

# The role of Environmental Agencies and Research Institutions for sustainable sediment management

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## Summary

- ***The general role of Environmental Agencies and Research Institutes***
- **ISPRA and Environmental Agencies in sediment management**
- **The cooperation between ISPRA and Agencies**
- **An example: the dredging of Port of Genoa**
- **Consideration**

# The role of National Environmental Agencies

- Giving technical support to regional and local Administrations in the environmental policy by means of:
  - Surveillance system, verifying the compliance with regulations and standards and analyzing the causes and relative effects of environmental degradation
  - Monitoring to protect health, ecosystems and territorial safety and to promote the use of resources within a framework of sustainable development

**There are 21 regional and provincial Agencies established with  
specific Regional Laws**

## The Research Institutes

- they carry out the basic research
- they're functional in the training formation
- they promote scientific knowledge increasing
- they contribute to the development of new technologies, products, processes and services

# **The national role of ISPRA**

**Institute for Environmental Protection and Research**

**ISPRA came from the merge of different institutions like as marine research institute, wildlife research institute and environmental agency, collecting a wide technical and scientific proficiencies**

**ISPRA provides technical and scientific support, as well as necessary tools and know-how, for the environmental decision of the Ministry of the Environment to safeguard the environmental and sustainable development paths agreed within the EU**

# ISPRA and Italian Environmental Agencies

- **ISPRA is actually the institutional and technical/scientific reference point for the whole country on environmental themes**
- **ISPRA also represents a system's cohesion, while respecting local territories favouring a more homogeneous development of cooperation**
- **ISPRA chairs the Federal Council of Agencies**
- **they belong to Environmental Agency System, a network which matches the knowledge of the territory and the local green problems with the prevention and national environmental protection policies**

## ISPRA and European Agencies

- ISPRA works as *National Focal Point* for *European Environment Agency* and as *National Reference Centre* for many topics, also participating in specific groups (*ETC – European Topic Centre*) in partnership with European environmental agencies and institutions
- ISPRA is included in EPA network which comprises directors and chairmen of the European agencies, presided over by the EEA (European Environment Agency)

## The EPA Network's objectives

- to provide a forum on critical issues of environmental policy and its implementation
- to provide a high-level dialogue and to share the information on topics of mutual interests
- to promote and make easy bilateral and multilateral cooperation among its members sharing experiences, approaches, problems and practical solutions
- to discuss proposals for implementation and/or development of European environmental policies



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- ***ISPRA and Environmental Agencies in sediment management***
- The cooperation between ISPRA and Agencies
- An example: the dredging of Port of Genoa
- Conclusions

# The sediment management



Harbor dredging



Beach nourishment



Laying of  
cables and pipelines



Cleaning of contaminated sediment



Confined Disposal Facilities



Sea disposal

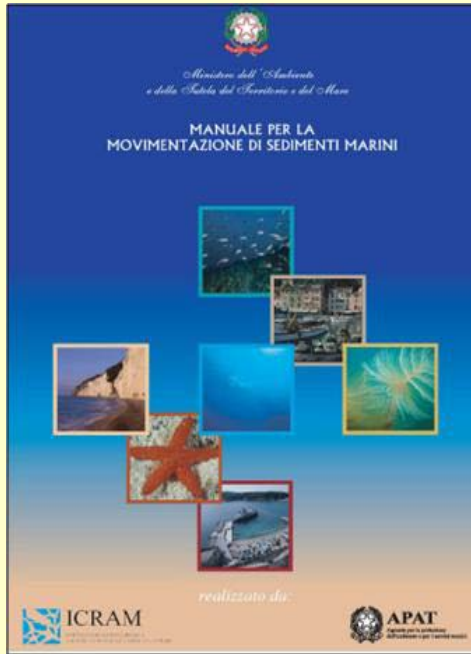
# The role of the Environmental Agencies in the sediment management

- Control of the correct execution of activities
- Validation of the analyses
- Monitoring the activities to protect the regional coastal marine ecosystems
- Development of new methods and technological upgrading of all activities related to the monitoring of environment

# ISPRA and Sediment management

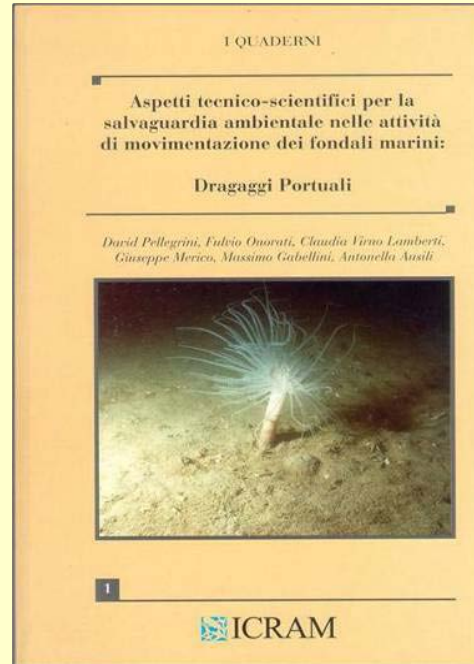
- **ISPRA support the Administration to make decision by means of its experience and knowledge gained on the whole issue of the sediment management carrying out experimental researches**
- **The main research activities are focused on:**
  1. **Definition of guidelines on marine environment (water, sediment, organisms)**
  2. **Sediment quality assessment focused to their management taking in account the peculiarity of the area (reference and action levels)**
  3. **Beach nourishment using “relict sands”**
  4. **Contaminated sediment treatment**

# 1. The guidelines on sediment management

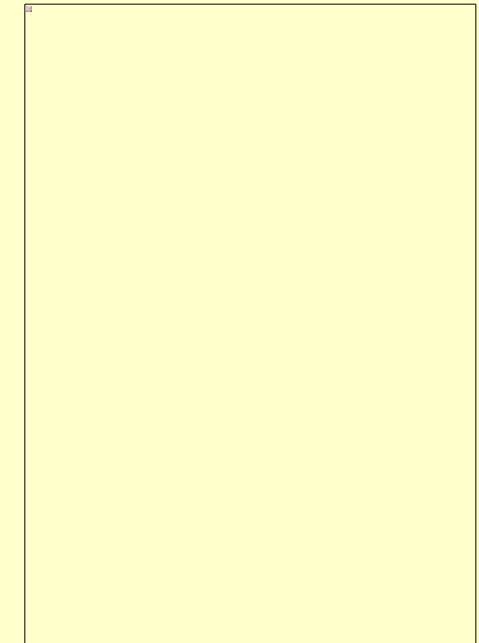


guidelines focused on coastal sediment handling like as:

- harbour dredging
- beach nourishment coastal areas
- dumping at sea of dredged material

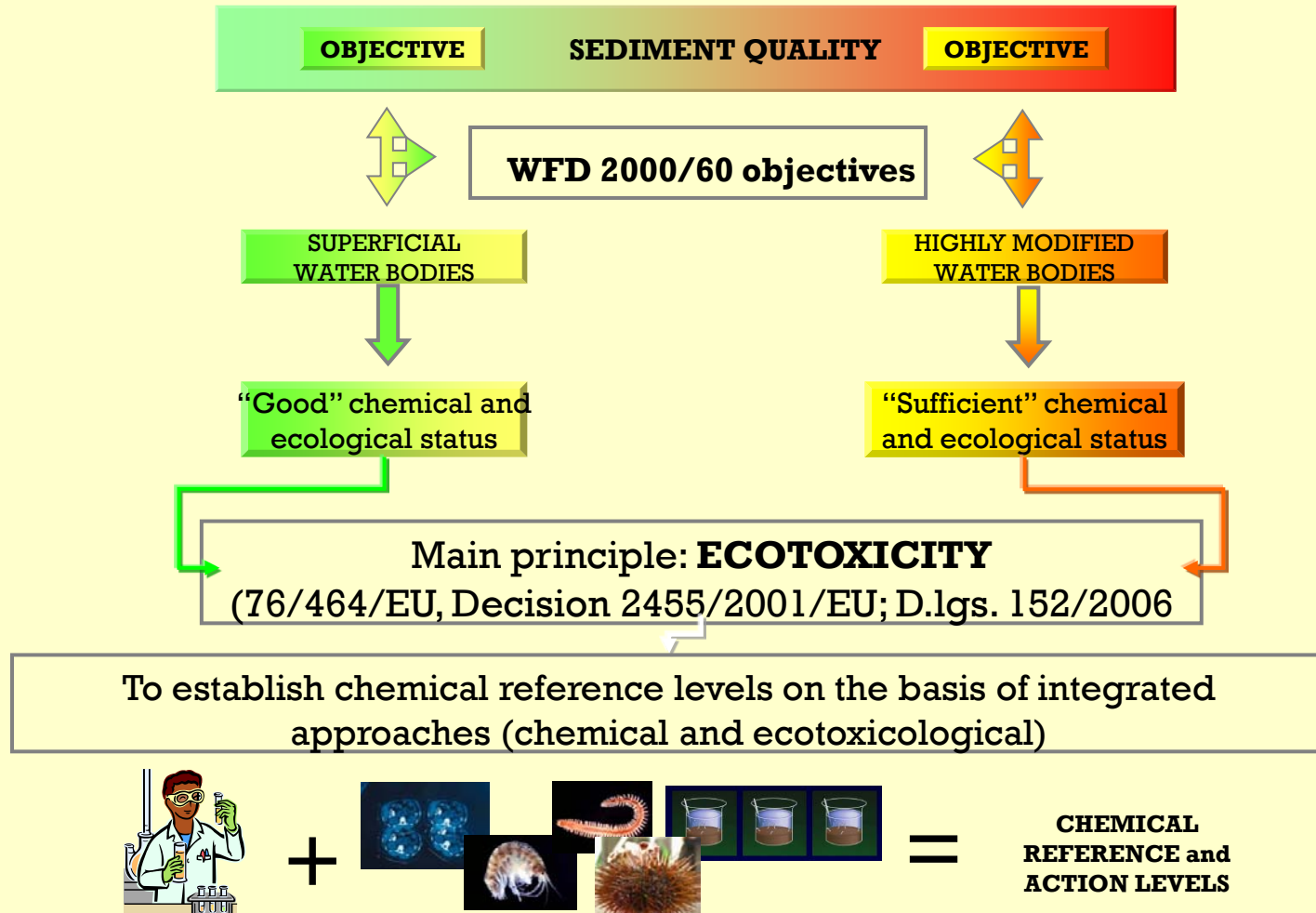


guidelines for the characterization and management of dredged sediments



Monitoring during the dredging of relict sands to use for beach nourishment

## 2. Sediment quality assessment





### 3. Beach nourishment using “*relict sands*”

- Extraction of “*relict sands*” by dredging to use in the nourishment of eroded beaches



Monitoring the activities to avoid negative impacts on the marine environment...

## 4. Contaminated sediment treatment

- Making experimentation of most of existing treatment technologies to verify the effectiveness of treatments depending on the type of contamination and sediment involved
- To verify the applications of selected technologies on site-specific situations

**Cooperation between ISPRA and research Institutes**  
**Applying these technologies to real case**



# Experiments of sediment treatment

in close cooperation with Research Institutions and private companies

- Biological treatment (ENEA)
- Electro kinetic Remediation (University of Rome)
- Sediment washing (University of Rome – University of Cagliari – Biogenesis)
- Liming treatment (University of Rome)
- Solidification/Stabilization treatment (Politecnico of Milan – Mapei – Solvay)
- Thermal desorption (Politecnico of Milan – Mapei)
- Grain-size separation pilot treatment

# Experiments on sediment treatment in EU Projects

- **COAST-BEST Coordinated Approach towards dredged Sediments Treatment and valorization in small harbors - University of Rome – University of Cagliari – ARPA ER – Sogesid SpA– ICOP SpA– Envisan Srl– Lab&Lab Srl**
- **SEDI.PORT.SIL Recovery of dredged SEDIments of the PORT of Ravenna and SILicon extraction – Med Ingegneria Srl, University of Ferrara, University of Bologna, Park of Delta Po Emilia-Romagna, Geocomar**

## Summary

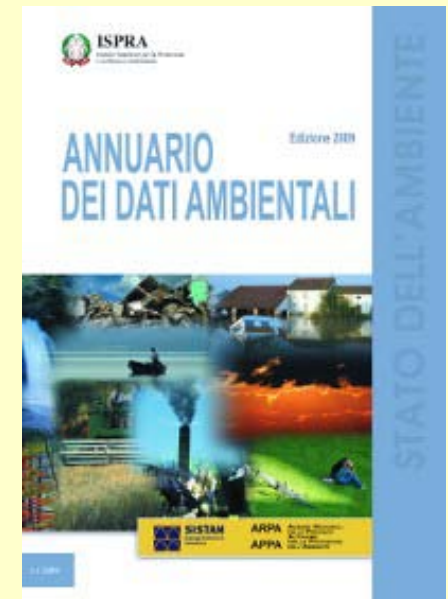
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# The cooperation between ISPRA and Agencies

- Inter-calibration exercises finalized to implementation of chemical-physical analyses
- Standardization and application of protocol analyses

and...

- Collection of environmental data to create a unique geodatabase finalized to improve the management of sediments on the coastal areas



# The cooperation between ISPRA and Agencies (*within UNICHIM*)

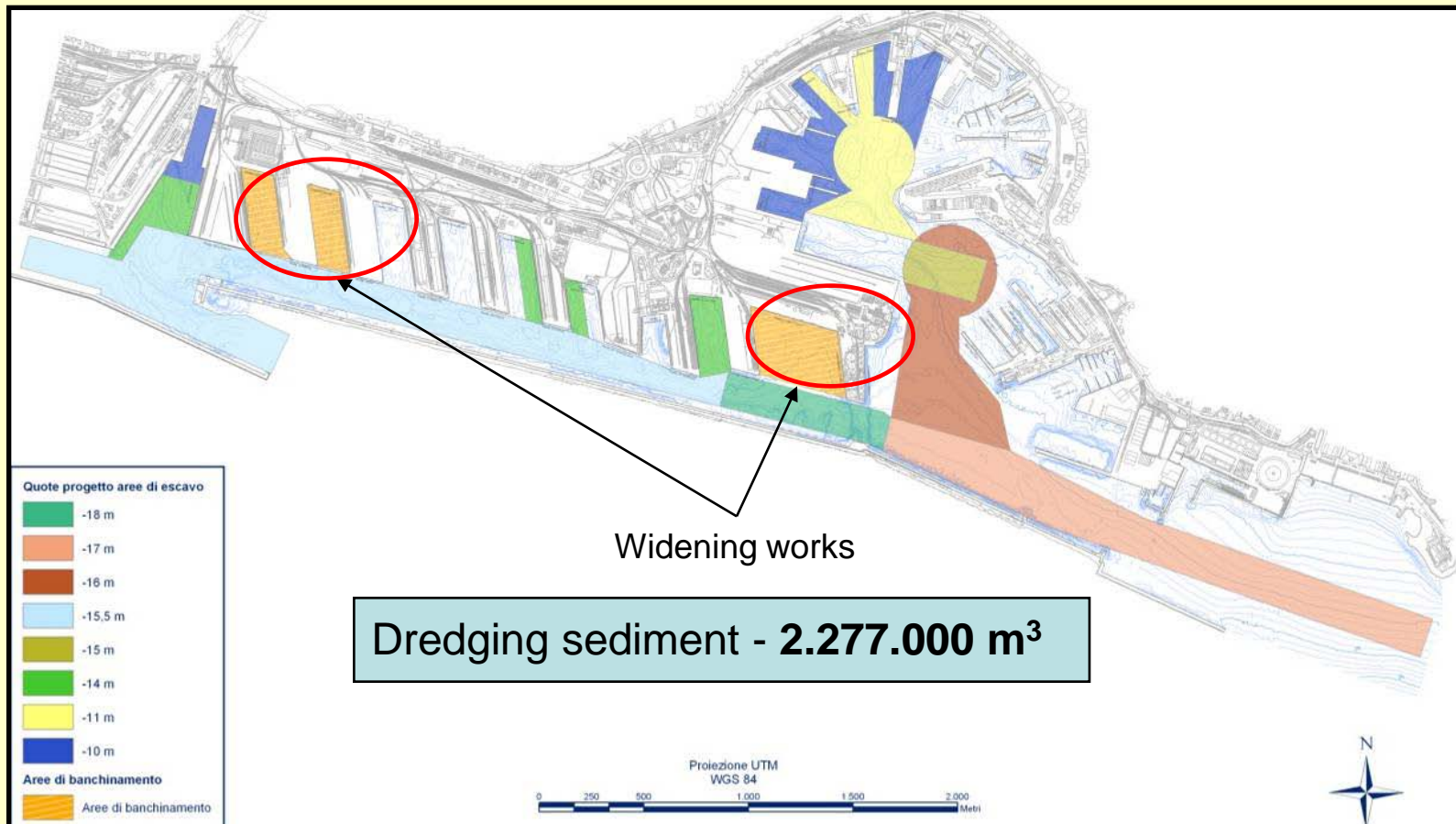
- Inter-calibration exercises finalized to implementation of ecotoxicological analyses
- Standardization of protocol analyses and guidelines
- Certification of ecotoxicological analyses
  
- Analytical training by ISPRA for execution of bioassays

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# The cooperation in the sediment management

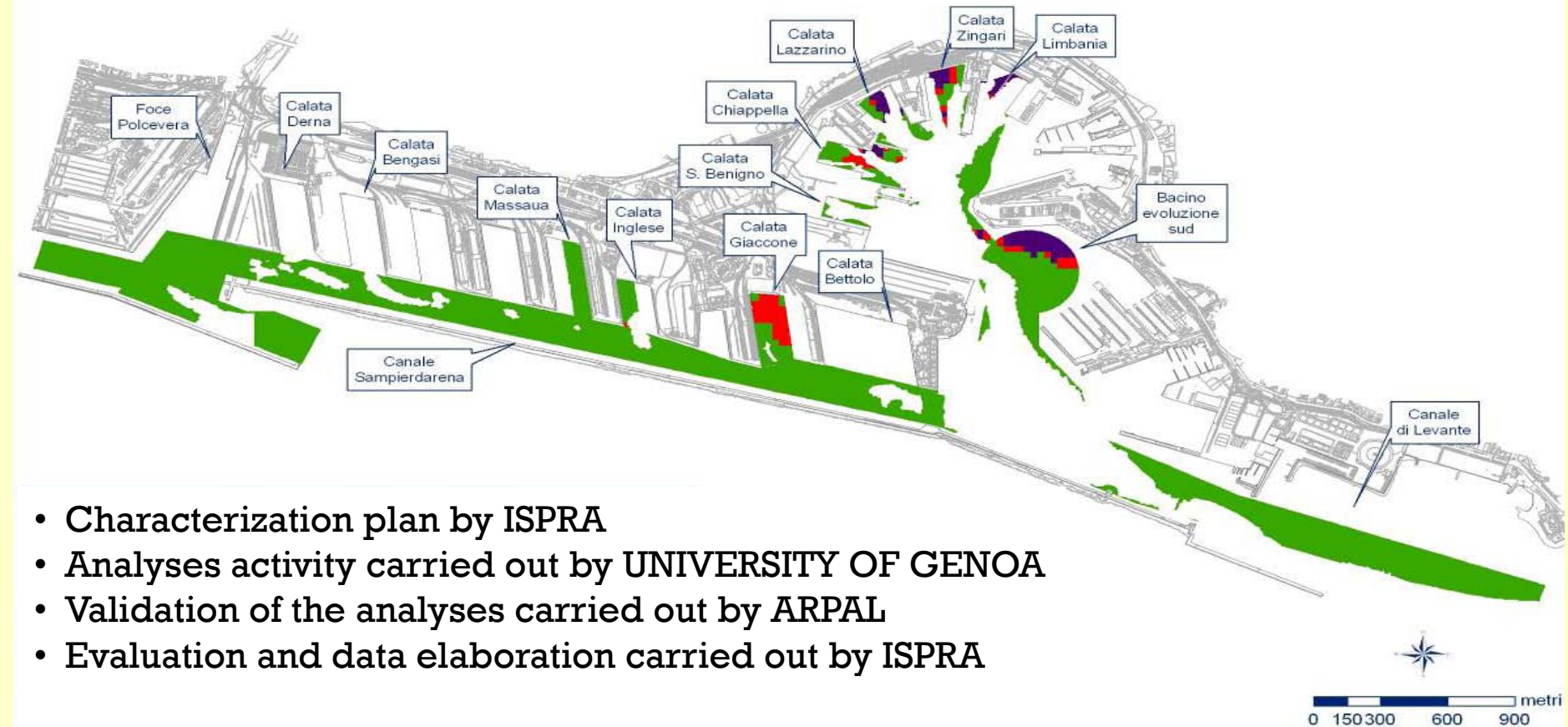
## An Italian example – Port of Genoa





# Genoa Port dredging activities

## *Sediment characterization*



- Characterization plan by ISPRA
- Analyses activity carried out by UNIVERSITY OF GENOA
- Validation of the analyses carried out by ARPAL
- Evaluation and data elaboration carried out by ISPRA



# Genoa Port dredging activities

## *Dredging and CDF disposal monitoring*

- Monitoring Plan by ISPRA
- Surveillance and control during disposal by ARPAL
- Monitoring activities by UNIVERSITY OF GENOA



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# Conclusions

- collaboration between research institutes and environmental Agencies is essential to provide useful criteria and procedures for the proper sediments management
- Institutions monitoring role is crucial for the whole procedure, from the planning to the execution
- needs to go on with the implementations, each for their competences, in order to contribute to make sediment management procedures more streamlined and environmentally sustainable

# Conclusions

- to improve operational guidelines and technical manuals, basing on the operational experience gained, and updating them with the real needs of the sediment management activities to streamline the procedures;
- to develop specific database on sediment handling activities (dredging, beach nourishment, etc.) to assess and monitor the progress of the issues and, at the same time, addressing action on national and local scale;
- to promote and encourage all forms of applied research, networking, communication and information to create specialized know-how that meets the environmental and economic challenges set out by the global market

**Thank you for the attention**