



Sed
Net



SedNet: the evolving, European Sediment Network

Sediments and Circular Economy

Hamburg November 6th, 2018

www.sednet.org

Agenda

- Introduction to **SedNet** (if any participants are not yet familiar)
- Brief introduction of participants
- Introduction to a **SedNet CE WG** – Why circular ?
- **CE WG** ‘development lines’
- What’s next

SedNet

Mission:

A European network aimed at incorporating sediment issues and knowledge into European strategies to support the achievement of a good environmental status and to develop new tools for sediment management.

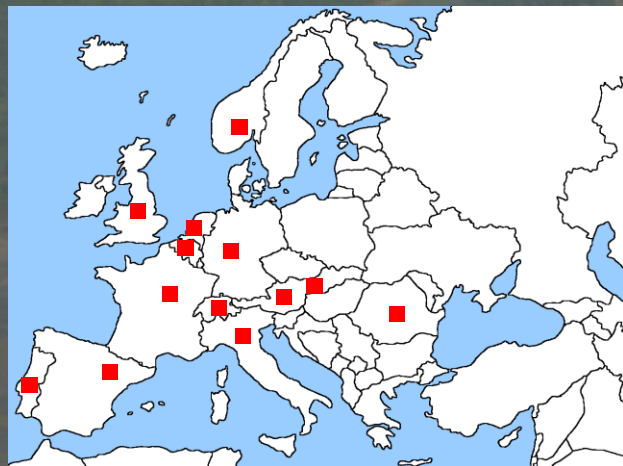
Contribute to the further development of a holistic understanding of sediments and their management.

Identity:

- Network of sediment professionals
- Independent platform to expert advice
- Positioned between science and stakeholders
- Window on sediment issues to EC DG Environment

Focus:

- Sediment quality AND quantity issues
- River basin scale
- Including marine / estuarine sediments in a ICZM context



SedNet steer group (2018)

	Port of Rotterdam Authority Marc Eisma (<i>Chairman SedNet Steering Group</i>)		Dutch Ministry of Infrastructure and Water Management Pieter de Boer and Edwin van der Wel
	CORILA Andrea Barbanti		Ecotox Centre Carmen Casado and Benoît Ferrari
	IDAEA-CSIC Damià Barceló		University of Lisbon Cristina Lira
	Norwegian Geotechnical Institute (NGI) Gijs Breedveld		Flemish Government, Dept. Mobility and Public Works Edward Van Keer and Jürgen Suffis
	Deltares Jos Brils and Katherine Cronin		OVAM, Public Waste Agency of Flanders Goedele Vanacker
	Hamburg Port Authority Henrich Röper		University of Natural Resources and Applied Life Sciences, Vienna (BOKU) Helmut Habersack and Marlene Haimann
	Federal Institute of Hydrology (BfG) Vera Breitung		Rothamsted Research – North Wyke Adrian Collins
	Port Authority Antwerp Agnes Heylen and Eric de Deckere		GeoEcoMar Adrian Stanica
	International Commission for the Protection of the Danube River (ICPDR) Igor Liska		Ruder Bošković Institute Jasmina Obhodaš
	BRGM Bruno Lemière and Philippe Negrel		ELSA – Remediation of contaminated Elbe sediments Ilka Carls
	ISPRA, Italian National Institute for Environmental Protection and Research Antonella Ausili and Elena Romano		



Circular economy of sediments

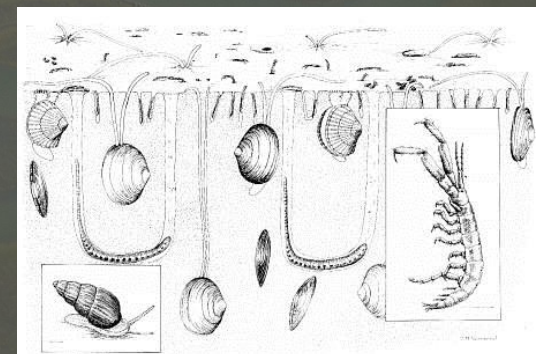
workshop

- Dredged sediments are one of the biggest potential waste flows, according to regulations
- Dredged sediments are mostly disposed of, at sea or on land
- Sediments are part of our potential mineral resources (but also of our environment)

=> Sediments are eligible to circular economy thinking

Nothing new, SedNet thoughts in 2004 ...

Too much sediment	Too little sediment	Sediment as resource
Obstruction of channels Rivers fill and flood Reefs get smothered Turbidity	Beaches erode Riverbanks erode Wetlands are lost River profile degradation	Construction material Sand for beaches Wetland nourishment Soil enrichment Habitat and food for life



Sediment = “no waste” =
 essential & integral element of river systems

- SedNet CE WG topics:

- 1. Reuse pathways, which, where and how far?
- 2. Demonstration, Good practice and securing confidence for decision makers
- 3. Markets, SMEs and jobs benefits of sediment reuse
- 4. The Causal loops approach and sediment reuse
- 5. Regulations, barrier or incentive for circular approaches?
- 6. Sediment agglomeration vs aggregate - sustainability?
- 7. Land use benefits of sediment reuse
- Topics emerging from WG discussion



- SedNet CE WG ‘development lines’:
 - 1. Reuse pathways, which, where and how far?

The first question asked by operators and stakeholders is “we would like to reuse dredged sediments instead of dumping, but which are the technically feasible options, are they acceptable from the regulatory and social point of view, and which is their cost?”

Reuse pathways: which, where and how far?

Raw sediment reused where it belongs

Coastline defence

Flood protection and land uplift

River profile restoration

Wetlands protection and restoration

Clean or contaminated ?

Sediment as an alternative to mineral extraction

Cement

Concrete

Road base and civil engineering

Cost/benefit analysis ?

Sediment reused after treatment

Engineered coastline defence

Flood protection works

Brownfields and derelict land restoration

Which properties are desirable ?



- SedNet CE WG ‘development lines’:
 - 2. Demonstration, Good practice and securing confidence for decision makers
 - If a reuse option is identified and acceptable, how far has it been used, is it really demonstrated, what are the possible pitfalls, are there any good practice guides ?
 - What is the level of risk involved if we chose Reuse and CE instead of Business as Usual ?

Demonstration, Good practice and securing confidence for decision makers



Real size operations

AMORAS

Photo Port of Antwerp

Building with Nature

Which feedback ?

Pilot demonstrators

USAR

VALSE

SURICATES

Lessons learned ?

Good practice guides

SEDIMATERIAUX

Knowledge gap ?



- SedNet CE WG 'development lines':

- 3. Markets, SMEs and jobs benefits of sediment reuse

Beyond waste reduction, circular economy development and environmental benefits, EU competitiveness and job creation are major drivers.

If the cost-benefit analysis breaks even against disposal, growth, jobs and know-how export will make the difference

Markets, SMEs and jobs benefits of sediment reuse

Any documented experience ?

Jobs and income from reuse implementation

Jobs and income from exporting

EU know-how

A strong EU dredging sector

Economic analysis in pilot projects

USAR, PRISMA

SURICATES, CEAMaS

Voluntary approach at the local scale

Operators, ports, waterways

Territorial communities and development

EU regional policy

River basins



- SedNet CE WG 'development lines':
 - 4. The Causal loops approach and sediment reuse

Goedele Vanacker, OVAM

THE ICEBERG MODEL

Use this tool to help you think more systemically!



EVENTS

What is happening?

PATTERNS OF BEHAVIOR

What trends are there over time?

SYSTEMS STRUCTURE

How are the parts related?

What influences the patterns?

MENTAL MODELS

What values, assumptions, + beliefs shape the system?

Increasing Leverage

Systemthinking:

To change a system (f.i. to improve reuse of sediment) you have to look for underlying root causes.

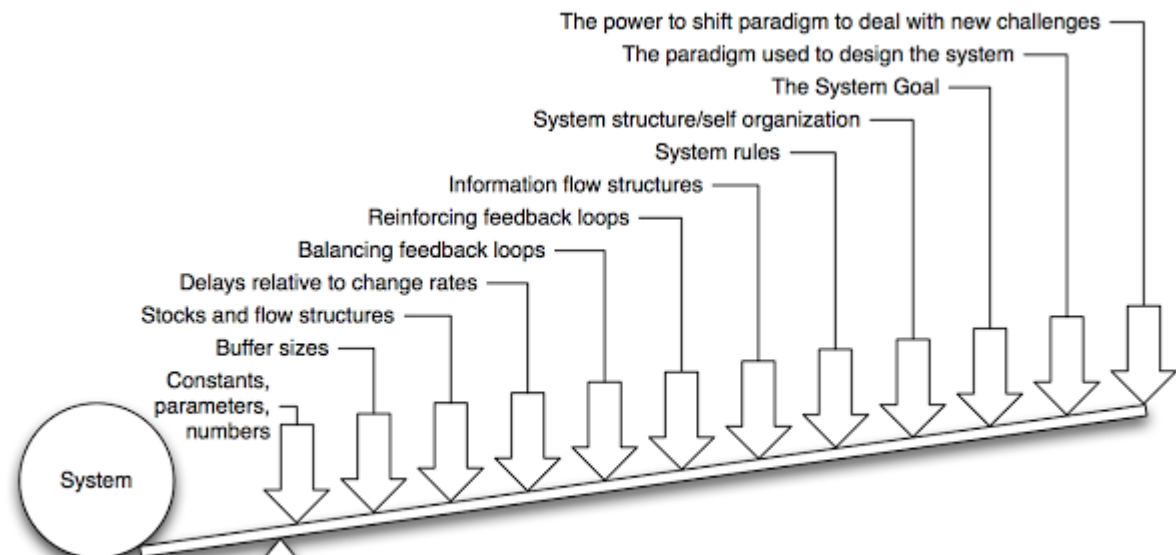
Just like an iceberg, 90% of which is invisible beneath the water, these root causes are often hidden below the surface. However, if you can identify them and connect them to the events that you are seeing, you may be able to develop lasting solutions that target the whole system rather than short term, reactive solutions.

2019: Sullied Sediment project together with Sednet

- 2 workshops on causal loop approach for Flanders
- Identify lessons learned and organise 2 workshops for Europe

donellameadows.org

Leverage Points: Places to Intervene in a System - The Donella Meadows Institute





- SedNet CE WG 'development lines':

- 5. Regulations, barrier or incentive for circular approaches?

Reuse meets the Waste status of dredged sediments

Waste regulations often hamper reuse projects with environmental constraints which were not designed for sediments reuse

They are often country specific and make EU-scale projects even more difficult

But reuse can provide environmentally beneficial options for site restoration, for river good status (WFD) and for climate change mitigation

Should regulations evolve to become an incentive for sustainable reuse options ?



- SedNet CE WG 'development lines':

- 6. Sediment agglomeration vs aggregate - sustainability?

A large part of dredged sediments is fine-grained or extremely fine grained (clay, mud)

In civil engineering applications, there are more needs for coarse sediment or sand than for mud.

Mud can be agglomerated to build coarser materials.

Agglomeration has a cost (energy, binders,...)

A sustainability analysis of this process is needed.



- SedNet CE WG 'development lines':

- 7. Land use benefits of sediment reuse

Reuse options provide land use benefits by

- The reduction of disposal site surfaces
- The reduction of quarries and sand extraction surfaces
- The restoration of derelict land or of land under flood threats



- CE and Sediment projects and pilots
- **SedNet and Circular Economy:**
 - Further CE WG sessions
 - CE session at the Dubrovnik SedNet conference (2019)
 - Participation to other events

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