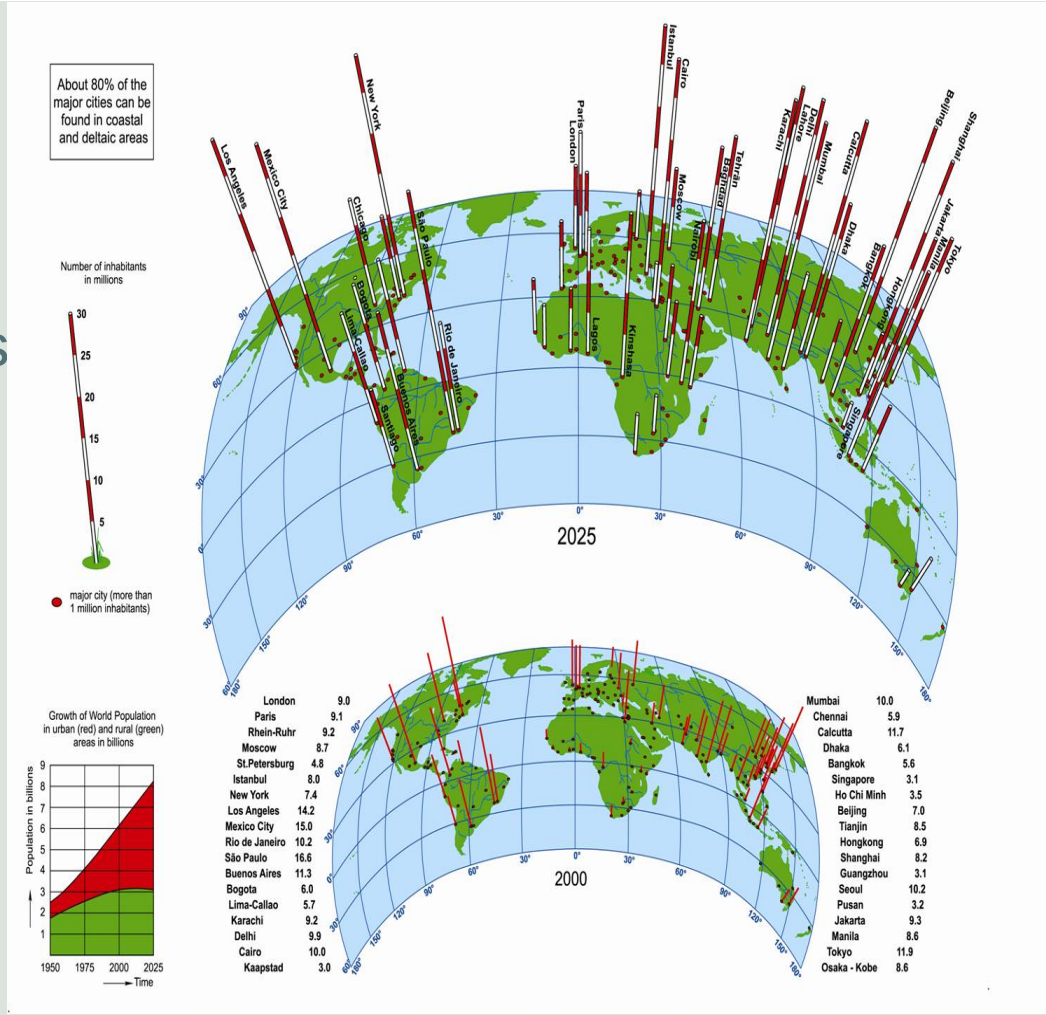
Overview – Dredging and the Environment

- 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

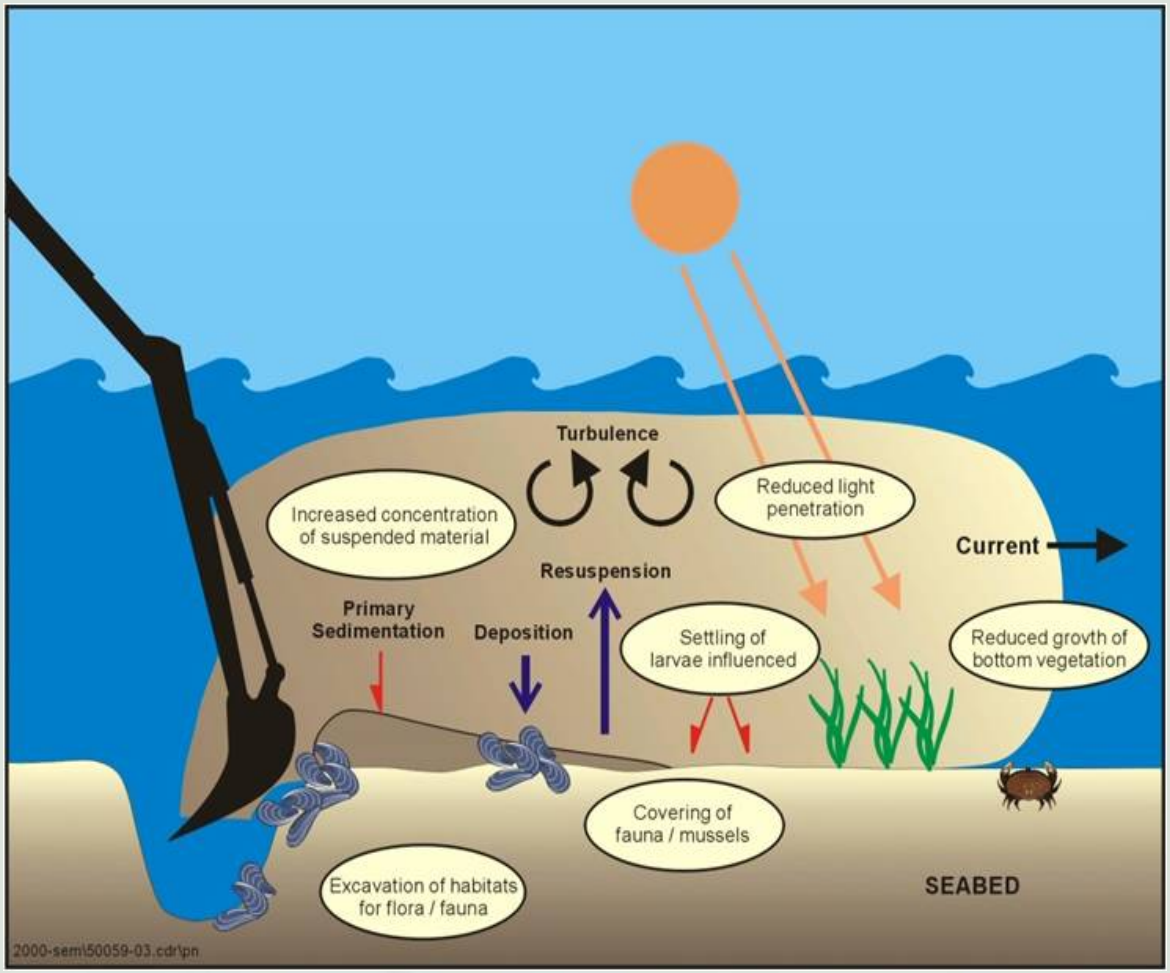
Issues - US Marine Transportation System

- 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



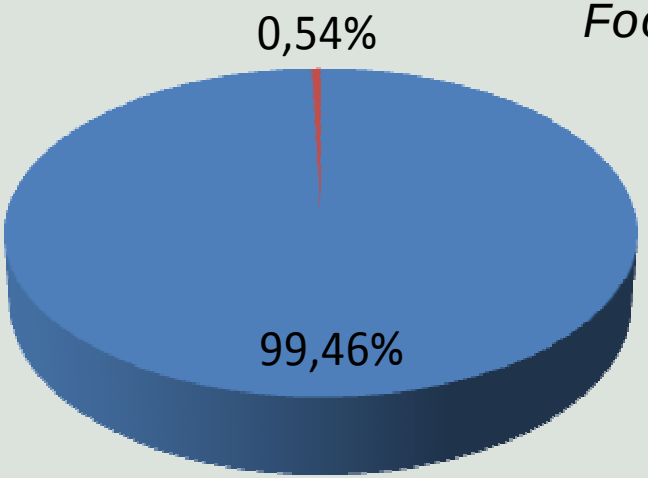
- short term
- dredging method is important
- best practices

  (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)

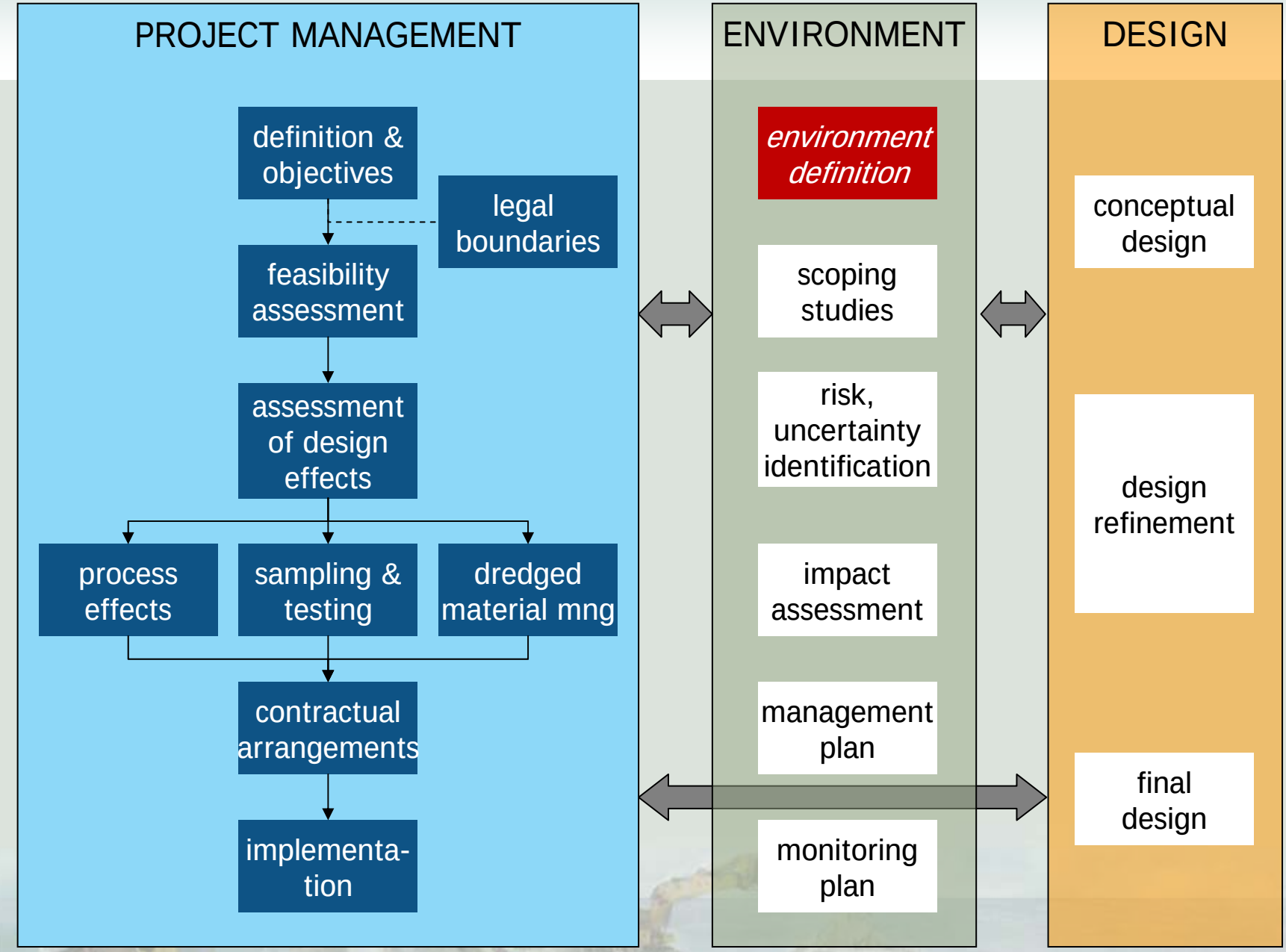
Est. Global CO2 Emissions per sector in %	
Energy production / industry	36%
Road transport	20%
Manufacturing industry and construction	17%
Aviation	3%
Maritime transport	2%
Other sectors	22%
	100%

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



Source: CEDA / IADC Environmental Aspects of Dredging, 2008

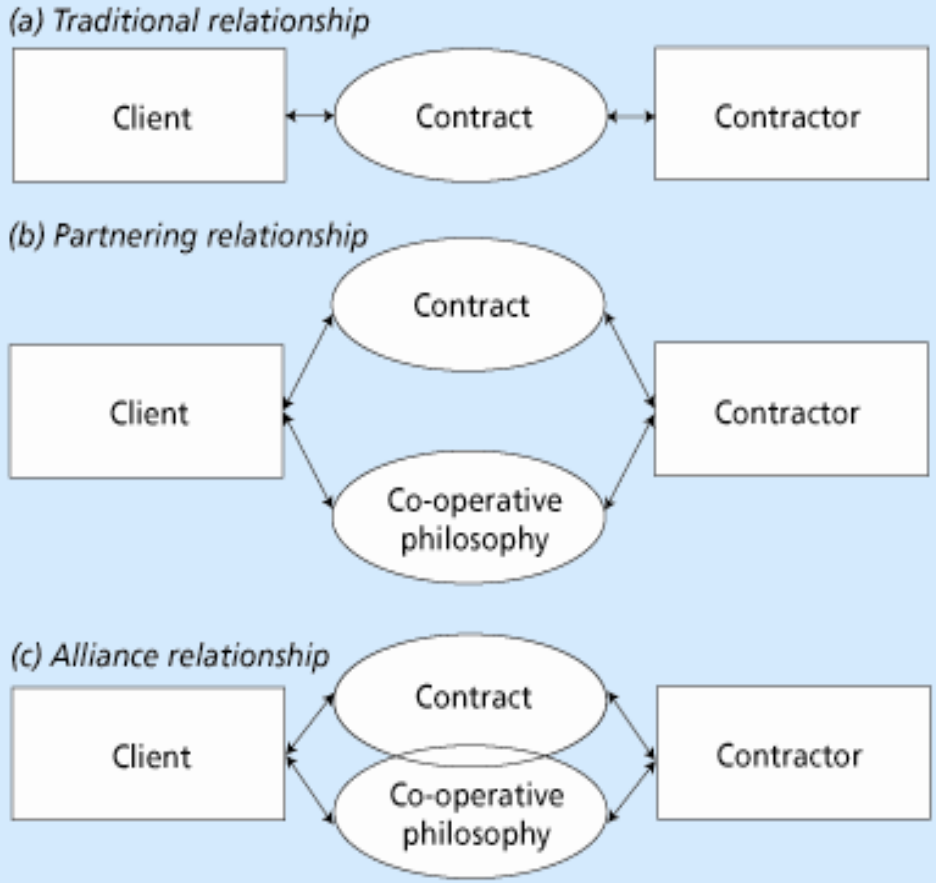
Lessons - Building with Nature

www.ecoshape.nl

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

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



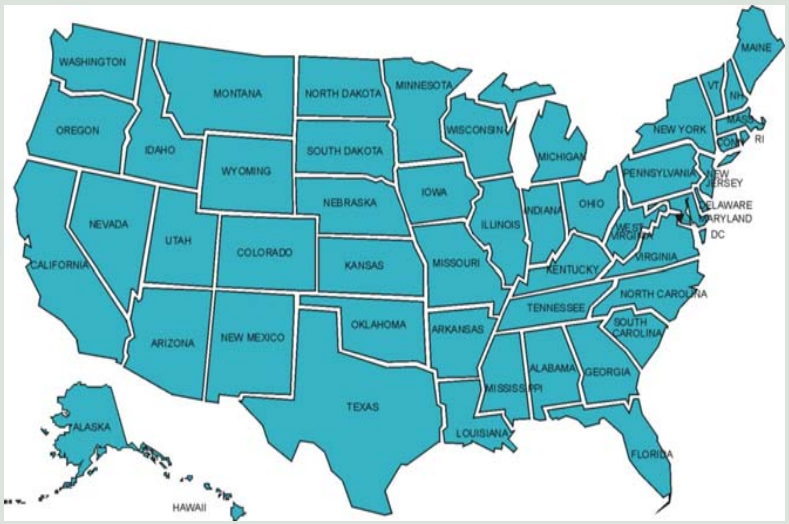
Tang *et al., derived from Terra et Aqua 113, 2008*

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

International Association of Dredging Companies