

INFORMATION NEEDS FOR DUTCH NATIONAL POLICY EVALUATION

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Biographical Sketch of Authors

Jos Timmerman is employed as senior projectleader at the Institute for Inland Water Management and Waste Water Treatment RIZA in the Department of Information and Measurement technologies and is involved in the Dutch national inland water quality and quantity monitoring. John Schobben is employed as senior projectleader at the Institute for Coastal Zone Management RIKZ in the Department of Advice and Policy. In their position, authors are responsible for linking monitoring to policy information needs. Authors have contributed to the development of the methodology for specification of information needs and the implementation of this method to describe the information needs for Dutch national policy evaluation as summarized in this paper.

Abstract

Acceptation of the fourth national policy document on water management by the Dutch parliament was the starting point for inventorying the information needs to evaluate this new policy. The project was carried out along the lines of the five-step method for specification of information needs, and was restricted to the information needs of the Dutch Directorate General of Public Works and Water Management. Apart from an overview of information needs on a high level of abstraction, some conclusions were drawn on the future changes in monitoring. The conclusions were: 1) 'policy-monitoring' is needed to be able to evaluate progress in policy measures; 2) spatial planning should be based on hydrological conditions; 3) expansion of transboundary cooperation in water management is inevitable; 4) a limited number of indicators for water policy evaluation should be developed; and 5) monitoring networks should be made more flexible. These future developments are subject to study in the next few years.

Introduction

Information is needed to formulate and evaluate policy for water management. Information production should therefore be tuned to the needs of policy-makers. This requires thorough communication between policy-makers that need information and scientists that provide information. To support this communication, the information cycle as a common framework is developed (figure 1). The information cycle provides a structure for scientists to explain their activities and the way these activities are connected to water management. The structure also helps to clarify the role of both policy-makers and scientists in the various activities of information production (Timmerman et al. 2000). The shape of the activities of information production in the information cycle differ from the shape of the water management activities to indicate that water management belongs to a different set of activities.

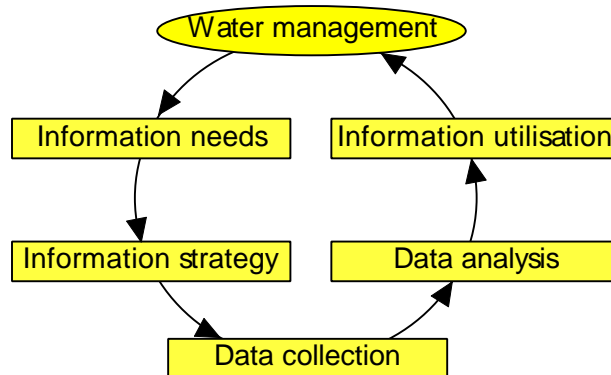


Figure 1 The information cycle (Timmerman and Hendriksma 1997)

Dutch water management is roughly divided into management of regional waters (small streams and polders) by regional waterboards and national waters (larger rivers and lakes) by the Directorate General of Public Works and Water Management (in Dutch: Rijkswaterstaat) within the Ministry of Transport, Public Works and Water Management. Most of the information on the quality and quantity of the Dutch National waters is collected by RIZA (inland waters) and RIKZ (coastal waters and the sea). Monitoring networks are operated and regularly evaluated, taking into account new policies as they are implemented. The fourth national policy document on water management, that was accepted by parliament in 1998, was the trigger to contemplate on the effects of this new policy on the information needed for water management, and consequently on the monitoring networks. A project was started to make an inventory of the information needs among the water-policy makers within Rijkswaterstaat, focusing on new information that would be needed from the new policy.

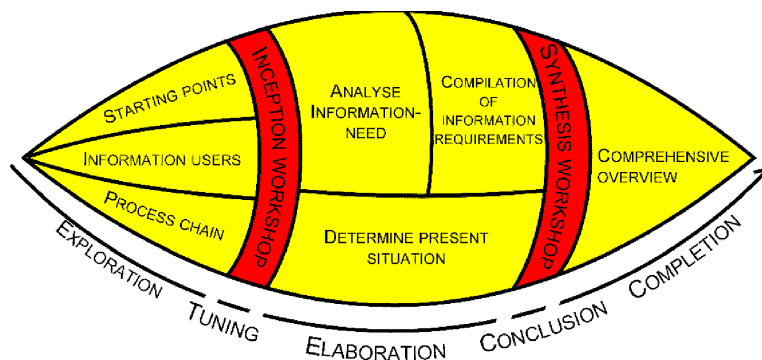


Figure 2 The five-step method for specification of information needs (Timmerman and Mulder 1999)

Inventory of information needs

The project was carried out along the lines of the five-step method for specification of information needs (figure 2). This method is developed within the framework of a program of Rijkswaterstaat, aiming at innovation in

monitoring. The steps in the method are: (1) Exploration, to mark out the project; (2) Tuning, to communicate and verify the starting points; (3) Elaboration, to come to detail; (4) Conclusion, to communicate and verify the results; and (5) Completion, to document the results and to plan following steps. The shape of the figure indicates the diversion in scope that occurs when the project is started. The first two steps have to restrain the maximum scope of the project. Towards the end of the project the scope has to converge to a comprehensive overview (Timmerman and Mulder 1999).

Starting points

The project was to aim at information for the evaluation of the policy and the way the policy is carried out, not for information intended to support policy analysis and policy preparation. During the first two steps in the project, the following starting points became clear (Schobben et al. 2000):

1. *Policy life cycle*: Most government policy problems go through the same cycle of four phases (Winsemius 1986): 1. Political recognition of a problem, when signals from society are recognised as a policy problem; 2. Policy formulation, when consensus is built on the size and nature of the problem; 3. Policy implementation, when measures become operational; and 4. Result's evaluation, where emphasis is put on securing and improving the conditions. In the first phase, the political attention, and with this the political importance is rapidly growing, although there exists a level of discord between different groups. The political importance reaches its highest point by the end of the second phase, whereas the level of discord is only very small. When measures are taken, the political importance of the specific problem rapidly decreases to reach a low and slowly diminishing level of attention during the last phase. Looking at the information aspect in this policy life cycle, in the first two phases much attention is given to rapid information on the sources of the problems and the processes in the environment. In the course of the second and third phase, more attention is put on longer term information like trends, especially when measures are taken. In the fourth phase, monitoring is needed to keep track of the problem, but as the problem comes under control, the information needed could be reduced (figure 3).

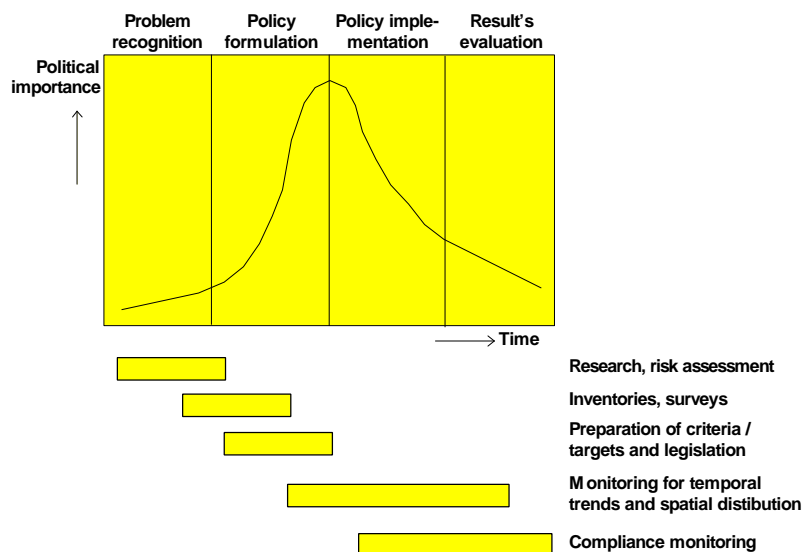


Figure 3 Policy life cycle (redrafted from Cofino 1995)

2. *Dynamics*: While specifying information needs, distinction should be made between structural, long-term information and temporal information, related to instantaneous policy interest. Specifically temporal information requires the dynamic nature of information needs.
3. *Policy-monitoring*: Information needs have a strong relation to the cause-effect chain. Next to the causes (e.g. emissions) and effects (concentrations of pollutants or changes in flora or fauna) of problems, policy-makers are interested in the measures taken. Information on the extent to which measures have been carried out should be made available. Only then, measures can be related to the way the causes and effects of a problem change.
4. *Information user*: Different information users have different information needs. In the project, different groups of information users will be distinguished. In the end, this also means that these different groups

should receive different parts of the information produced or the same information, but in a different format, e.g. a different level of aggregation.

5. *Time scale*: The results of the project should be valid for a period of eight years to the maximum. After this period, a new national policy document is expected. This also means that the information required, should be made available within this period.

Results

In this project, that restricted itself to the Rijkswaterstaat organization, a total number of 40 people were interviewed, selected on the basis of their various expertise in the field of water management. The interviews resulted in a description of different issues, specifically pointing at new information needs. From this description a short overview of the new information needs was made in a table stating the policy- or management goal, the information need(s) for this goal, if there would be a future increase or decrease of this information need, some examples, whether the information need is structural or temporary, the information users and the phase in the policy life cycle. An example is shown in table 1.

Policy- or management goal	Information need	Increase or decrease of interest	Concrete examples	Structural or temporary	Information users	Phase in policy life cycle
<i>Safety</i>						
Maintaining coast line	Position of coast line	decrease	annual soundings along coast	structural	HK, RD	Measures
Natural and resilient coast	Surface area of natural habitat in the coastal zone	increase	surface area natural ecotope (like salt marsh, green beaches, eroding dunes)	structural	HK, RD, SD	policy formulation
	Open space development in coastal zone	increase	Maps with building in coastal zone	structural	HK, RD, SD	policy formulation
Safe rivers	What water level decreasing measures can be realized	neutral	Environmental planning along riverbeds (situation of obstacles like houses, trees, brick factories, farms; shape of winterbed; etc.)	structural	SD, RD	Measures

Table 1 Overview of new information needs (selection from total list) (Schobben et al. 2000).

The fourth national policy document on water management has some specific features, that were recurring in all the interviews and have an influence on the information needs. These features are:

1. The rising of the sea-level is a major threat for the Netherlands, as already half of the country lies below sea-level, protected by dikes and coastal dunes. Also, change in climate can lead to heavy peak flows in precipitation. Winter floods in 1993 and 1995 and flooding problems in 1998 have led to the notion that water should be the guiding principle in policy making, where, for instance, designation of areas for controlled flooding should reduce serious damage because of flooding (Ministry of Transport 1999). This is one of the most important issues in the fourth national policy document.
2. The third national policy document on water management was aiming at reaching water quality standards. Compared to this, the fourth policy document is hardly aiming at standards, but aims at implementing measures to achieve goals. A characteristic of setting water quality standards is that these are many times long term goals with slow improvements. The implementation of measures on the other hand can be much more dynamic, with the possibility to connect implemented measures with the state of a water body.
3. As much problems have specific local characteristics, actions and responsibilities are put at a local level. The national government does not set standards anymore, but takes a directing role.

Because these features are not fully worked out, it is not yet clear what influence they have on the information needs. Nevertheless, they are important for the conclusions that have been drawn, as discussed in the next section.

Conclusions

Apart from an overview of emerging information needs, from the various discussions some conclusions have been drawn on the issues that need more attention in providing information for future water management. These conclusions are:

1. Collection of information for water management should not be limited to physico-chemical and biological properties of the water system, but should be extended to information on the use and economy and even to 'policy-monitoring', which can be described as monitoring of the implementation of policies, like the degree to which measures have been carried out. Usually, this kind of information is collected on an ad hoc basis for a specific project. Monitoring on a regular basis of this kind of information could give a better view on the effects of written-down policies.
2. Water should become the guiding principle for spatial planning. Until recently, spatial planning was done largely on the basis of existing infrastructure with little or no concern for hydrological conditions. If hydrological conditions were not suitable for the planned use, they were adjusted to the extent needed. Especially in a densely populated country like the Netherlands, this situation has led to high costs for maintaining hydrological conditions for the specified land-use, and to deterioration of the ecological functioning of these areas, for instance as a result of desiccation. If water is to be a determining factor for spatial planning, information on the geohydrological situation is needed.
3. Responsibility for implementation of the national water management policy is more and more put in the hands of regional water bodies, arguing that regional problems can best be met at a regional level. A similar approach is found in the EU framework directive, where the member states can tune the policy to national conditions. This 'regionalization', both on the national and international level, brings about the issue of information-exchange and, related to this, the question what information should be collected at what level.
4. In order to provide concise and well-organized information, a limited number of 'indicators' should be developed to compile the information on water management. Such indicators should be powerful in communication (like e.g. bring back the salmon in the River Rhine by the year 2000) but should not lead to oversimplification of the issues. The main aim of the Dutch fourth national policy document is: "To have and maintain a safe and habitable country and to develop and maintain healthy and resilient water systems which will continue to guarantee sustained use". To translate this aim into information, it was suggested to define the next three indicators: (1) the number of hectares built-on area that is flooded when certain high water-levels are reached, (2) the extent to which functions of a water body are met, and (3) diversity in fish-species.
5. One of the limitations of monitoring networks is that they aim at building up or maintaining time series of measurements over the years. On the other hand, monitoring networks are not equipped for dealing with actual situations like floods, heavy rainfall, oil-spills, new priority substances or algal bloom. Critical evaluation of monitoring networks and their information needs should lead to conclusions on the possibility of reducing frequencies and number of locations for long-year time series, without undoing the continuity that is necessary to detect significant and reliable trends, thus making room for more flexible monitoring.

These conclusions on information issues for future water management indicate a direction for discussion. Further investigation is needed to be able to obtain insight into the consequences, e.g. for monitoring and assessment. On the basis of the inventory of information needs, the information strategy, to better specify the data to be collected, and the way the data should be collected, will be elaborated.

References

- Cofino, W.P. (1995) Quality management of monitoring programmes, Pages 178 - 187 in: Adriaanse, M., J. van de Kraats, P.G. Stoks and R.C. Ward (*Eds.*), Proceedings of the international workshop Monitoring Tailor-made, Beekbergen, The Netherlands.
- Ministry of Transport, Public Works and Water Management, 1999. New deal with an old enemy. Water management in the Netherlands: Past, Present and Future. RIZA, Lelystad, The Netherlands. 36 pp.
- Schobben, J.H.M., J.G. Timmerman, J. Honkoop and K. De Beer, 2000. Nieuw beleid, andere informatiebehoefte? (*New policy, new information needs?*) RIKZ/RIZA report (in press) (in Dutch)
- Timmerman, J.G. and J. Hendriksma, 1997. Informatie op maat: een raamwerk voor waterbeheer (*Tailor-made information: a framework for water management*) H₂O (30) nr. 17 p. 528 - 530. (in Dutch)

- Timmerman, J.G. and W.H. Mulder, 1999. Information needs as the basis for monitoring. *European Water Management* 2 (2): 41 - 45.
- Timmerman, J.G., J.J. Ottens and R.C. Ward, 2000. The information cycle as a framework for defining information goals for water-quality monitoring. *Environmental management* 25 (3): 229 - 239.
- Winsemius, P., 1986. *Gast in eigen huis, beschouwingen over milieumanagement (Guest in own home, contemplating on environmental management)*. Samson H.D. Tjeenk Willink, Alphen a/d Rijn, Netherlands. 227 pp. (in Dutch)