Unambiguous risk assessment: the solution for urban water management?

Paper for the 45th Congress of the European Regional Science Association
23-27 August 2005, Vrije Universiteit Amsterdam

Authors:

dr ir Wim van der Knaap *, Eric Oosterhof */, ir Henk van der Wielen **, ir Jan van Roestel, ir Irene Immink ***

Addresses:

* **Wageningen University, Land Use Planning Group,**
Generaal Foulkesweg 13, 6706 BJ Wageningen, The Netherlands,
Email contact: Wim.vanderKnaap@wur.nl

** **Consultancy company Oranjewoud BV,**
Postbus 321, 7400AH Deventer
Email contact: HenkvanderWielen@Oranjewoud.nl

Introduction

The Commission for Water management in the 21st century has introduced an instrument to deal with regional flooding risks. This instrument has been developed after the flooding of rivers in 1993 and 1995, which started the discussion how to cope with this returning water problem. Also the effect of compact, but heavy rainfall in a short time puts a lot of stress on proper water management, especially in urbanised areas. The proposed instrument focuses on a standardisation of water level risks and should be in operation in the Netherlands from September 2005 on. To deal with flooding in rural and urban areas a proposal was made which depends on land uses (see table1).

Table 1: Overview proposed standardization levels for different land uses

Land use	Ground level criterion*) (%)	Probability (1 per yr)
Grassland	5 %	1/10
Agriculture	1 %	1/25
High-quality agri- and horticulture (incl glass)	1 %	1/50
Urban area	0 %	1/100

*) ground level criterion: percentage of the land use area which can overflow without one speaks of water nuisance.

It was up to the regional (district) water boards to implement these standardization levels for the whole country by testing their water systems and to denominate which areas might be at risk and how much economical and societal damage can be expected. There are enough data available of the rural area and the hydrological models are validated and calibrated for that purpose. The problem for urbanized areas was besides the lack of sufficient data, the combination with sewer systems and the specific spatial plans. Also different management and legal aspects distorted a straight forward approach for urban areas in accordance with the rural approach.

Research Background

A research has been conducted in the first half of 2004 in which the process was followed (Oosterhof, 2004). This research especially focussed on the risk assessment for urban water management, because the urban area was rather new for the district water boards. The rural areas are the 'natural' areas to work with for these district water boards. 16 persons were interviewed about their expertise around the subject. They were all working for provinces, municipalities and district water boards.

As a result from this research a meeting was held for representatives of the municipal and provincial governments as well as the district water boards in October 2004 to discuss the results of the research and to determine possible ways to continue. Around 40 persons at-

tended this discussion meeting. One of the outcomes was the large difference between the world of water management and of environmental planning, resulting in a bad cooperation between the involved authorities. Based on the results of the meeting an article was published in ROM (Dutch oriented journal for spatial development; see Van der Knaap et al., 2005), of which parts will be used in this paper.

Roles and responsibilities

Municipalities are responsible for the sewerage system (with their own standardization level) and drainage in urban area. The district water boards are responsible for the water discharge of rural and urban areas. The provinces are responsible for groundwater management. In the process of the application of the proposed standardization levels this means that the water boards technically carries out the test and the outcomes have to be communicated with municipalities and provinces. The municipality controls space consuming measures and have an important communication role to the citizens. The province has the control role at the assessment of (spatial) interventions that exceed a municipality or water board. Because of this partitioning of responsibilities around the standardization levels, especially for urban areas, the administrative-organizational complexity of the urban water management comes clearly forward. Because of this complexity the aims of applying standardization levels stand under pressure. One of the aims is to create clarity which level of protection by which agency is guaranteed. Extra tasks and responsibilities originating from the standardization process become by this complexity not transparent and create sectorial thinking instead of orienting on the integrated water chain. The implementation of the measures comes under pressure. At each level there must be a good harmonization between direction role and executive role. How can this be implemented?

The administrative status: action deal or outcome obligation?

The proposed standardization levels are not yet definite and create therefore no obligations for the moment. The nature of the obligations depends on the administrative status of the level of protection to obtain: it becomes an action deal or an outcome obligation. The choice of the status is linked with the question if and if so, who must compensate for the damage as a result of water nuisance. The legal perspective for everyone must be made clear.

A outcome obligation means: under all circumstances and at every moment the agreed standard must be met. This forms a heavy administrative obligation which can lead to ' American situations ' (increase of height of damage claims). Moreover, governments will compensate

this financial loss by raising the water board rates for the citizens. In doing this, the outcome obligation will miss its aim. With an action deal the water board is only held responsible for damage when they have not within its possibilities checked for occurring of water nuisance.
Because of the iterative process at determining the proposed standardization levels and testing of the water system, it seems a preference is laid at the action deal. But who will get (too?) much room to move around and whose space will be restricted?

Standardization and practice

The research and the discussion meeting made clear that harmonization and coordination between the water administrator and the municipality in the application of the standardization levels in urban area has been not yet well started up everywhere. Especially municipalities are still uncertain and have not always the resources and technical knowledge to keep acting on water nuisance. They have also a problem in coping with the direct relation between the functioning of the sewer scheme and too much water on the street. Moreover, the water administrator normally limits its testing mainly to the main water system related to the urban area.
The measures, necessary to be taken on the basis of the tests, must be anchored in a spatial plan insofar it is related to this space structure. The question arises if the level of protection against water nuisance also must be fixed somewhere. Possibilities are a water mastering plan, a destination plan, the level decision, the water plan or cadastral arrangements. Which plan or instrument is most suitable for that purpose?

Does the proposed standardization levels functions as a bridge?

Standardization can be considered as a stimulant to integration because it makes the consistency between water and land use visible. Moreover, it is a reason for actors in urban water management to cooperate. The attention does not have to be limited to standardization, but it should be also aimed at the underlying question: not well coordinating of responsibilities and plan schemes in urban water management. Rigid handling of standards will miss the aim. “Using standards is no goal in itself “ was an opinion which came clearly forward during the discussion meeting. Especially the complexity of organisation and administration around urban water management is an important obstacle. There was a common agreement that this risk assessment approach can fulfil a role between environmental management and water related issues and it seems appropriate as a means of communication between the different stakeholders. But there was discussion if it is also capable of bridging the dilemmas between water

management and environmental planning or does it only accentuate differences? And must the risk assessments be the same for the whole of the Netherlands?

A process of cooperation is necessary, to reach clear agreements concerning the commitment of space for water. However this will not indicate yet that citizens will understand. Communication with citizens asks for another approach and framework, for example by means of maps with situations of water nuisance. Standards expressed in chances remain a hydrological language.

Conclusions

Based on the result of the research project and the discussion meeting of October 2004 several conclusions can be presented around the issue of risk assessment and urban water management.

- Each of the governmental organisations has their own directing role, causing problems in communication and loss of quality and agreement. There should be a harmonisation between action level and directing role.
- What status must risk assessment result have: an action deal or an outcome deal? because of the iterative process the preference goes to an action deal
- Mutual agreement and harmonisation between all stakeholders/partners is important. Especially community councils are not yet prepared for their role in the urban water management, because of possible conflict and uncertain agreement about the link between sewerage and urban water management.
- The resulting risk assessment levels have to be incorporated into every day policies, e.g., in the ‘municipal spatial plan’ or as a ‘water level decision’. However, one has to be careful not to hamper new development by institutionalizing the risk assessment level too tight.
- Risk assessment can be seen as a driver for integration between water management and environmental planning, especially when regional differences are allowed.
- Risk assessment levels are means for communication and not a goal in itself.
- For citizens it is important to have a different approach to communicate flooding risks in stead of using the risk assessment level.
-

References

Oosterhof, E., 2004. Normering van regionale wateroverlast met accent op bebouwd gebied (standardization of acceptable levels of regional flooding with special focus on urbanized areas). MSc-thesis, Wageningen University and Oranjewoud BV (report in Dutch).

Van der Knaap, W., I. Immink, H. van der Wielen, E. Oosterhof, 2005. Normering regionale wateroverlast: Olie of Zand? (standardized levels for regional water nuisance: Oil or Sand?). In ROM vol 23, nr 5. Reed Business, Den Haag, p 32-33