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Institutional influences on transitions in water management

A comparison between Dutch and Flemish river management plans

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Introduction

To support the transition to integrated, nature-based river-basin management, institutions supporting such strategies and practices need to be established while existing institutions hindering the transition need to be gradually broken down and replaced (Fig. 1). Institutions play a vital role in transitions since they are the rules which determine the range of acceptable behaviour in society and how interactions are organised (North, 1990). This study draws lessons from the influence of different institutional frameworks in transitions towards nature-based river management by comparing institutional developments in the Dutch "Room for the River" programme and the Flemish "Plan Sigma".

Methods

Room for the River (RvR) in the Netherlands and the Sigma Plan in Flanders were established to protect against flooding from major rivers by integrating ecology and living environments with water safety programs (Hartgers et al., 2015; De Jonge et al., 2022). These programs showcase efforts towards institutional change. Since the two programs are organized differently, they have led to distinct institutional consequences, offering valuable insights. In this research we study how the institutional arrangements of the two programs contribute in different ways and with different speeds to nature-based river management transition. To this end we studied: policy documents (4 RVR, 3 Sigma), Research reports (2RVR, 1 Sigma), scholarly articles (2 RVR, 2 Sigma), and conducted interviews with water-management scholars (2) and a landscape-architect.

Institutions exist in a multi-layered nested hierarchy of rules: *Operational rules* (more rules that determine daily actions), *Collective Choice rules* (rules for selecting operational rules)

Constitutional rules (rules for selecting collective-choice rules) (Ostrom, 2005). This hierarchy illustrates how different institutions influence each other and is used to categorize institutions in this study to allow for more detailed analysis and understanding of their influence on transitions.



Figure 1: The X curve of transitions representing building up new institutions and breaking down old ones (Hebinck et al., 2022), combined with the three institutional levels at which change may take place (Ostrom, 2005)

Results

Room for the River

Due to high water levels in the 90's, allowing room for rivers became a basis for the high-water protection programmes in the 2000's (Rijkswaterstaat, 2000). This was formalized in law with a core planning decision by the parliament in 2007, combining water protection, ecological recovery, and spatial quality in a flexible and participative manner (Busscher et al., 2017). The rise and formalization of this new norm is a great example of a new *constitutional institution*, moving a transition into the stabilisation phase, see fig 1 (Rotmans et al., 2000). The *collective choice institutions* based on this included how the new rules would be implemented, which was through programmes with specific structures: the room for the river programme, but for example also the Meuse works programme. These programs were governed by a programme directorate and executed through cooperation of Rijkswaterstaat, municipalities, engineering companies and

regional water boards, partially informed through local participation (Rijkswaterstaat, 2000). Changing operational institutions included public participation, public-private partnerships and technical ways of working (De Jonge et al., 2022).

Plan Sigma

Plan Sigma had a similar motivation to the "Room for the River" initiative. It was designed to prevent flooding while enhancing spatial quality and nature around the Scheldt River and its tributaries (De Vlaamse Waterweg, nd). Initiated in Belgium in 1977, Plan Sigma is an integrated water management program that has evolved to better protect Flanders from flooding while balancing with ecological and landscape objectives. By integrally embedding this approach in the departments of mobility and public works this represents a *constitutional shift* (Meire et al., 1995; 2014). Instead of adhering to an absolute safety standard, the plan applies a risk-based approach. In the 1970s, space was allocated for the estuary, diverging from the traditional approach of large-scale hydraulic engineering projects, both examples of *collective choice institutions*. The plan is implemented through a broad collaboration of government agencies, experts, and societal actors, making it a multi-stakeholder approach that also marked an *operational institutional shift* (Van Lierde et al., 2013).

Discussion/ Conclusions

The main difference between the two programs that Plan Sigma was integrated in existing power structures, while for Room for the River new structures were installed backed up by law (*Planologische Kern Beslissing*), instantly setting up constitutional institutions and moving the transition into stabilisation. The consequences were that Room for the River attained its goals quickly, successfully, and within budget because no barring institutions needed to be broken down for the programme direction to implement innovative ideas (De Jonge., 2022). In Plan Sigma it took a lot longer to attain similar results, since old, contending institutions, required breaking down before the new integrated approaches could be implemented. On the turn side, while lauded and copied worldwide, when Room for the River was finished, and the

governing bodies disbanded, the new institutions established were gone, cut off from funding and official organisations. And since it had been separately organized, very little was internalised in the department of infrastructure and public works, where old, hard-infrastructure focussed institutions still reigned (WNF, nd; Busscher et al., 2017). The breaking down part of the X curve (fig.1), never occurred. Plan Sigma, which slowly but steadily built new institutions, while breaking down old ones, has fully internalised the integral, nature and area based, participative workways, moving on the X curve in classic fashion from experimentation to institutionalisation to stabilisation, developing institutions on the relevant levels, see fig 1. This demonstrates how important the breaking down of old institutions and internalization of new institutions in existing power structures is when aiming to support transitions.

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