

Towards river basin sediment management for Meuse and Scheldt



LIFE project on Contaminated Sediments

LIFE99 ENV/NL/000263

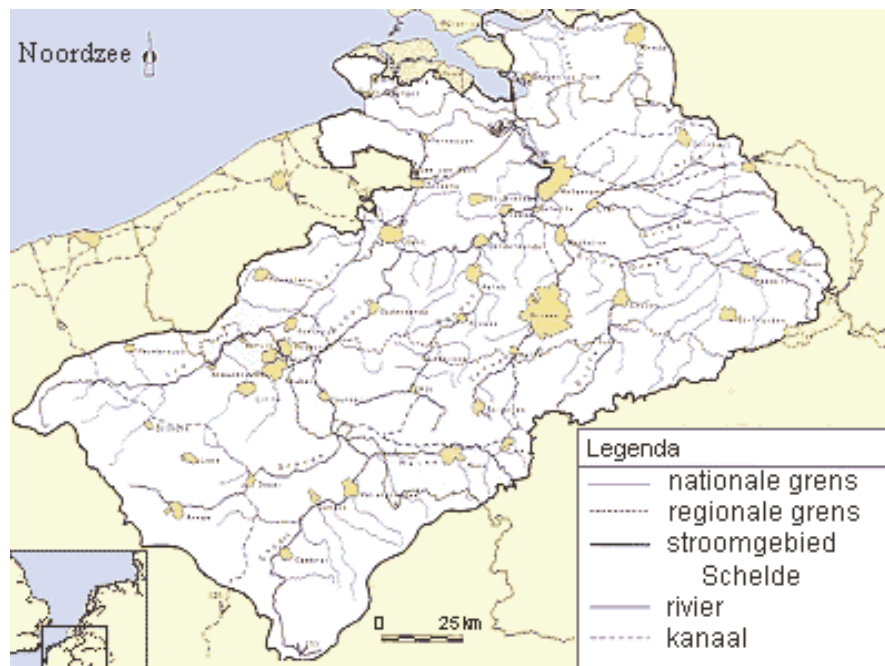
The regulatory frameworks in the riparian Meuse and Scheldt states differ in theory, but the everyday-practice, those systems show much similarity. The development of a river basin sediment management should therefore – on the short term – focus on a common monitoring system and common standards for the classification of sediments. Adjustment of the regulatory frameworks can take place in a longer term, at which stage harmonizing of those frameworks could also be considered.

This is the main conclusion from the LIFE project on contaminated sediments. In the LIFE project, participants from Flanders, France, the Netherlands and Wallonia worked on the development of integrated sediment management for the rivers Meuse and Scheldt. The project covered three important issues: the issue of assessment of sediment (when is sediment considered clean or polluted?), the issue of the solutions (what can we do with contaminated sediments?), and the issue of the legal systems in the different countries (what is permitted in every country?).

Differences now hamper river basin sediment management

Since the discovery of contaminants in sediments in the early eighties, European governments have placed much emphasis on the development of solutions. Methods for the assessment of the risks of contaminated sediments were developed, techniques were invented to dredge, clean and re-use sediments, and governments put up policies and legal frameworks. Due to the fact that these develop-

ments mostly took place at a national level, differences now exist between the various European countries. Nevertheless, the problem of contaminated sediments is more of a river basin problem than a national problem since water and suspended matter do not stop at the international borders. At present, the differences hamper the tuning of the management of waterways and an approach on sediments, especially for international, border crossing waterways like the Meuse and the Scheldt.

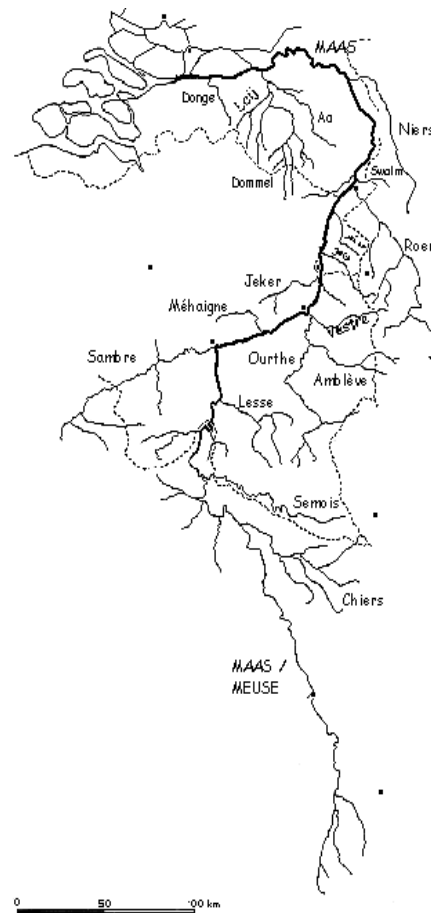


Scheldt river basin

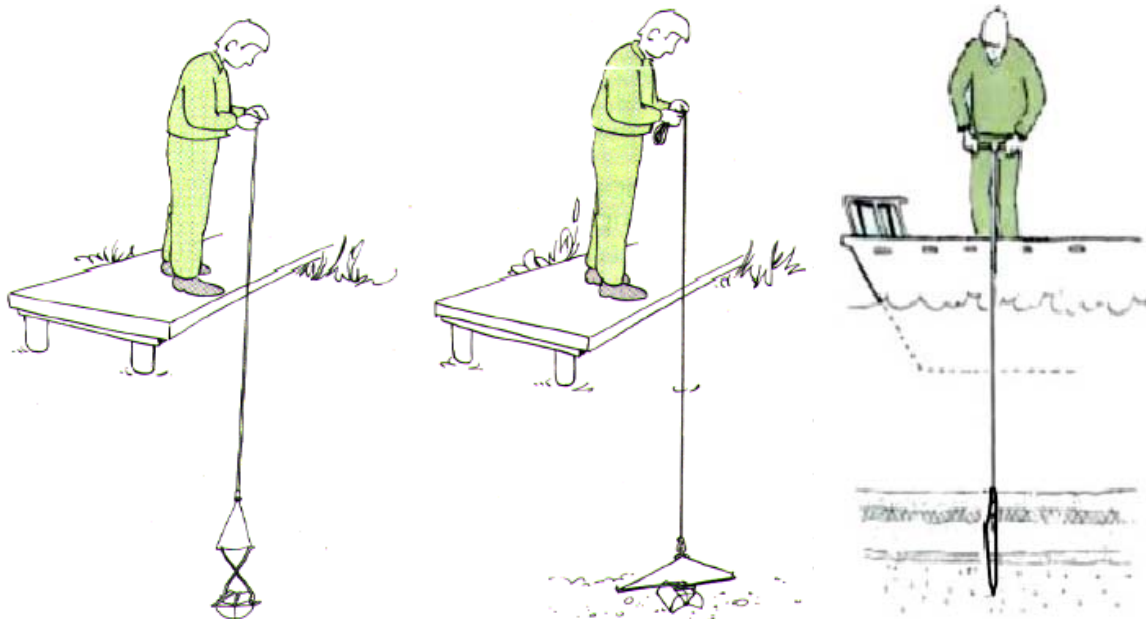
The International Commission for the Protection of the Scheldt (ICPS) and the International Commission for the Protection of the Meuse (ICPM) recognized this. Both the ICPM and ICPS consider contaminated sediments in their action programmes. Confronted with the differences in knowledge and applied science, and the lack of common methods and references, they decided to start the LIFE-project on contaminated sediments. In the LIFE-project on contaminated sediments, the first steps were taken to tune the management of contaminated sediments in an integrated technical and administrative-judicial manner. This included integration between several technical and judicial disciplines at an international scale (two river basins covering four countries/regions; Flanders, France, the Netherlands and Wallonia), which was an innovative aspect of the project.

Common Method; assessing sediment in the same manner

One of the first steps taken in the making of a common river basin management is to reach an agreement on the present state of the river system; do we consider the sediment clean or polluted? One can imagine that it is very important that all parties in a river basin mean the same by 'clean' and 'polluted'. A major part of the LIFE-project therefore consisted of formulating a common method for sediment quality assessment, which was tested on four locations in the Scheldt and Meuse catchments. This so-called 'common method' gives recommendations for the methods of sampling sediment and for the analysis parameters in the samples. In general, three kinds of assessment of sediments are possible: physico-chemical, ecotoxicological and biological. The physico-chemical assessment tests for noxious substances in the sediment. In the ecotoxicological assessment, the sediment is tested in a laboratory for toxic effects on organisms. The biological assessment finally, determines the organisms present in the field, which is an indicator of toxic effects.



Meuse river basin



Sampling: Van Veen grab sampler

Peat sampler

The LIFE project concluded that the assessment of sediment depends on the final objective; for purposes of monitoring the ecological quality, a triad approach with physico-chemical, ecotoxicological and biological assessment is the most appropriate. For maintenance purposes (i.e. dredging a fairway) physico-chemical assessment, combined with specific bioassays will satisfy.

There is broad agreement among the participants on the substances to test within the physico-chemical analysis. A small list of parameters requires further discussion and research. The choice for the tests within the ecotoxicological assessment and the choice for the biological classification system could not yet be made because dataset of the project was too limited. The sites in the Scheldt and Meuse on which several tests have been performed for evaluation had the same (poor) quality, which made it impossible to reach conclusions. However, a team of specialists agreed upon a proposal for both the ecotoxicological as well as the biological assessment method. In order to come to definite conclusions and to put up reliable common standards, more data is needed.



72h growth inhibition test with *Raphidocelis subcapitata*



16-day pore water test with *Daphnia magna*



10-day sediment contact test with *Hyallela azteca*

Testing organisms (ecotoxicological assessment)

Field tests

In order to evaluate the draft common method, three sites were tested twice during the project (Mortagne, Bossuit (both Scheldt) and Lixhe (Meuse)). According to the results of the triad-approach, the sites were polluted and even toxic, varying from moderately (Mortagne) to severely toxic (Bossuit and Lixhe). During the second measuring campaign, a site was added, in order to make a comparison possible with a less polluted spot (Grembergen). This site turned out to be less polluted indeed, but still showed moderate effects on the testing organisms and was classified as 'poor quality'.

Possible solutions

To evaluate the feasibility of objectives in a management programme, insight in possible solutions for problems with contaminated sediments is a prerequisite. Therefore, a database was formed with international information on dredging, treatment and disposal of contaminated sediment. Added to this database was a decision support system to help determine the different techniques. The DSS applied to the results of the testing sites mentioned above, recommended storing, embanking or treating the sediment thermally.



Eco-dredging

Regulatory systems differ in theory, but are similar in practice

The regulatory systems of, on the one hand, Flanders and the Netherlands and, on the other hand, France and Wallonia present significant differences when it comes to their approaches to contaminated sediment. In Flanders and the Netherlands on the basis of statutory provisions, contaminated sediment in situ is regarded as an environmental problem for the riverine ecosystem. In France and Wallonia, this is not the case, while the focus lies on the receiving environment (ex situ).

Most other differences in the regulatory frameworks can be attributed to this basic difference in philosophy. In practice the differences, however, are less pronounced, and convergent trends can be identified.

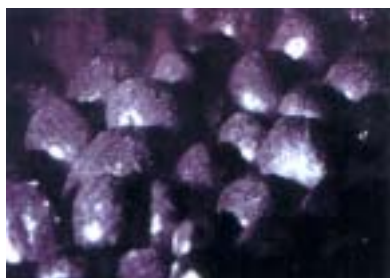


Storage of sediments on land

A common knowledge base of divergent and convergent trends is important both because it offers a basis for further cooperation and because it provides a more thorough understanding of why the negotiating positions of the participating countries/regions differ. The divergent trends can be of assistance in identifying topics that might be less fruitful as a focus for seeking cooperation. Those issues that confront each of the four countries/regions with similar practical problems as well as those issues identified as common concerns, probably offer the most fruitful elements for further cooperation through a step-by-step approach.

An issue that merits further attention, and that could be the first subject of the step-by-step approach, is the nature of the standards used to monitor and classify sediment. This is a topic that can be addressed through cooperation at the technical and scientific level. The participants on the LIFE-project also worked, very enthusiastically, at this level, and they are of the same opinion, that the cooperation with the other participants was interesting and stimulating.

For the river basins in question, the results of further work can be used to define the objective of 'good ecological status' and to prepare an inventory of the status of the sediment. Thus, it would provide a basis for implementing the EC Water Framework Directive. Furthermore, it is important that this topic be addressed in the short term, as it will ultimately provide the basis for developing a common philosophy for dealing with contaminated sediment.



Three types of thermal treatment

One topic that requires consideration, in the short term, is the relationship between upstream and downstream locations. The Water Framework Directive requires a river basin management approach. This implies that policies for contaminated sediment and dredging for those sediments in upstream locations would have to take into account the effects on downstream locations, including downstream locations in another country/region. Moreover, the question of the allocation of financial resources

within the river basin management approach merits attention. Should such resources be allocated on a country-by-country basis or on the basis of the river basin as a whole? This is a sensitive issue as it raises considerations with respect to the “polluter pays” principle. While these considerations are not irrelevant, they should not bar the development of sustainable river basin management in a trans-boundary context. This is especially the case if, also in terms of the benefits for the downstream state, an euro spent upstream may be more efficiently spent than the same euro spent downstream.

Good prospects for the future

Promising for the future of the quality of the Meuse and the Scheldt, was the atmosphere of enthusiasm and confidence in which the participants worked together. Scientists of similar kinds of institutes in different regions developed a common method instead of continuing in a more or less isolated approach. The enthusiasm for the project laid the foundation for further cooperation in the future. The results of the project will act as an input to the new action programmes of the Meuse and Scheldt commissions, and if only a bit of the spirit from the project will settle in the new programmes, the environmental benefits can be considerable.



Good prospects...

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This text and as well as the text of the entire report can also be found on www.waterland.net/akwa.