# Multi-Layer Cooperation in Flood Management
## How to Cooperate within Flood Management in Public Area's

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## Abstract

Recent floods in Europe and hurricane Katrina, made the Dutch government realize that flood protection policy should be broader in scope than just prevention of floods. Only preventive measures (such as dikes) give an infinite security. However, there is always a chance things go wrong. Therefore the Dutch government introduced the concept of multi-layer safety (National Water Plan, 2010). In this concept, in addition to prevention (layer 1), attention also is given to spatial development (layer 2) and disaster management (layer 3). The three layers together represent de level of flood protection. Where in prevention (layer 1) cooperation runs hand in hand with legal instruments, these instruments are missing in the second and third layer. Thus cooperation is stronger needed in multi-layer safety then on other grounds.

This article will conclude that the introduction of multi-layer safety provides a strong need for reinforcing cooperation between the actors involved.

## Multi-layer cooperation in Flood Management

**The concept of multi-layer safety**

The Dutch government has introduced the concept of multi-layer safety in the National Water Plan [1]. The National Water Plan describes the measures that should be taken in the period 2009-2015 to keep the Netherlands liveable for future generations, and to exploit the opportunities of water. In the National Water Plan the concept of multi-layer safety is introduced to strengthen flood protection in the Netherlands.

In the concept the first layer is about preventing floods with strong dikes, dunes and ‘storm flood barriers’ (robust and future oriented). Prevention stays the primary pillar of the policy. The second layer is about achieving a sustainable land use planning (location and planning issues), this can reduce victims and limit the damage from possible flooding. Flood risks will therefore play a stronger role in spatial planning considerations. The third layer is about disaster management. Good preparation for disasters is essential to effectively (lower number of victims) deal with a flood disaster. The first layer is traditionally the main pillar. Risk approach of this pillar is primarily motivated to overrun a chance of flooding. The second and third layer focus on reduction and management of consequences of floods. For a sound interpretation of the second and the third layer it is necessary to identify flood risks and to give professionals in those layers a perspective for action.

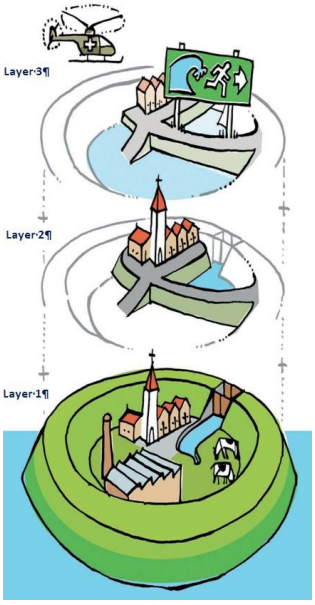


Figure 1 Multi-layer safety

Thus, where the 'old' policy was based on prevention, the concept of multi-layer safety makes flood protection a more complex environment to work in. In the 'old' policy the ministry of Infrastructure & Environment and the waterboards had a central position. With multi-layer safety the role of the ministry will be much more diverse and other partiers will also have different responsibilities in different layers, such as the safety region within layer three. Instead of implementing goals and norms and executing measures on dikes and rivers (prevention), the Ministry of I&M and waterboards have to search for cooperation with provinces, municipalities and safety regions to enhance flood protection in the second and third layer. The effectiveness of applying multi-layer safety and the roles of the different actors in this, have to be discovered in order to decide whether and how multi-layer safety can be organized, coordinated and institutionalized. Therefore the Ministry of I&M has initiated six regional pilots to explore multi-layer safety. This article is - in addition to an analysis of the relevant literature- based on the experience of Antea consultants within one of those pilots.

**Multi-layer safety makes cooperation equivalent**

The introduction of multi-layer safety increases the importance of cooperation in flood protection. Where in prevention (first layer) cooperation runs hand in hand with directive and some legal instruments, those instruments are absent in the second and third layer. For example, in the first layer the Dutch Water Act -and its legal standards- play an important role in prevention. Safety is thereby enforceable. That cooperation pays off here too is clear, see for example the development of interactive planning around dike reinforcements. However, the legal basis to stay here the parties to the trigger table.

For the second and third layer these hard legal instruments to enhance flood protection are missing. There are some legal instruments, for example the Water Assessment for new spatial developments in which prevention and spatial developments must be adapted, but this process is not an enforceable instrument with testing on flood protection and for which concrete results must be achieved. And there are disaster plans, however the enforcement of measures to increase flood protection in this layer is missing. To achieve results in the second and third layer, the development of cooperation between water managers, spatial planners and disaster managers is therefore crucial.

This observation is in line with the analysis that Roovers and Dicke [2] have made on so-called securing mechanisms of public values in river management. Roovers and Dicke found that applying a risk-based approach could cause a shift of securing mechanisms for flood protection. To realize this, instead of so-called hierarchical securing mechanisms such as legislation, there will be a need for emphasis on network and market mechanisms. Therefore it can be concluded that if cooperation over the three different layers is desired, an increase in cooperation is needed.

**Essentials for cooperation**

Reinforcing the need for cooperation between actors to realize flood protection in the second and third layer raises the question what is needed for that. For successful partnerships a number of preconditions are necessary [3]:

1. a shared urgency between actors;
2. a shared goal between actors;
3. sense of interdependence.

So parties should work together to feel that something must be done, they should all get 'something' and they must realize that they can not do without each other.
If these preconditions have been filled in, Verbout and Travaille state that an intermediate product is needed. This intermediate product is the result of early cooperation and has the following characteristics:

1. an expression of confidence;
2. sharing knowledge and experience;
3. a larger support among stakeholders;
4. and the emergence of creativity.

The next step is to make the cooperation sustainably successful. According to de Bruijn, ten Heuvelhof, & In 't Veld [4] this requires that conditions for openness, security, progress and content are created in a proper manner for each actor. They also state that to establish decision making, stakeholders must experience openness and express their opinion, position or vision without a risk of consequences. It is important that core values of the parties are protected. Those involved must be willing to listen to other views, differences and similarities must be explored without prioritizing the self-interest. Finally, to actually reach decisions, the required quality of the content must be met. When the conditions for cooperation and result are met, a decision can be made.

**Cooperation within the concept of multi-layer safety**

With regard to multi-layer safety, cooperation in the Netherlands seems problematic: there is no shared urgency, it is not always clear what can be gained and even the dependency awareness is often low. Also, research [5] shows that a cultural aspect plays a role: focus on prevention combined with a small (perceived) chance of flood makes that ‘safety above all’ is dominant and is not a discussion. This empowers the position of prevention and makes cooperation with other layers not urgent.
The problematic situation is also illustrated by the following:

- The high degree of safety through prevention, the low probability value in the secure delta of the Netherlands, for most parties outside the water sector the urgency is absent. Arguments often focuses on (the impacts of) climate change, and given the

perceived deadline in climate development urgency is insufficiently created. And in contrast with the first layer, there is no legal mechanism that creates urgency.

- Especially for parties involved in spatial planning (such as municipalities and project developers) it is not clear what they can gain with flood protection and what opportunities the multi-layered approach offers. An important aspect is a big annoyance of the spatial planners with regard to the dominant regulatory guidelines of water boards, labeled with the example of the phrase: "Nothing is possible!". Offering perspective requires that this tight regulation is released, and that more room for negotiating is created for combining development with flood protection [2].
- Finally, the awareness of interdependence is hardly present at spatial planners, as long as they are not too close to the dam, they are not bothered by floor protection objectives. Even the disaster managers independently implement their policies. The water column reinforces this lack of dependence by making preventing undisputed the base of flood protection and thus continue to regard themselves as 'independent ' of the outcome in the other two layers.

In short, in the current situation the structural conditions are missing to develop structural cooperation between actores. This is expressed concretely in a limited interest and awareness of added value of the multi-layer safety concept by municipalities and the safety region.

**The challenge for success**

Van Klaveren, Kaats en Opheij [6] state that there are four groundforms of cooperation:

1. Transactional cooperation, with a focus on effective and efficient exchange of people, products, services and/or information.
2. Functional cooperation, with a clear assignment and agreements between actors about tasks.
3. Exploring cooperation, working together on a shared goal to enlarge the knowledge position of parties.
4. Enterprising cooperation, working together in a complementary alliance in order to achieve strategic renewal.

With regard to the type of cooperation it can be stated that the six regional pilots are organized to create insight in the three layers and the significancefor actors, and to create a common goal by working together and combining knowledge (exploring cooperation). In order to make multi-layer safety sustainable successful, an enterprising cooperation should arise in which the common goal is about strategic renewal.

It can be stated that the regional pilots could be an important first step for successful inter-organizational cooperation within the region of the pilot. We consider this from the perspective of embeddedness [7], an approach that states that economic exchange is embedded in social networks. Economic urgency is thus a requirement for successful inter-organizational cooperation. This embedding according to Granovetter implies that:

- actors prefer to work with known partners rather than strangers;
- economic relations are part of a broader set of social relations;
- existing relationships influence the development of new relationships.

Coming from multi-layer safety, it is important to create awareness between actors and to develop cooperation. For this, the pilots play an important role. It is also clear that for all related organizations an economic interest play an important role, particularly for the

municipalities it is very important in relation to spatial development. Finally, it is important to further develop cooperation from existing relations, for example by involving government layers through servant layers.

## Conclusion for flood-protection policies

Based on the analysis above, we state that in the Netherlands two main choices in policy can be made:

1. The focus stays on layer 1: prevention. Ambitions for the second and third layer are minimal. The present instruments result in a good basis of flood protection, cooperation between actors will continue in this perspective of will be absent. In fact, this scenario is a empowered 'business as usual'.
2. The policy for flood protection will significantly activate, beside prevention, the second and third layer. This implies that flood protection more than before will rely on cooperation (market and network mechanisms [2] and economic opportunities [7]. For this, the conditions for this (urgency, desire and dependency must be created.

If chosen for the second scenario, a structural contribution of the second and third layer to flood protection, this will imply:

- Shared urgency and desire must be created. Due to the long term of the challenge, this implies that success must be achieved by creating chances. Initiatives, financing and innovation are needed for this. But also letting loose regulations for the second and third layer. This implies something for involved water organizations (culture change, adjusted regulations, personal competentions, et cetera).
- Dependencies must be created. For example by an explicit role and assessment framework for flood protection in the spatial development, or the necessity of linking financial investments. As stated before: especially the development of skills in negotiating and networking is necessary for water managers.
- A need for development from exploring to enterprising cooperation, where strategic renewal is a shared goal among actors involved in all three layers. Commitment, also on a political level, is needed.

## References


[1] Deltacommissie. (2008). Samen werken met water - Een land dat leeft, bouwt aan zijn toekomst. Hollandia Printing. English: http://www.deltacommissie.com/en/advies

[2] Dicke. W. M., Roovers, G. (2007). Acceptatie en borging nodig bij bescherming overstroming; Land + Water, no. 1/2; February 2007

[3] Verbout, A., & Travaille, A. (2008). Succesvolle samenwerking is geen toeval. Overheidsmanagement, 11-13.

[4] Bruin, de J., Heuvelhof, t. E., & Veld, I. (2008). Procesmanagement - Over procesontwerp en besluitvorming. Den Haag: Academic Service - Sdu Uitgevers bv.

[5] Steenhuisen, B., Dicke, W., Tijink, D. (2006) Veiligheid verwaterd? Een narratieve analyse van Nederlands en Duits hoogwaterbeleid. Bestuurswetenschappen, jaargang 60, nr. 3, June 2006.

[6] Kaats, E., Klaveren, v. P., & Opheij, W. (2009). Organiseren tussen organisaties - inrichting en besturing van samenwerkingsrelaties. Schiedam: Scriptum.

[7] Granovetter, M. (1985). Economic Action and Social Structure: The Problem of Embeddedness. American Journal of Sociology 91 (3): 481–510.