

WORK PACKAGE 2: SEDIMENT MANAGEMENT AT THE RIVER BASIN SCALE

Workshop 1

Existing guidelines and the EU Framework directives

28th and 29th October 2002, Cranfield University, Silsoe, UK



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.

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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 first workshop of SedNet Work Package 2 was held on the 28th and 29th October 2002 at the National Soil Resources Institute (NSRI), Cranfield University, Silsoe, UK. Fourteen participants from five countries attended, representing sediment interests in policy, practice and research. The workshop took the form of a discussion forum with keynote presentations at intervals throughout the meeting to focus thought and stimulate debate in order to satisfy specific objectives. Prior to the workshop, discussion papers outlining the key topic areas were distributed to all WP2 members to inform and allow preparation for the discussions. These discussion papers and the full minutes of this workshop can be found on the SedNet website: www.sednet.org.

The objective of this workshop was to assemble some of Europe's leading scientists and stakeholders dealing with sediment in order to:

- Network on sediment issues and research;
- Collate and review state-of-the-art information related to existing sediment decision frameworks, sediment guidelines and EU policies (with special reference to the Water Framework Directive); and
- Identify sediment management issues related to the river basin scale.

Workshop participants

Name	Affiliation	Country	Representation	Role at workshop
Sabine Apitz	SEA Environmental Decisions	UK/USA	Scientist	Participant WP2 core group
Ramon Batalla	University of Lleida	Spain	Scientist	Discussion paper Oral presentation WP2 core group
Julie Carter	Institute of Water and Environment, Cranfield University at Silsoe	UK	Scientist	Participant
Alison Collins	NSRI, Cranfield University at Silsoe	UK	Scientist	Coorganiser WP2 core group
Heinz Glindemann	Department of Port and River Engineering	Germany	Stakeholder	Discussion paper Oral presentation WP2 core group
Sjoerd Hoornstra	Ministry of Transport and Water Management	Netherlands	Stakeholder	Discussion paper Oral presentation WP2 core group
Harald Köthe	Federal Institute of Hydrology	Germany	Scientist	Discussion paper Oral presentation WP2 core group
Roy Morgan	NSRI, Cranfield University at Silsoe	UK	Scientist	Participant
Gareth Old	Centre for Ecology and Hydrology, Wallingford	UK	Scientist	Participant
Phil Owens	NSRI, Cranfield University at Silsoe	UK	Scientist	Coorganiser Oral presentation WP2 core group
John Quinton	Lancaster University	UK	Scientist	Participant WP2 core group
Sue White	IWE, Cranfield University at Silsoe	UK	Scientist	Oral presentation WP2 core group
Helen Wilkinson	Environment Agency	UK	Stakeholder	Participant WP2 core group
Gavin Wood	NSRI, Cranfield University at Silsoe	UK	Scientist	Participant

Summary of workshop issues and perspectives

At present, sediment has either very limited or no dedicated legislation at local, national and European levels. Sediment does, however, interface with many other legislative fields (implemented or under construction) such as the EU Water Framework Directive, waste directives, soil regulations (including the EU Soil Thematic Strategy), and a range of treaties and conventions. Within these related policies, sediment takes on a variety of roles, values and definitions. For example, sediment is often classified as waste by legislation frameworks generating a negative image for sediment, and leading to practical difficulties in handling and managing sediment.

Existing sediment management guidelines include (for further details see Köthe, 2003):

- Conventions for the protection of the marine environment;
- Conventions for the trans-boundary movement of hazardous waste;
- Recommendations for the management of dredged material;
- European regulations, including:
 - water legislation;
 - soil legislation; and
 - waste legislation.

Not only is sediment insufficiently addressed by legislation, but it also lacks integrated, comprehensive and river basin scale management guidelines or frameworks. Neglecting to manage sediment in a sustainable way, either by a lack of adequate sediment management strategies, or by the cursory inclusion of sediment in generic policy and legislation, can result in costs to both society and the environment. In this respect, the EU Water Framework Directive (WFD) and other existing or upcoming EU policies (such as the Soil Thematic Strategy), generally fail to adequately deal with sediment as both an important natural resource and as part of the wider river basin system. In turn, it can be argued that by not addressing sediment issues adequately at the river basin scale may compromise the effectiveness of the policies described above. For example, it is well documented that many chemicals (such as certain nutrients, metals and trace elements) are preferentially associated with fine sediment (especially silts and clays). It is therefore necessary to recognise the important role that sediment plays in transferring nutrients and contaminants within river basins. Failure to recognise and adequately address this role, may cause problems for the WFD in delivering its objective (i.e. rivers and water bodies achieving good chemical and ecological status) within the designated timeframe.

In order to effectively manage sediment, a greater understanding and appreciation of the complexity of sediment balances, scales of operation and key principles are required. In turn, it is important to recognize that:

- Sediment supply, transport, and deposition are spatially and temporally dynamic and variable. Therefore, effective management must be site-specific, but must also address the dominant spatial and temporal processes at the catchment scale.
- Any changes in the delicate balance of sediment quality and quantity issues can be significant for many inter-related natural and anthropogenic systems (see Figure 1).
- Sediment managers and decision-makers must consider issues of sediment balance. Sediment cannot be unrestrictedly taken out of the river system without negative consequences for a variety of systems (including ecosystems) that depend on it for their own functioning.
- A basin-scale approach must recognise that there are many different environments within a river basin, including land, rivers, lakes/reservoirs, tidal areas and the coastal zone.
- There are gaps within our knowledge base, specifically a lack of information on sediment behaviour at the river basin scale (system scale), and a lack of monitoring data and programmes.

It is recognised that a European drive towards sustainable sediment management is required. Sediment management should either be incorporated into existing and forthcoming legislation (i.e. within the WFD and the Soil Thematic Strategy), or should be addressed through the establishment of dedicated EU and/or national sediment policy. In this context, SedNet Work Package 2 has the following key recommendations:

- Long-term integrated sediment monitoring programmes require co-ordination and implementation in order to provide an information base for decision-making.
- Sediment management needs to be planned at the river basin scale and integrated into existing frameworks at this scale such as river basin management plans.
- Sustainable strategies must include the ‘friendly’ transfer of sediments from upstream areas to the river mouth. Furthermore, these strategies should respect the natural processes of erosion, transport and deposition, since these allow the healthy functioning of aquatic habitats and allow a river system to be in a state of dynamic equilibrium.
- A sustainable sediment balance for river systems should satisfy multi-objective requirements (such as good ecological and navigational status). Thus, existing sediment deficits in floodplains, estuarine and coastal zones need to be replenished in order to prevent habitat loss and destabilisation of river systems.
- The definitions and terms used to describe sediment must be neutral and all-embracing.
- Sediment managers should seek to work with nature, not against it, for ecological and economic sustainability.
- Furthermore, SedNet Work Package 2 agrees on the need to consider:
 - Upstream (source) and downstream issues;
 - Clean and contaminated sediment (i.e. quantity and quality issues);
 - Coarse-grained (i.e. sands and gravels) and fine-grained (i.e. silts and clays) sediment;
 - Problems of sediment excess and deficit; and
 - Multiple interconnected environments and resources in a river basin (see Figure 1).



Figure 1 – Examples of the different land uses and functions within a river basin that are influenced by sediment quality and quantity issues

Key messages and recommendations

- For sediment management to be comprehensive and sustainable it is necessary to consider sediment at the river basin scale.
- Sediment management at the river basin scale is not adequately considered or dealt with in existing management guidelines and policies.
- There is a need for sediment management (and monitoring) to be either included within existing (WFD) and future (Soil Thematic Strategy) EU policies, or there needs to be a dedicated sediment policy that is itself incorporated within a broader policy on soil-sediment-water-ecology functioning.

Main outputs from the workshop

- We have started to develop a decision-making framework (see below).
- We have assembled information on existing sediment management guidelines (see below).
- We have evaluated the positive and negative aspects of the WFD and other (upcoming) EU policies, and identified gaps that need addressing.
- We have assembled information on sediment issues and sediment studies.
- We are beginning to shape ideas on sediment management at the river basin scale for a sediment management guide.

Associated material

As a result of discussions at the workshop, a brief Statement Document on *The importance of sediment and sediment processes for river basin management* was produced by members of WP2. This can be located and viewed at <http://www.sednet.org>

In addition, several WP2 Discussion Papers were produced:

- Sediment management in reservoirs and water supply basins, by Ramon Batalla
- Getting Europe's waters cleaner – getting the citizen more involved, supplied by H. Blöch
- Sediment management in tidal and fresh water systems with reference to the EU directives, by Heinz Glindemann
- A decision framework for sediment management in river basins, by Sjoerd Hoornstra
- Existing sediment management guidelines: a review, by Harald Köthe

and these can also be found at the SedNet website.

Furthermore, the following publication is a direct result of the workshop:

- Köthe, H. (2003). Existing sediment management guidelines: an overview. *Journal of Soils and Sediments*, **3**, 139-143.

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: input of sediment from bank erosion, River Swale, England (by Phil Owens).

Information on SedNet

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