

# *Working with Nature*

## *In Navigating the New Millennium*

**The World Association for  
Waterborne Transport Infrastructure**



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**33<sup>rd</sup> PIANC World Congress WwN Workshop**

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# Working with Nature: *Background*

- Developed as a position paper by PIANC's Environmental Commission in 2007-2008
  - Supported by CEDA and IADC
- Endorsed by PIANC Executive Committee
- Aims to provide a practical framework for sustainable navigation infrastructure development

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PIANC Position Paper

## **‘Working with Nature’**

October 2008; revised January 2011

### What do we mean by ‘Working with Nature’?

*Maximising opportunities; reducing frustrations.* **Working with Nature** is an integrated process which involves working to identify and exploit win-win solutions which respect nature and are acceptable to both project proponents and environmental stakeholders. It is a philosophy which needs to be applied early in a project<sup>1</sup> when flexibility is still possible. By adopting a determined and proactive approach from conception through to project completion, opportunities can be maximised and - importantly - frustrations, delays and associated extra costs can be reduced.



# Working with Nature: *Introduction*

- An integrated approach to project development, applied early in a project
- Aim: identify win-win solutions, addressing the objectives of project proponents and environmental stakeholders
- Represents a medium-long term ambition to achieve an effective and efficient balance of development and environmental objectives



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# Working with Nature: *Why?*

- Well-established requirement to consider environmental implications of projects
- However, the process is often complicated by project delays and increased costs
- Design-construct-mitigate model is focused on limiting environmental damage
  - In contrast to creating sustainable projects
  - Missed opportunities



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# Working with Nature: *What does it mean?*

**Working with Nature** requires a shift in approach to:

- focus on achieving project objectives in an ecosystem context rather than assessing consequences of a pre-defined design
- focus on identifying win-win solutions rather than simply minimizing ecological harm



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# Working with Nature: *A different order of activities*

1. Establish project need and objectives
2. Understand the environment
3. Make meaningful use of stakeholder engagement; identify win-win options
4. Prepare project proposals/design to benefit navigation and nature



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# Working with Nature: *The Progression*

Inputs and Outputs  
*'Degree of'*

System Resilience

Efficiency

Benefits Related to the Project

**Outcomes**

**Inputs**

Technology Transfer

Technical Understanding

Innovation and Creativity

Diversity of Skills and Expertise

Stakeholder Engagement



Business  
as Usual

Understanding  
Natural  
Processes

Aligning  
Processes

Expanding  
Benefits

Enabling  
Self-Sustaining  
Benefits

**STAGES**

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# Examples of WwN



Bird Island, Le Havre, France



Evia Island, Galveston Bay, Texas

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# Examples of WwN



Sand Motor, The Netherlands

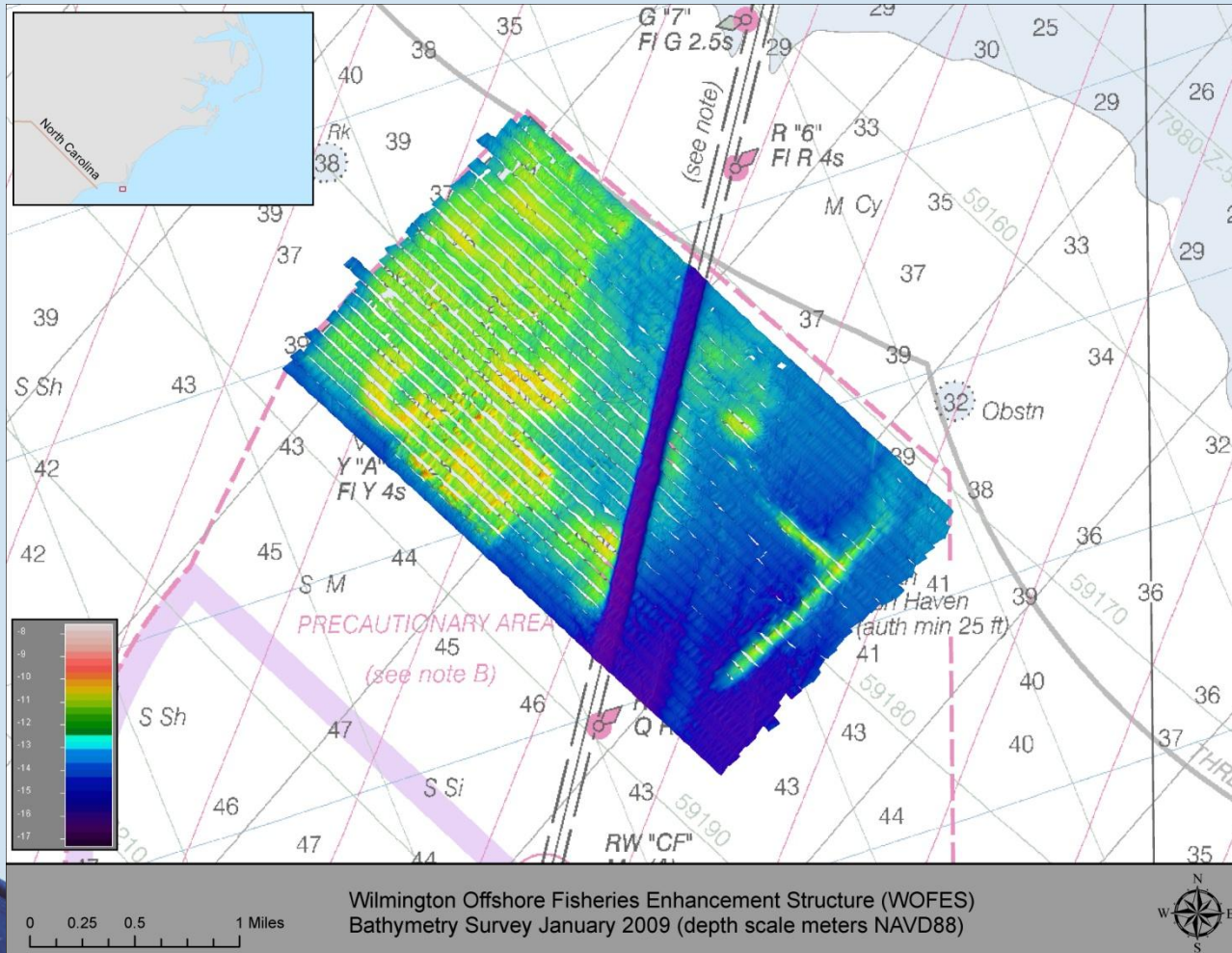


Jacksonville, Florida

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# Examples of WwN



## Wilmington Offshore Fisheries Enhancement Structure

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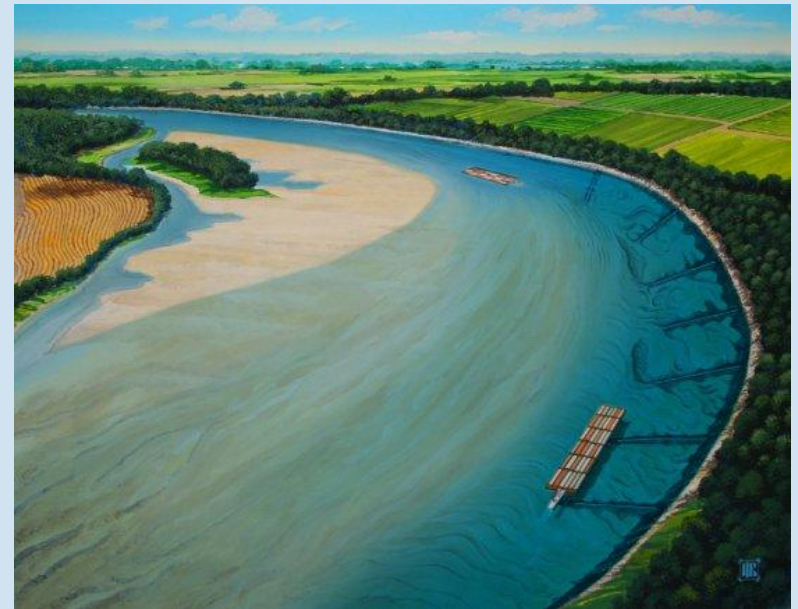




# Examples of WwN



Upper Mississippi River Training Structures: Chevrons



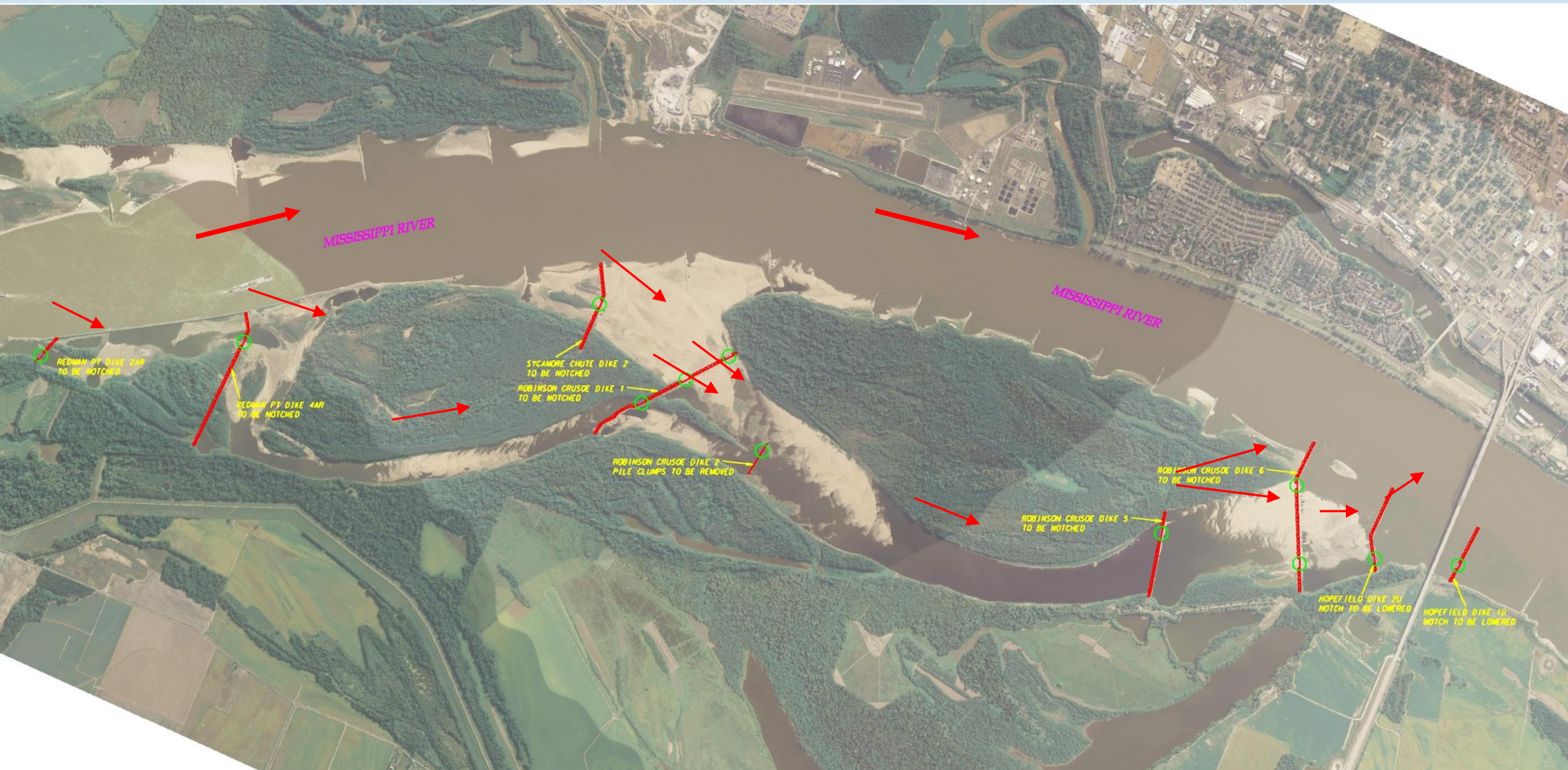
River Bendway Weirs



Environmentally Enhanced Breakwater Toe Blocks



# Examples of WwN



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Loosahatchie Bar  
Aquatic Habitat Rehabilitation



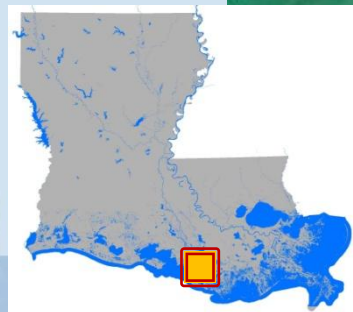


# Examples of WwN

Habitat Creation  
by  
*Strategic  
Sediment  
Placement*

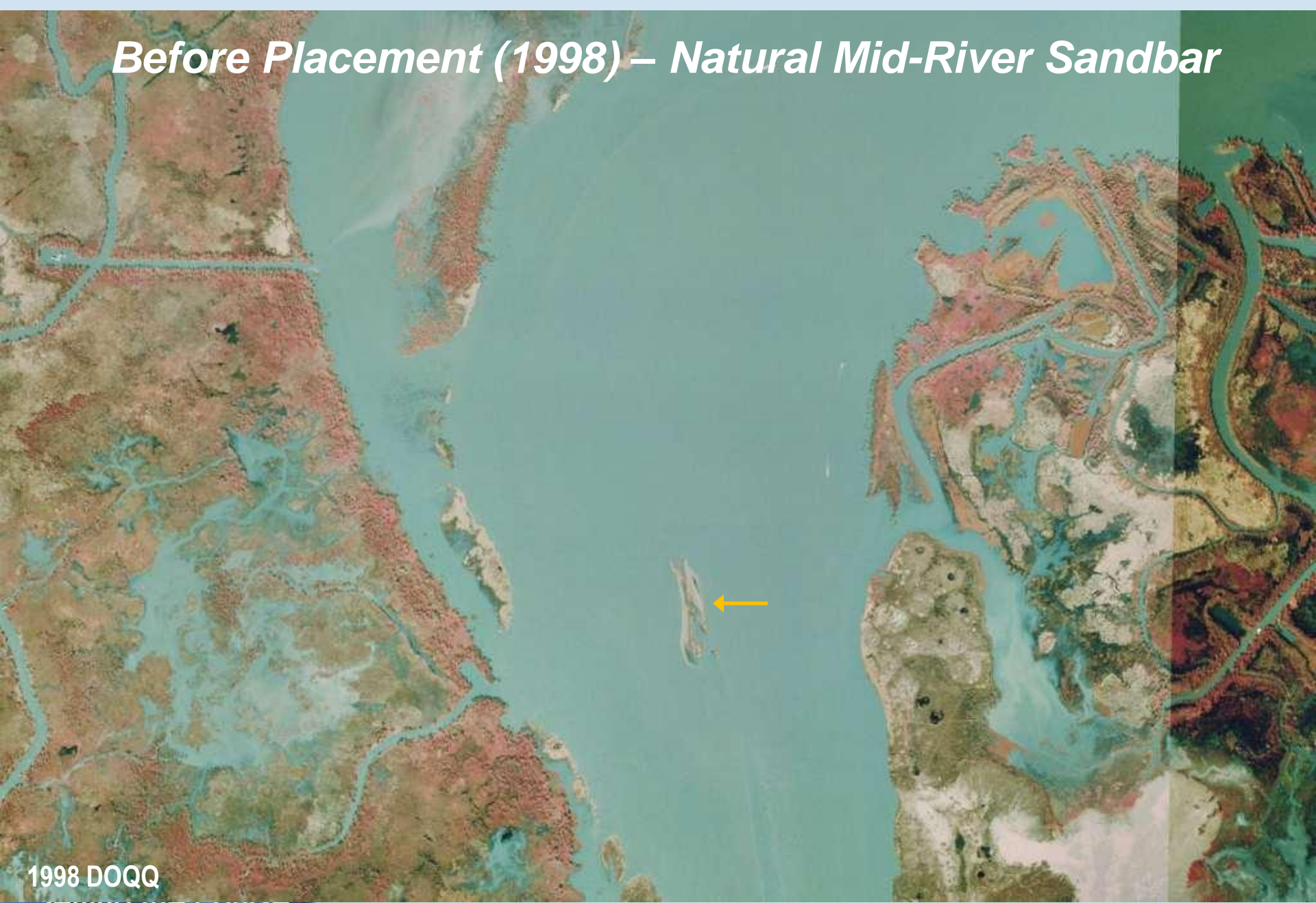


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# *Before Placement (1998) – Natural Mid-River Sandbar*



1998 DOQQ

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# *Initial Dredged Material Placement (2002-2004)*



2004 DOQQ

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# 100 Acres of Created Habitat (2010)



2010 BUMP  
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# Working with Nature: *Can we do it?*

**Significant progress made in recent years:**

- Advances in science and technology, modelling and design
- Understanding of system dynamics
- Managing uncertainty
- Balancing environmental, social and economic considerations
- Improved practice in stakeholder engagement



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# Parallel Efforts

- U.S. Army Corps of Engineers-  
Engineering with Nature initiative
  - [www.engineeringwithnature.org](http://www.engineeringwithnature.org)
- Ecoshape's Building with Nature program
  - [www.ecoshape.nl](http://www.ecoshape.nl)



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# Working with Nature: *Some Challenges*

- Creating the right conditions for innovation
- Overcoming inflexible application of environmental regulation and business practices
- Practical implementation of adaptive management
  - E.g., dynamic natural ecosystems
- Need for patience and perseverance



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# PIANC WwN Project Certificate of Recognition and Award

- In order to promote WwN practice, PIANC has developed a certification and award process for navigation projects worldwide
- Process:
  - Projects are nominated through the PIANC WwN website
  - PIANC jury of experts periodically evaluates subjected projects with respect to the WwN philosophy and recommends projects for certification
  - Certified projects are qualified for being considered for the WwN Award made once every 4 years at the PIANC Congress



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# Working with Nature: *The Way Forward*

- Change in practice will take time...
- Recognize the challenges; learn from achievements
- Identify and build on existing cost-effective examples of working with natural processes
- Accept that developing/delivering win-win solutions takes imagination and innovation



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