

## ***Summary of advisory report 45*** **FLOW OR FLOOD. KNOWLEDGE AND INNOVATION CHALLENGES FOR A WATERY NETHERLANDS**

### **Background**

Water management in the Netherlands is in transition. The centuries-old strategy of draining off water rapidly lacks possibilities and is even counterproductive where the current three-pronged task of water management – preventing flooding, combating groundwater depletion and guaranteeing good water quality – is concerned. A different method of approach is required which leaves room for the natural resilience of water systems. This switch from “stemming the flow of water” to “accommodating water” not only opens up new perspectives for the quantity and quality of water, but also creates new opportunities for water recreation and nature, and contributes towards an attractive residential and living environment. In spite of this, the transition to the new paradigm is not proceeding smoothly. Quite the reverse. In the Netherlands, buildings have since time immemorial been erected on land that essentially constitutes part of the country’s natural water system (polders, flood plains). Fleshing out the new paradigm therefore has an impact on the vested interests of diverse parties. To achieve this switch requires efforts which in size are comparable to the construction of the Delta works and in administrative and social complexity even exceed them. Is our knowledge infrastructure capable of adequately initiating and supporting this paradigm change? What changes in orientation and methods may be needed to achieve this? These questions are central to this advisory report, which is based on a detailed foresight study.

### **Challenges for the knowledge infrastructure**

In the sphere of water, the Netherlands has an extensive knowledge infrastructure, which has traditionally focused primarily on safety and “stemming the flow of water”. With this form of water management, the emphasis in knowledge generation lies in the sphere of the technical and natural sciences. The paradigm change outlined above presents numerous new challenges for knowledge generation and innovation. New knowledge and understanding are required, especially at the interface between water management and the social environment. It is therefore not surprising that the knowledge themes designated in the foresight study as having priority all relate to the interaction between water management and society. Insufficient light is shed on these knowledge themes (perception of water, value of water, participatory planning in water management, interdepartmental management of space and water) even in the present study. Also, the picture that emerges from the foresight study is one of a fragmented, sectarian and technocratic knowledge infrastructure in the water sphere, with a huge gap between the researchers on the one hand and policy and practice on the other. In the past, the attitude of the knowledge infrastructure may have been effective enough, but in the light of the new paradigm this approach no longer suffices.

The study’s conclusion is that modifications are urgently required in the organisation and methods of the water-based knowledge infrastructure in order to bring about a satisfactory change of culture. In particular, experience needs to be gained with other, more interactive and interdisciplinary methods of knowledge generation. The priority knowledge themes, which are mainly of a social sciences nature, need to be reinforced. The councils have taken the results of this foresight study as a basis for their report.

### **Proposed action**

The foresight study indicates the direction in which changes are required, but does not generate an all-encompassing agenda for water-related knowledge infrastructure in the coming decades. It is still too early for an agenda of such length; the idea that a paradigm change in water management is necessary is still very new and too little experience has been gained with projects based on the new paradigm. The complexity and radicality of the intended changes require a process approach. The councils advocate a growth model in order to achieve a gradual shift from the old to the new paradigm. This growth process may gradually result in a more structural reorganisation of the knowledge infrastructure. The process comprises four components, which are explained below.

### **Knowledge generation in innovative practical projects**

The new paradigm requires knowledge from various disciplines (exact and social sciences), which will be generated and used in interaction between authorities, companies, social groups and knowledge institutions. Strategic practical projects on a regional scale ("watershed"), in which spatial interventions shape the new approach to water, constitute an excellent framework for this. Large-scale practical projects of this kind have already commenced in several places or are at the planning stage. New practical projects can be expected, e.g. as a result of the advisory report of the Committee on Water Management in the 21st Century, the Fifth Policy Document on Spatial Planning and the Policy Document on Nature, Woodlands and Landscape in the 21st Century. The councils propose reinforcing the strategic knowledge component of these projects and creating space for experimentation for an interactive and knowledge-intensive development of innovative and integral methods of approach to space for water at watershed level. The generating of new, creative designs (technical and administrative) also falls within the scope of this form of knowledge generation. This should be effected along two lines. In the first place, the involvement of knowledge institutions in a number of strategic practical projects should be increased. In the second, it should be possible to use the knowledge and experience gained in other, similar projects.

### **Strategic research programmes**

The four priority knowledge themes (perception of water, the value of water, participatory planning in water management, interdepartmental management of space and water) run largely parallel to the GAMIN programme, a programme of the Netherlands Organisation for Scientific Research (NWO) which is funded by different departments and which focuses on increasing knowledge in the social sciences sphere in environmental and nature research. Reinforcing this programme presents good opportunities for removing the backlogs on these knowledge themes. The presentation of questions from the above innovative projects can show the way in fleshing out these themes. On the other hand, these research programmes need to create a sound knowledge base for feeding the innovative practical projects.

### **Breeding ground for new ideas and innovative plans**

In addition to practice-based innovation projects and strategic research programmes, investment is needed in the development of long-range outlooks and innovative plans in the sphere of space and water. These long-term foresight projects, with a time horizon of twenty to fifty years, can provide the necessary new impulses needed for the practical projects and research programmes. Thinkers and doers from government circles, the business community, social groups and knowledge institutions will gather together in changing combinations to generate outlooks and plans for the future in the sphere of water and space.

### **Different way of educating and training**

Broadening the scope of water management stands or falls with the availability of people who have a broad outlook and combine a thorough knowledge of one or more specialist fields with an affinity for a wide range of cultures and disciplines. There are many opportunities for shaping this increase in scope in educational and training courses, from multidisciplinary study and work groups to industrial placements and taught research into social problems. The need for courses in the natural sciences to develop a specialisation in social fields – as a consequence of extending the course – also presents opportunities. Potential for increasing the scope of courses can also be found in the major/minor model, with the possibility of combining an exact sciences major with a social sciences minor and vice versa. The plans for a bachelor's/master's degree also present opportunities. Apart from opportunities for students, facilities also need to

be available for those who work in the field of space and water to expand their knowledge and experience. The practical projects referred to above can be a valuable training school for both groups.

### **Implementation**

These four actions constitute a major impetus for the necessary changes in our water-related knowledge infrastructure. They are each important individually, but for effectiveness it is essential that they be elaborated in relation to each other. The Ministries of Transport, Public Works and Water Management (V&W), Housing, Spatial Planning and the Environment (VROM) and Agriculture, Nature Management and Fisheries (LNV) should take the lead in creating the organisational and financial facilities for achieving these actions.

The councils advise the above three Ministries to set up an independent task force to implement the four actions mentioned. The principal tasks of this “knowledge and innovation in relation to space for water” task force are to reinforce the knowledge component of strategic practical projects, to encourage strategic research, to promote the development of innovative plans and to encourage the integration of exact and social sciences in higher professional and university education. This task force should include authorities, the business community, social organisations and knowledge institutions and should be backed up by a small, top-line facility. It is important that elements of the social and exact sciences should be given equal standing, which should also be expressed in the composition of the task force.

In view of the great social importance of sustainable water management, the swift incorporation of new thinking into regular knowledge generation is essential. In order to accelerate this process, additional funds will be needed for a transition period of three to five years. The councils recommend setting up the task force for this period. For implementing the various actions they propose that a budget in the order of 10 – 15 million Dutch guilders be set aside each year during the transition period. The requisite funds could be provided via the Interdepartmental Committee on Economic Structure (ICES-K15), with a similar sum being contributed by stakeholders.

In order to be able to make a flying start, consideration should be given to reinforcing the “water division” of the Centre for Expertise on Multiple Space Use (Habiforum). In this context, the possibilities presented by the new Green Space Innovation Network and Agrocluster and the Council for Research on Spatial Planning, Nature and the Environment should also be explored.

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