

## Workshop “Sustainable Sediment- & Water- management” from a resilience point of view

# The Frisian story as an example

On the 30th of May, following the SedNet conference, the living with sediment project team organized a special session hosted by the Norwegian Geotechnical Institute, Oslo, Norway in Oslo. About 40 participants took part in the discussion to set out changes that are needed to implement a systems approach of sustainable sediment management (on river basin scale). Important issues such as: how to deal with the different geographical scales (local, regional, national, international)? How to involve stakeholders (which also includes scientists)? were discussed based on case studies from all over Europe. In this article we focus on the Frisian Story as an example.<sup>1</sup>

### -----BOX 1-----



Another interesting case discussed is the deepening of the Unterelbe, as described by Lasse Gerrits in his PhD thesis, *The gentle art of co-evolution*. Decision makers in Hamburg were suddenly confronted with the unfavourable effects of decades of modifications to the physical system, as the deepening triggered a change in the tidal regime and with that, an unfavourable change in the transportation of sediments. Under pressure of these changes, the decision-making system was forced to alter the process and content of the intended deepening operation and initiated the development of a long-term vision. It also started a

mediation process in order to deal with societal unrest.

### -----BOX 1-----



Wim Haalboom presented an example how the province of Fryslân, in the northern part of Holland, approached sediment-management in the “Dredging Action Program”. The main issues that this program wanted to address were: illegal dumping, shallow water, reduction of water quality and biodiversity and lack of opportunities for water recreation and economy. In this program all important stakeholders worked together to solve the issues concerning sediment in Fryslân. Stakeholders were government organisations such as municipalities and waterboards and, for example, boating organizations, farmers and nature organisations.

To describe the resilient nature of the “Dredging Action Program”, Wim used the concept of a learning cycle. Which consists of the four following ‘building blocks’:

1. Common system understanding: of both the geophysical and the societal system;
2. View on the system in the future and possible threats: what should the system look like in the future?

<sup>1</sup> For the entire report of the special session we refer to the document section of [www.levenmetbagger.nl](http://www.levenmetbagger.nl)

3. Interventions in the system: implementing actions;
4. Monitoring and evaluation: keeping track of the effects of interventions in the societal and geophysical system;

#### *1: Common system understanding*

The province of Fryslân represents a lot of sediment. It is made by man out of sediment behind and before high dykes as is shown in the following map - a product of "remote sensing".



In the "Dredging Action Program" a lot of energy was spent on understanding the geophysical system as it is. For this reason a website was created together with the stakeholders that gives an overview of the sediment present in the system, the urgency to dredge (both from a quality and quantity point of view) and possible locations for landfills. The website is open to the public: <http://www.baggerinformatie.nl/>

#### *2. View on the system in the future and possible threats*

Together with the stakeholders the view of the system in the future was described as follows:

- Deepening the waterways for boating, drainage + other functions of the surface water
- Dredged materials in no way cause risk or damage to the surroundings
- Quality of the water system increases (both biodiversity and clear water in Fryslân even in urban areas);
- Reusing dredged material when economically & technically viable;
- Enough income from tourism + structural responsibility for maintaining the system;

An important threat was that regions like Fryslân have to deal with the societal aspects of dredged material. In Holland they call it "bagger", like "mudder" in Norway (see photo, taken in the harbour of Oslo). The words themselves even have a negative connotation. The action programme tried to connect to the close connection that the region of Fryslân has its water(soils). The project focussed on the beneficial aspects of dredged materials for society.



### *3 Interventions in the system: implementing actions*

To reach the desired system in the future 750.000 m<sup>3</sup> of sediments have to be dredged each year for the coming 25 years. How was the dredged material used in Fryslân? Reuse of sediment in infrastructure and agriculture is one of the instruments, as was shown in an example.

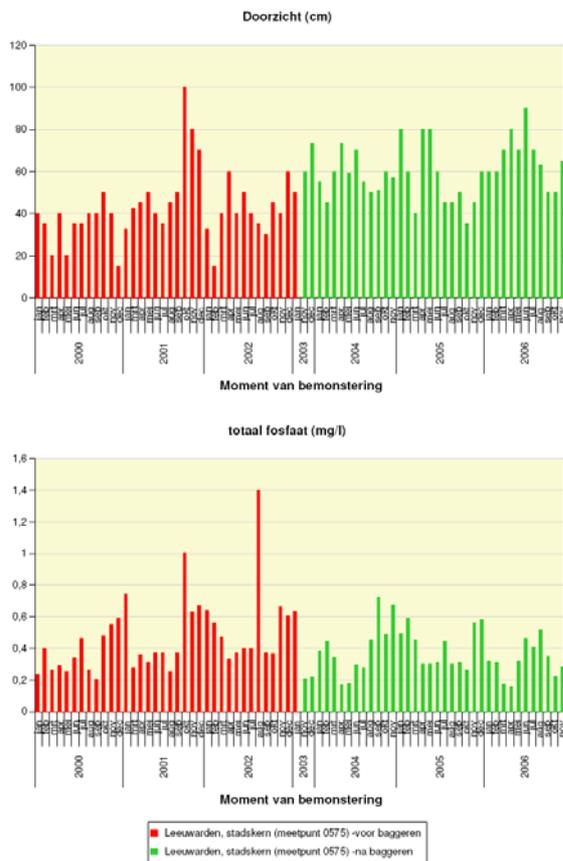




#### 4 Monitoring and evaluation

The results are monitored and are significant. Concerning the quantity that was dredged: in four years – thanks to extra money gained in the “Frisian Lakeprojekt” - the amount of dredged sediment was doubled, from 400.000 m<sup>3</sup> in 2002 to 750.000 m<sup>3</sup> in 2007.

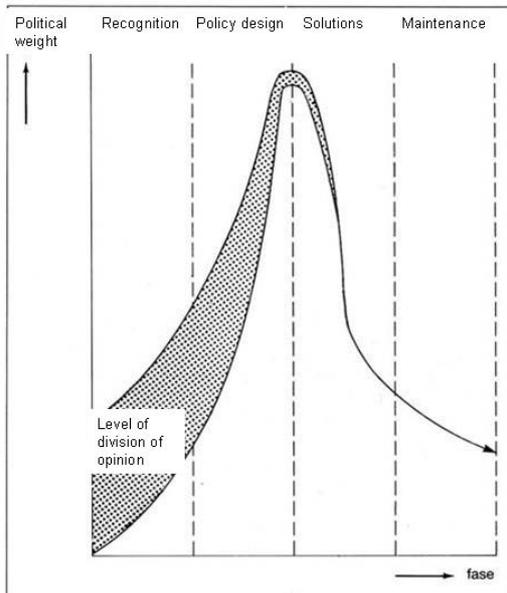
The experience in Fryslân proved that dredging is not only effective to increase water depth, but also improve water quality, shown by parameters such as turbidity and total amount of phosphates before and after dredging.



#### Conclusion

The conclusion of the Fryslân case is that the results of the measures that were taken in Fryslân give hope. Through the resilience lens, Fryslân seems to be able to incorporate both the societal and geophysical aspects of a complex sediment issue in

its decision-making process. But until now there is still a lack of coordinated policy to solve sediment problems in the future. Wim Haalboom claims that we deal with an example of the “life cycle” of policy, that Winsemius published in 1986.



During the discussion in the workshop the ‘political weight’ of a societal issue is perceived as an important factor for succes. The Fryslân project has been in action for 10 years. However in daily practice one strives to take decision, but there are many constraints (budget, political pressures, time frames, funding, natural intervention) to do it as suggested by in the resilience approach. The most important question how do you adapt the resilience concept to daily practice? An important step in doing this is to identify that ‘slow problems’ ask for ‘slow processes’ and not quick fixes in isolated projects. However, politics often does not allow for thinking in slow processes. This mirrors the politicians’ assumptions about the (natural) system(s) involved: they can know it, they can control it and they can communicate about it. These assumptions bend back on the need for (more) transparency and trust in science-policy processes, perhaps this is the next step towards systems approach of sustainable sediment.