Innovation program for sediment management in The Netherlands

Innovation for Water management

Within the Netherlands Directorate-General of Public Works and Water Management ('Rijkswaterstaat'), a program was started in 2003 that aims at the application of innovative concepts in the management of water and sediment. The idea behind this program is that the current maintenance of the water ways in The Netherlands may be organized to satisfaction, but are also highly expensive to continue in the future. Many known and unknown changes have to be dealt with and offer chances for innovation, such as:

- Climate change
- Increased pressure on space (on land and on water)
- Multipurpose use of water and bordering structures such as dikes
- Public perception of risks of pollution

Objectives of the theme 'Sediment management'

In the theme 'Sediment' there is a call for innovations that could lead to:

- Decreased quantities of sediments that need to be dredged for the maintenance of water ways (how to influence sedimentation patterns);
- Decreasing the quantity of sediments to special depots and initiate the production of building materials out of contaminated sludge's by techniques as cold immobilisation
- Reduction in costs for (maintenance of) shipping facilities, such as sluices, navigation equipment etc.
- Sediment as a valuable resource: focus on beneficial use of sediments (e.g. as construction material)
- Innovation in treatment technologies for dredged material
- Participation of stakeholders: cost-benefit analysis, risk perception by the public and communication
- Application of principles of sustainable development in river basin sediment management plans
- Development of legislation for the management of sediments

Ongoing pilot projects in the theme 'Sediment Management'

The following projects have been started:

- **Terps of sediment**. In this project we seek for opportunities to combine dredging activities with beneficial use of sediments, even if those sediments are polluted. Knowledge on the behaviour of the contaminants, sandwich techniques for the isolation of contaminated sediment, and evaluation of risks for the environment and for human health play an important role in this pilot project. In 2005 locations for pilot projects have been selected and technical and legal requirements for the project are investigated. In the period 2006-2007 the realization of these projects is planned
- **Stimulation of sediment ripening.** Silty sediments require dewatering and ripening before material can be produced that can be used in construction works (e.g., roads). In case it is necessary to accelerate this process, certain additional treatment techniques come into focus. No decision has yet been made for starting pilot projects.
- **Stakeholder participation.** We seek opportunities to apply a model for active involvement of stakeholders in the process of fact finding in sediment management projects. Supported by the Dutch funding program "Leven met Water"("Living with Water") and the theme "Sediment management" two pilot project were started in 2005.

- **Statistical techniques to estimate sediment quantities.** The volume of sediment that has to be dredged is an important uncertainty in the planning of dredging operations. New statistical techniques have been tested that enable more cost-effective sampling than with classical methods.
- **Sediment management plans**. Sustainable sediment management issues need to be handled from the river basin perspective. Therefore sediment management plans need to be developed in which the interests of all stakeholders are balanced and translated into clear management options. For the implementation of sediment management plans pilot projects are needed. This work is carried out within the framework of the Dutch-German Exchange on dredged material and the International commission for the protection of the Rhine (ICPR).
- **From contaminated sediment to building material**. In this project, Rijkswaterstaat is looking for opportunities to use the technique of cold Immobilization for handling contaminated and / or instable sediment to a useful and certificated building material. It is the intention to use the end product in infrastructural constructions instead of putting it in special sludge depots. Geo-fysical aspects and the environmental consequences of contaminated sediment after handling with the cold immobilization (CI) process play an important role in this pilot project. In 2004 and 2005 a project involving the treatment of 50,000 m3 has started up,. It is the intention scaling up the production process and looking for broader use of C.I.-materials.

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See also : www.waterinnovatiebron.nl