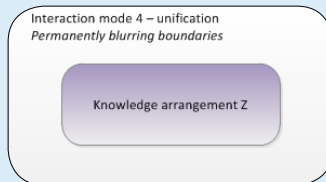
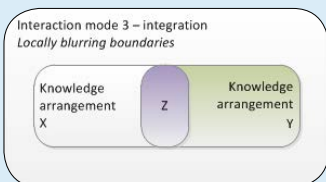
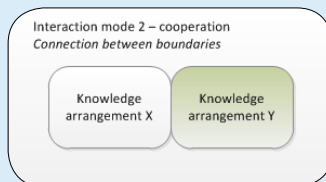
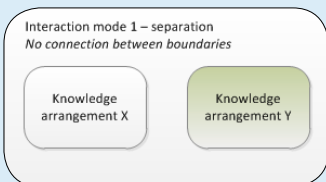


Greening flood protection in the Netherlands



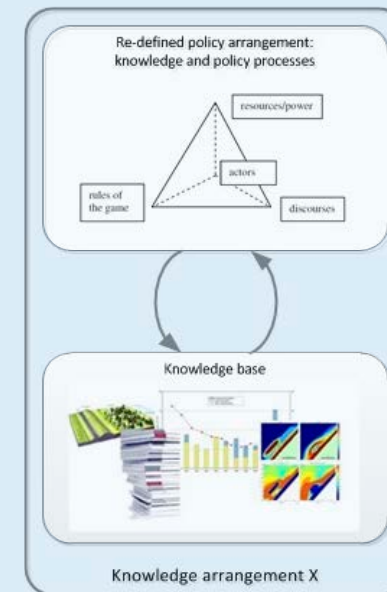
Interaction modes between knowledge arrangements

The dominant paradigm of ‘building hard structures’ in flood risk management is being challenged by approaches that integrate ecosystem dynamics and are ‘nature-based’. In Greening Flood Protection (GFP) approaches of this kind, natural dynamics contribute to flood risk management, the ecosystem is enhanced, and nature and flood protection are combined. Knowledge development and policy ambitions for GFP are advancing rapidly but actual full-scale implementation continues to lag behind. The knowledge gaps represent a key barrier to implementation because GFP involves technologies that are still unproven, works with knowledge uncertainties, and integrates knowledge from different disciplines and policy domains. The central focus of this doctorate research is on how knowledge about GFP decision-making enables and constrains GFP.

By contrast with conventional research and models looking at knowledge in decision-making - where the need to bridge the gap between knowledge and policy is central - this research assumes a strong connection between knowledge and policy in specific policy domains. This connection is conceptualised as a “knowledge arrangement” that shows how domain-specific actors, rules, resources and discourses structure knowledge and knowledge processes. GFP involves domains relating to nature and flood protection policy and therefore an interaction between knowledge arrangements. In three Dutch case studies, we showed how this interaction evolved and what is required to achieve GFP implementation. These case studies were the Sand Motor, the Afsluitdijk barrier dam and the Markermeer dikes.

We distinguish four levels of interaction in knowledge arrangements: separation, cooperation, integration or unification. In the Markermeer dikes project, the nature and flood protection knowledge arrangements remained separate: a flood protection project and an ecology project developed knowledge that did not overlap. The result was the development of two different and discordant knowledge bases, with only flood protection knowledge being considered in decision-making. By contrast, the Sand Motor was organised as a multi-functional project with integrated nature and flood protection knowledge arrangements. This led to integrated design development and the implementation of a multi-functional GFP solution.

This research shows that the structure of a policy domain has a direct impact on knowledge and knowledge processes. When design solutions are multi-functional (as is the case with GFP) and require cross-domain cooperation, there is a serious threat of multiple and discordant knowledge bases being developed and inhibiting implementation. The implementation of GFP depends on transcending the gaps between policy domains and knowledge arrangements should be integrated to produce integrated knowledge and knowledge processes. The research identified some critical factors, one of which is the balance between knowledge arrangements. The flood protection domain took precedence over the nature field to a significant degree in two of the case studies and paved the way to monofunctional approaches. Another crucial factor supporting integration in the Sand Motor project was the fact that it was organised as a pilot project. This allowed for the acceptance of uncertainties, ample design space and less need for trade-offs between functions.



Interacting knowledge arrangements

Further reading:
Janssen (2015). Greening Flood Protection in the Netherlands: a knowledge arrangement approach, PhD thesis WUR, <http://edepot.wur.nl/352709>