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

SedNet Work Package books to be published by Elsevier in 2005

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DELIVERABLES: D2.4, D3.3, D4.4, D5.3	**DOCUMENT STATUS:** Definite version	**FILE:** D2.4_3.3_4.4_5.3	**NUMBER OF PAGES:** 11

Contents

1. Introduction

The European Sediment Research Network - SedNet[1] - is a three-year project, commissioned by EC DG-Research, which dealt with the science, policy and regulatory aspects of contaminated sediments. The SedNet network organised 17 workshops and 3 conferences and the results are summarised in the SedNet booklet "Contaminated sediments in European river basin" that can be found at the SedNet website (www.SedNet.org).

Specific management issues were addressed by dedicated SedNet Work Packages (WP). Top-level scientists and major stakeholders contributed to the workshops organised by each WP. Those were used to identify and review the current state-of-the-art in knowledge, to identify practical recommendations and to review research needs related to specific sediment management issues. New scenarios and concepts were debated and are currently being further underpinned. Furthermore, three annual SedNet conferences (2002, 2003 and 2004) were used to put the WP discussions in a broader perspective and verify the WP conclusions and recommendations. The reports of the outcomes of the individual workshops, a synthesis of the WP discussions, and a list of the core-people that contributed to those discussions, can be found at the SedNet website.

The complete results will be published in 2005 by Elsevier as a series of four books. In this document the definite book titles, outline and lead-authors of each book chapter are described.

[1] Project acronym: SedNet; European Commission (EC) contract No. EVK1-CT-2001-20002; EC 5th RTD Framework Programme; key-action: 1.4.1 "Abatement of water pollution from contaminated land, landfills and sediments".

2. WP-books

2.1. WP2-book "Sediment management at the river-basin scale"

Editor: Philip Owens, Contractor No. 6, National Soil Resources Institute, Cranfield University, North Wyke, Okehampton, Devon, EX20 2SB, United Kingdom, E-mail: philip.owens@bbsrc.ac.uk

Chapter 1 - Why manage sediment at the river basin scale (Phil Owens)

- Introduction
- Terms and definitions
- Sediment functions, uses and values (quality and quantity)
- Examples of sediment management: successes and failures
- Why manage sediment and why manage at the basin scale (quality and quantity)
- Summary

Chapter 2 - Decision making at the river basin scale (Sue White)

- Sediment management decisions at the basin scale
- Frameworks for sediment management at the basin scale
- Conclusion

Chapter 3 - Policy, legislation and guidance (Sjoerd Hoornstra)

- Introduction
- Policy related to sediment
- Legislation
- Guidance
- Summary and conclusions

Chapter 4 - Sediment and contaminant transfers in river basins: information for understanding the system (Kevin Taylor)

- Introduction and Link to Framework
- Sediment Sources to River Basins
- Sources of Contaminants and Nutrients to Sediments.
- Transport and Transfer Processes
- Perturbation of sediment and contaminant transfers
- Gaps and knowledge and research needs (see SedNet strategy document).
- Summary

Chapter 5 - Decision support tools for sediment management (Marc Eisma)

- Introduction and link to the framework
- Measuring and monitoring tools
- Modelling
- Decision support systems
- Risk assessment tools

- Treatment tools
- Summary and link to other tools

Chapter 6 - Risk analysis at the basin-scale (Sue White)

- Functions and uses of rivers
- River management
- Risk management in rivers
- Basin-scale decision framework
- Sediment management and communication
- Summary and conclusion

Chapter 7 - Cost-benefit analysis for sediment management (Adriaan Slob)

- Introduction
- Societal Cost-Benefit Analysis
- Sediment management & Societal Cost– Benefit analysis
- Cost- Benefit analysis of dredging in the Netherlands
- Economic analysis and river basin management in relation to the EU Water Framework Directive.
- Environmental liability and sediments
- Summary and conclusions

Chapter 8 - The role of stakeholders in sediment management (Adriaan Slob)

- Introduction
- Stakeholders
- Why should stakeholders be involved?
- Stakeholder analysis
- Stakeholder perspectives
- How to involve stakeholders
- Tools, processes and instruments
- Pitfalls
- Summary and conclusions

Chapter 9 - Towards sustainability for sediment management (Phil Owens)

- Introduction and link to the framework
- What does sustainability mean (social, economic and environmental) and the concept of sustainable development
- Sustainable management of sediments (social, economic and environmental)
- Scale considerations (site vs basin-scale), interconnectivity
- Sustainable solutions that relate to the basin scale
- Constraints and barriers
- The role of SedNet
- Summary

Chapter 10 - Summary and recommendations (Phil Owens)

- Summary
- Recommendations
- Conclusions

2.2. WP3-book "Sediment Quality and Impact Assessment of Pollutants"

Editor: Damià Barceló, Contractor No. 4, Consejo Superior de Investigaciones Cientificas (CSIC), Jordi Girona 18-26, E-08034 Barcelona, Spain, E-mail: dbcqam@cid.csic.es

Introduction (Damià Barceló)

Chapter 1 - Site characterization (Eric de Dekere)

- development of monitoring techniques and strategies
- in-situ physical sediment properties/characterization
- data collection & handling (e.g., mapping)

Chapter 2 - Characterization of contaminants in sediments – effects of bioavailability on impact (John Parsons)

- bioavailability
- bioaccumulation
- toxicity
- degradation
- sorption
- methods to estimate bioavailable fractions

Chapter 3 - Sampling of sediments and suspended matter (Andrew Parker)

- sediment – suspended matter
- grab sampling vs integrated sampling
- sample handling, preservation, pre-treatment

Chapter 4 - Chemical analysis of contaminants in sediments and dredged materials (Mira Petrovic)

- Sample preparation (extraction, clean-up protocols)
- Target analysis of organic and inorganic pollutants (advanced analytical protocols)
- Non-target analysis – screening of unknowns

Chapter 5 - Biological analysis (Peter Hansen)

- bioassays, biomarkers
- in vivo vs. in vitro
- biosensors

Chapter 6 - Effect Directed Analysis and Toxicity Identification Evaluation (EDA & TIE) (Joop Bakker)

- combined chemical-biological protocols
- validation, harmonization

Chapter 7 - Biotic indices (Eric de Dekere)

Chapter 8 - Modelling of Contaminant fate and Behaviour in Bed Sediments (Julia Stegemann)

- Fate and behaviour of pollutants
- Conceptual models
- Numerical models

Chapter 9 - Sediment Quality Guidelines : an overview (Marc Scrimshaw)

Conclusions and recommendations (Damià Barceló)

2.3. WP4-book "Dredged material treatment"

Editor: Giuseppe Bortone, Contractor No. 5, Regione Emilia-Romagna, Via dei Mille 21, I-40121 Bologna, Italy, E-mail: gbortone@regione.emilia-romagna.it

Chapter 1- General Introduction about sediment treatment (Giuseppe Bortone)

Chapter 2 - National situation (Leonardo Palumbo)

Chapter 3 - Overview on treatment and disposal options (Heinz-Dieter Detzner)

Chapter 4 - Description of the available technology for treatment and disposal of dredged material (Pol Hakstege)

Chapter 5 - Beneficial use (Imke Deibel)

Chapter 6 - Assessment of treatment and disposal options (Kay Hamer)

Chapter 7 - Application of the principles of Life Cycle Assessment to evaluate contaminated sediment treatment chains (Eduardo Arevalo)

Chapter 8 - Costs of treatment chains (Joop Harmsen)

Chapter 9 - Case studies (Leonardo Palumbo)

Chapter 10 - Conclusions and recommendations (ALL)

2.4. WP5-book "Risk Management of Sediments"

Sub-title: The need for new concepts and insights in European Risk Management of Sediments

Editor: Susanne Heise, Contractor No. 7, Technische Universität, Hamburg Harburg (TUHH), Eissendorfer Str. 40, D-21073 Hamburg, Germany, E-mail: s.heise@tu-harburg.de

Chapter 1 - The role of risk management in sustainable sediment management (Susanne Heise & Sabine Apitz)

Chapter 2 - Sediments a risk? Sediments at risk? An overview of the European situation (Susanne Heise)

- Introduction
- Short-term incidents
- Medium-term causes
- Continuing emissions
- Potential future trends
- References

Chapter 3 - Risk Assessment Approaches in European Countries (Piet den Besten)

- Introduction
- Overview over risk assessment approaches in European Countries
- Towards a harmonized approach
- Acknowledgements
- References

Chapter 4 - Strategic frameworks for managing sediment risk at basin and site-specific scale (Sabine Apitz)

- Introduction
- The Interrelationships between soil, sediment, water, contaminants and biota
- Basin-scale versus site-specific assessment and management
- Basin-scale and site specific sediment risk management
- Conclusions
- Acknowledgements
- References

Chapter 5 - Sediment management objectives and risk indicators (Jan Joziasse)

- Introduction
- A DPSIR approach to sediment management
- Management objective: Meeting regulatory criteria
- Management objective: Maintaining economic viability
- Management objective: Ensuring environmental quality and nature development
- Management objective: Securing quality of human life
- Stakeholder involvement in sediment management
- Acknowledgement

- References

Chapter 6 - Prioritisation at catchment scale, risk ranking at local scale: suggested approaches (Marc Babut)

- Introduction
- Classification and ranking approaches
- Setting priorities at catchment scale
- Risk Ranking at Local Scale
- Conclusions and Recommendations
- Acknowledgement
- References

Chapter 7 - Risk perception and communication (Gerald Jan Ellen & Adriaan Slob)

- Introduction
- A rational view on risk
- A societal view on risk
- Plurality and risk
- Risk Communication
- Conclusions
- References

Chapter 8 - Experiences with and Implications for Site-specific risk management (Susanne Heise)

- Introduction
- Experiences from different cases
- Analysis of cases under the aspects discussed in this book

Chapter 9 - Diversity of sediment regulations and monitoring programmes in Europe (Helge Bergmann)

- Introduction
- Regulatory situation
- Monitoring programmes for aquatic sediments
- Conclusions and recommendations

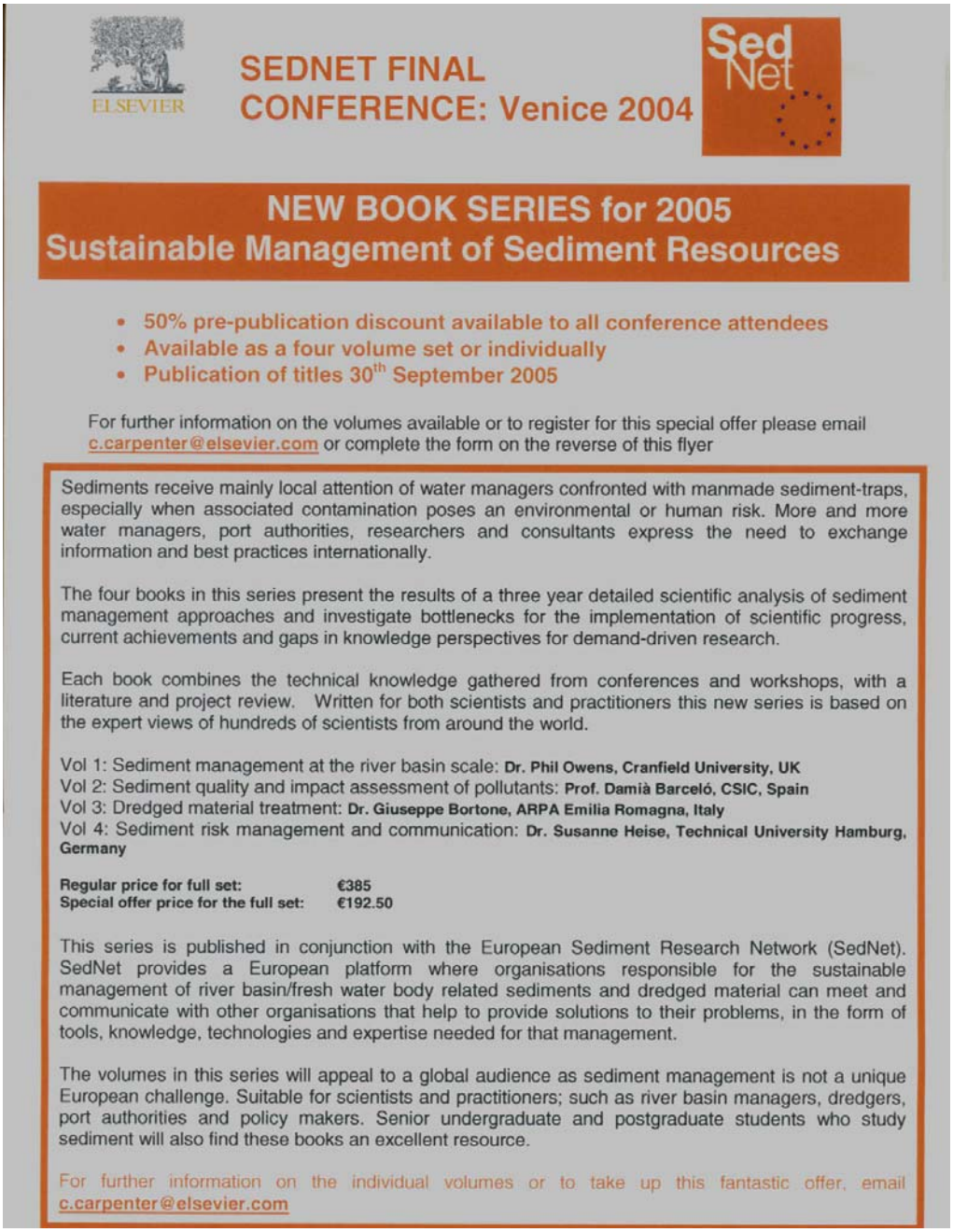
Chapter 10 - Recommendations and need for new concepts (Susanne Heise)

- Introduction
- Risk management from Basin scale to specific sites
- Conclusions

Chapter 11 - Glossary

3. Book publication

The books will be published in 2005 by Elsevier as a series of four books. The title of the Elsevier book series will be: "Sustainable Management of Sediment Resources" (see figure below: Elsevier book series announcement).



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Sed Net

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Vol 2: Sediment quality and impact assessment of pollutants: **Prof. Damià Barceló, CSIC, Spain**
Vol 3: Dredged material treatment: **Dr. Giuseppe Bortone, ARPA Emilia Romagna, Italy**
Vol 4: Sediment risk management and communication: **Dr. Susanne Heise, Technical University Hamburg, Germany**

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This series is published in conjunction with the European Sediment Research Network (SedNet). SedNet provides a European platform where organisations responsible for the sustainable management of river basin/fresh water body related sediments and dredged material can meet and communicate with other organisations that help to provide solutions to their problems, in the form of tools, knowledge, technologies and expertise needed for that management.

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