Sediment management opportunities to address the climate change challenge

Joint SedNet-Navigating a Changing Climate online Workshop on 10 February afternoon and 11 February morning, 2021

Programme

Day 1 – Wednesday 10 February 2021 (13.00 – 16.45 h Central European Time)

Welcome & Introduction

13.00 Welcome, introduction to the workshop & brief introduction to SedNet
Marc Eisma, Port of Rotterdam Authority, SedNet chairman, the Netherlands

13.10 Brief introduction to Navigating a Changing Climate
Jan Brooke, UK. Chair, NavClimate and Chair PIANC Climate Change Task Group

Session 1 - Role of sediment management in carbon sequestration and storage: opportunities to contribute to a net reduction in greenhouse gas emissions
Moderator **Jos Brils**, Deltares, SedNet Steer group, the Netherlands

Sediments and their associated aquatic habitats play a vital role in sequestering and storing carbon. Understanding these critical natural processes can help sediment scientists, dredging managers, port and waterway operators and others identify win-win opportunities, for example related to sustainable dredged material management. This session will provide an introduction to carbon sequestration in sediment; discusses some practical experiences of how sediments can be used in this context (Blue Carbon); and explores related issues such as water quality and the use of riverine and marine sediments on land.

13.20 Invited key-note: "Carbon sequestration in sediments"
Mike Clare, National Oceanography Centre, UK

13.35 Invited key-note: "Blue Carbon: possibilities, challenges and perspectives for dredging and sediment management"
Erik van Eekelen, EuDA, Belgium, and Van Oord and ECOSHAPE, the Netherlands

13.50 Talk 1: "Beneficial use of river sediments as topsoil for passive carbon capture and storage during land restoration and energy crop production"
Richard Lord, University of Strathclyde, UK

14.00 Talk 2: "Restoration measures in shallow lakes: how improvement of water quality has the added benefit of reducing greenhouse gas emissions"
Wouter van der Star, Deltares, the Netherlands

14.10 Q&A on presentations

14.25 Discussion on carbon sequestration and storage challenges and opportunities

14.45 Coffee break

Session 2 – Sediments and climate change adaptation: seeking flexible and adaptive solutions to strengthen resilience and adapt port and navigation infrastructure and operations
Moderator **Katherine Cronin**, Deltares, SedNet Steer group, the Netherlands

The resilience of port and navigation infrastructure is often intertwined with the resilience of the natural environment. Climate change will impact on both. Many ports and waterways will need to invest in strengthening the resilience of their infrastructure and operations to ensure business continuity, particularly in the face of more frequent and/or severe extreme events. Coastal and riverside towns, cities and local communities face similar challenges so there are common lessons to be learned. The inherent uncertainties in projections for rates of change in parameters such as rainfall, storms, wind and waves mean that flexible and adaptive solutions will offer the best way forward. Sediments can play a crucial role here, not only in relation to physical infrastructure solutions, but also understanding and managing morphological processes.

15.15 Invited key-note**: "**Increasing the resilience of ports by using locally dredged sediments – a pilot application in Port of Rotterdam**"**
Arjan Wijdeveld, Deltares, The Netherlands

15.30 Talk 1: "An innovative technology to combine navigability and sustainability in port infrastructure"
Marco Pellegrini, University of Bologna, Italy

15.40 Talk 2: "Nature-based remediation as a solution for heavy metal pollution in stream sediments to safeguard floodplains"
Froukje Kuijk, OVAM, Belgium

15.50 Talk 3: "Sustainable And Resilient Coastal Cities (SARCC)"
William Coulet, Exo Environmental Ltd., UK

16.00 Talk 4: "Water depth forecasting for the purpose of navigation improvements – importance of accounting for river bed morphodynamics"
Rolien van der Mark, Deltares, the Netherlands

16.10 Q&A on presentations

16.25 Discussion on adaptive solutions for resilience challenges and opportunities

16.45 End day 1

Day 2 – Thursday 11 February 2021 (8.30 – 13.00 h Central European Time)

Session 3 – Habitat enhancement and creation, Working-with-Nature and other nature-based solutions
Moderator **Jos Brils**, Deltares, SedNet Steer group, the Netherlands

Nature-based solutions are moving rapidly up the international climate change agenda as a potentially cost-effective win-win solution to help address both the climate and ecological crises. At the same time, nature-based solutions are important to the achievement of national and international environmental protection objectives, some of which will become increasingly difficult to achieve due to climate change impacts on natural as well as built environments. This session will highlight these important climate-environment inter-relationships. It will explore both ecological protection imperatives and practical experiences, highlighting the critical role of sediments and sediment management in the effective and sustainable delivery of nature-based solutions.

08.30 Invited key-note: "Sediment in EU environmental policies"
Jeanne Boughaba, European Commission DG Environment, WFD team, Belgium

08.45 Talk 1: "Beneficial Sediment Use and Nature-Based Solutions: opportunities for sustainable and circular developments"
Luca Sittoni, ECOSHAPE & Deltares, the Netherlands

08.55 Talk 2: "Effective Defensive Mechanisms of Coastal Sediment Regeneration against the rising Sea Level"
Henry Odunsi, Earth Info Services, Nigeria

09.05 Talk 3: "Peel Ports: Strategy for Beneficial use of dredged sediment"
Lisa Reilly, Peel Ports Group, UK

09.15 Talk 4: "Technological Advances in Saltmarsh Restoration"
William Coulet, Exo Environmental Ltd., UK

09.25 Q&A on presentations

09.40 Discussion on nature-based solutions challenges and opportunities

10.00 Coffee break

Session 4 – Sediment management, circular economy and the waste hierarchy: reduce, reuse, recycle
Moderator **Katherine Cronin**, Deltares, SedNet Steer group, the Netherlands

The climate crisis and the ecological crisis are closely interlinked. But the COVID-19 pandemic has highlighted that societies are also vulnerable, and without a thriving economy, it is sometimes difficult to deliver the measures needed to redress the balance. Those responsible for sediment management have an important role to play in achieving this balance, enabling the continuation of essential economic activities whilst on the other as achieving the ecological balance between on the one hand retaining sediment in the natural system and on the other ensuring that contaminants do not compromise aquatic life and ecosystem functioning. In the context of the waste hierarchy (e.g. reduce the need for extraction of virgin aggregate); reuse (e.g. shift perceptions of sediment from a waste to a resource); recycle (e.g.

optimising sediment placement), sediment managers have an important role to play within the circular economy concept.

10.30 Invited key-note: "Sediment treatment in Hamburg as part of a circular economy"
Henrich Röper, Hamburg Port Authority, SedNet steer group, Germany

10.45 Talk 1: "Assessing circularity of inland dredging activities: a new tool for the Dutch Water Authorities to pave the way towards a circular economy of dredge sediments"
Eldert Besseling, NETICS - The Sediment Engineers, the Netherlands

10.55 Talk 2: "GEOWALL® technology as the key for unlocking the value of dredged sediments by reuse in civil structures and infrastructure"
Hugo Ekelenkamp, NETICS - The Sediment Engineers, the Netherlands

11.05 Talk 3: "A Pilot Study for the Nature-based Conditioning of Dredged Urban Canal Sediments and their Beneficial Reuse"
Keith Torrance, University of Strathclyde, UK

11.15 Talk 4: "Towards a generalized circular use of salty dredged sediments: the Desalination of Slurries for Delta Protection project"
Maria Barciela Rial, HAN University of Applied Sciences, the Netherlands

11.25 Q&A on presentations

11.40 Discussion on circular economy challenges and opportunities

Panel discussion and an interactive session with the audience
Moderators **Katherine Cronin & Jos Brils**, Deltares, SedNet Steer group, the Netherlands

12.00 Three questions:
1. Key climate change-related challenges for sediment managers?
2. Key opportunities for sediment management to contribute to addressing the climate change challenge?
3. Key topics for further research and development?

Elaborating on workshop outcomes: way forward

13.00 End of the workshop

REGISTRATION

If you wish to participate to this online workshop, please indicate so by email to the SedNet Secretariat (marjan.euser@deltares.nl) before 6 February 2021.
There is no fee for participation.

FURTHER INFORMATION

For further information about NavClimate and SedNet see the websites:
https://navclimate.pianc.org and https://sednet.org