European Sediment Research Network

Acronym: SedNet

EC contract No.: EVK1-CT-2001-20002

Key action: 1.4.1 *Abatement of water pollution from contaminated land, landfills and sediments*

WORK PACKAGE 2: SEDIMENT MANAGEMENT AT THE RIVER BASIN SCALE
&
WORK PACKAGE 1: COORDINATION, SYNTHESIS, DISSEMINATION AND STAKEHOLDERS PANEL

Workshop 4

Societal Cost Benefit Analysis and Sediments

18th and 19th March 2004, Warsaw Agricultural University, Warsaw, Poland

SedNet

SedNet is the acronym for the demand-driven European Sediment Research Network. The SedNet objective is to form inter-disciplinary links between scientists, engineers, sediment managers and those responsible for developing and implementing sediment related policy, at the European scale. The initial focus of SedNet is on understanding how contaminated sediment influences river system functioning and, from there, how contaminated sediment and dredged material can be managed.

The SedNet activities are financially supported for three years by the EC under the FP5 EESD programme and within area 1.4.1 on "Abatement of water pollution from contaminated land, landfills and sediments" (Thematic Network project, EC contract No. EVK1-CT-2001-20002, starting date: 1 January 2002).

All SedNet activities aim to improve networking. In addition, SedNet aims to develop a document that contains recommendations in the form of guidance for integrated and sustainable sediment management, from the local level to the river basin scale.

Introduction

The workshop on Societal Cost Benefit Analysis and Sediments was the fourth workshop organized by SedNet Work Package 2: *Sediment management at the river basin scale*. The workshop was held at the Warsaw Agricultural University, Poland on the 18th and 19th of March 2004. Fifteen participants form five countries attended, representing sediment interests in policy, practice and research.

The management of sediments can have significant impacts on different aspects of society and the environment. In most cases there are different sediment management 'options' available and generally these have different impacts on society and the environment. By 'weighing' the impact of the various sediment management options, decision-makers can be supported in making a 'balanced' decision. This 'weighing' or evaluation of different options in the form of (Societal) Cost-Benefit Analysis (SCBA) was the subject of this workshop. With this in mind, the goal of the workshop was to discuss the "state-of-the-art" on SCBA with respect to sediment issues and to generate research recommendations on this subject to be addressed by the European Commission.

Workshop participants

Name	Affiliation	Country	Representation	Role at workshop
Kazimierz Banasik	Warsaw Agricultural University	Poland	Scientist	Coorganiser
Ramon Batalla	Departament de Medi Ambient i Ciències del Sòl, Universitat de Lleida	Spain	Scientist	WP2 core group Oral presentation Discussion paper
Mariusz Barszcz	Warsaw Agricultural University	Poland	Scientist	Participant
Jan-Jaap Bouma	Erasmus University Rotterdam	Netherlands	Scientist	Oral presentation
Galina Draganova	Bulgarian Agency of Environment	Bulgaria	Stakeholder	Participant
Marc Eisma	Port of Rotterdam, Corporate Strategy / Shipping & Maritime Development	Netherlands	Stakeholder	Participant WP2 core group
Gerald Jan Ellen	TNO STB	Netherlands	Scientist	Coorganiser
Carlos Mario Gomez	Department of Economics, Universidad de Alcala	Spain	Scientist	Oral presentation
Leszek Hejduk	Warsaw Agricultural University	Poland	Scientist	Participant
Agnieszka Markowska	Warsaw University	Poland	Scientist	Participant
Phil Owens	NSRI, Cranfield University	UK	Scientist	Coorganiser WP2 core group Discussion paper
Zbigniew Popek	Warsaw Agricultural University	Poland	Scientist	Participant
Adriaan Slob	TNO	Netherlands	Scientist	Coorganiser
Kevin Taylor	Department of Environmental and Geographical Sciences, Manchester Metropolitan University	UK	Scientist	WP2 core group
Jaap Van der Vlies	TNO STB	Netherlands	Scientist	Oral presentation

Summary of workshop issues and perspectives

Society is familiar with the approach of making decisions on the basis of a balance of gains and losses, advantages and disadvantages. The idea behind such an approach is that we only do things that yield us net gains, and that, if we have to choose between alternatives, we choose the one which offers the greatest net gain. Instead of speaking of gains we could speak of benefits, and instead of losses we can talk of costs. This is the simple foundation of cost-benefit analysis. If we look at societal cost benefit analysis, the table below gives some idea of what a SCBA should be, and what it is not.

Table 1 - Overview of what Societal Cost Benefit Analysis should be, and what it is not

A SCBA is not:	A SCBA should be:
• A method for valuation of functions	• An evaluation tool; weighing *alternative actions* against each other
• For economists only	• For all those wanting to make choices between alternatives
• A financial analysis	• An evaluation tool taking ALL societal aspects into account
• A gimmick/black box	• A tool with a long history (potentially) leading to transparent information processes and stakeholder involvement

There are roughly two initial phases to go through when conducting a SCBA before the SCBA itself can be started. The first phase is to make an inventory of the problem and to create a problem definition that is clear to all parties involved. The second phase is the generation of solutions to deal with the problem that was defined in phase one. Only after these two phases have been finished satisfactorily, can the SCBA be started.

This means that there has to be a good understanding and agreement of the main sediment-related concerns facing Europe at present and in the near future. Central to this is the need for an overview of the scale of sediment and contaminant fluxes in European rivers and the delivery to the coastal zone and oceans (see Figure 1).

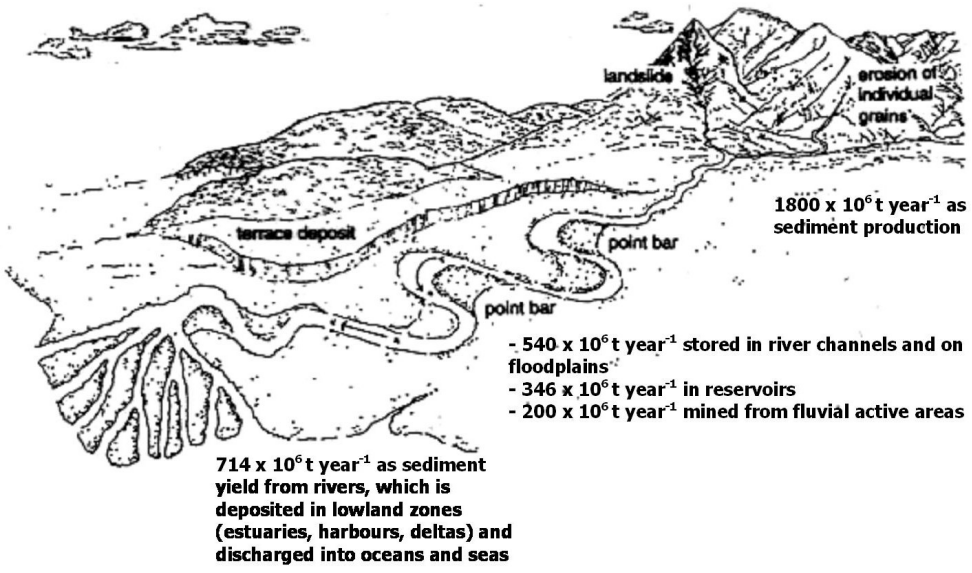

Figure 1 - An approximate sediment budget for Europe (source: Owens and Batalla (2003), original bottom sketch from Kondolf, 1997)

Some of the sediment-related issues that Europe has to deal with are:

- Due to the interaction between water and sediments, there is a direct link between the quality of sediments and the quality of water (including drink water);
- Due to sediment deposition, waterways have to be dredged to keep them open for shipping. If no dredging is undertaken then this will affect the efficiency of waterways for the transportation of goods etc;
- Due to the dredging of waterways, there are costs not only for the dredging activity itself but also for the cleaning and storage of the dredged sediments;
- Sediments are viewed differently by all participants, but the focus tends to be on contaminated sediments. The quality of contaminated sediments is usually the main problem, but the quantity of the sediments that have to be managed is also important.
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Defining the main issue of concern for a particular situation will give insight into the (economic, social and ecological) functions that are affected by sediments. This, in turn, will help to make the sediment issue easier to communicate to society, thus creating a sense of urgency.

If a SCBA is conducted, one should be aware of the following issues. First of all, the process of valuating different sediment management options is easy to manipulate (by the assumptions that are used and the choices that are taken in the process). Furthermore, a SCBA does not: 1) represent an individual interest; 2) represent the willingness to pay or the willingness to accept all stakeholders; and 3) take into account future costs and benefits. Finally, it is very important to create a level playing field for all parties involved, which can be done by explaining to all stakeholders which methods are being used, what the system boundary conditions are, and finally making the process of valuation transparent. This also points to the importance of involving stakeholders in a SCBA, as it will be necessary to try to take into account all of the societal aspects and perspectives.

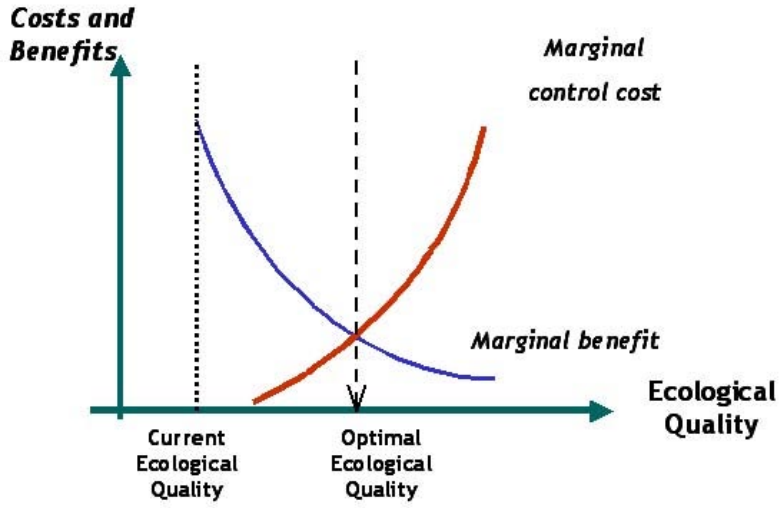

Figure 2 - Cost-benefit analysis theory relating to the comparison of the opportunity costs of improving the ecological quality of the river basin, and the expected increase in the services provided by the water system to the economy

Concerning the time frame in which a SCBA can be conducted, the time frame required to gather information and define the problem needs to be at least a year. If the urgency of the problem does not allow this period of time, then a SCBA is not an option and an immediate solution has to be chosen. However if there is enough time, the information can be obtained by:

- Involvement of stakeholders in the decision process (who are the stakeholders?);

- Gathering data by conducting measurement and monitoring programmes. This also depends on the level of detail that is needed;
- By valuating certain impacts (for example, environmental costs, cf. Figure 2).

Key messages and recommendations

Policy recommendations

- If society ignores sediments it risks failing to implement soil and water policy (e.g. the WFD) because sediments are a fundamental component of soil and water ecosystems.
- We need to recognize and understand the economic pressures on sediment (especially sediment balances) and the impact of these pressures on the ecosystem.
- We should apply SCBA to sediment issues, because sediment management has to be based on technical and societal elements.
- Stakeholders hold key knowledge and information about sediments. Thus in order to increase the transparency, communication and participation of stakeholders, they should be involved at an early stage in the policy and decision-making process. The procedure of conducting a SCBA should acknowledge this.
- The government needs to provide the means to make more information available, so as to make well informed decisions concerning sediment management and thus improving the quality of the decision-making process.

Research recommendations

- We need to extend (in a geographical sense) and standardise measurements of sediment related processes. This is needed in order to reach comprehensive reference values related to the definition of good chemical and ecological status of water bodies.
- We cannot asses the benefits and costs of alternative sediment management options unless we define a good ecological status in relation to sediments. This means taking into account spatial and temporal variations. Furthermore, we need to develop integrated methods to define in a precise way what a good ecological status means with respect to sediment issues and sediment balances.
- There is a need to model stocks and flows of sediments and their economic values, in order to increase the effectiveness and sustainability of river basin management.

Main outputs from the workshop

- We have evaluated how Societal Cost Benefit Analysis can be used as a tool for evaluating sediment management options, with a positive outcome.
- We have evaluated and compared how SCBA can be used in different situations and countries, and developed a common approach to SCBA for sediments.

Associated Material

A WP2 and WP1 article on Societal Cost Benefit Analysis and Sediments has been produced and this can be found at the SedNet website: www.sednet.org, along with the minutes of this workshop.

This Work Package 2 report

The contents of this workshop report have been evaluated and approved by the workshop participants (identified above) and the WP2 Core Group (see below). Cover photo: participants (scientists and stakeholders) at the workshop.

References

Owens, P.N. and Batalla, R.J. (2003). A first attempt to approximate Europe's sediment budget. SedNet Work Package 2 Report to the European Commission.

Information on SedNet

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