

# The dynamics of natural systems between the river and the sea and the whimsicality of policy processes

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**Introduction:** Policy issues concerning sediments are becoming more complex. The policy approach broadens and addresses the whole groundwater – river – sediment - soil system. This widens the scope of the previously quite narrow defined issue of sediment management to a variety of related issues, like nature development, the use of space, and economic and social issues. This increasing complexity of the policy process is represented in an increasing number of interests entering the policy arena and many stakeholders who represent them. With reference to the theory of complex systems – applying to both social and physical systems [1,2,3,4] we show how this complexity is expressed in whimsical policy processes, in which events, coincidence and people play a major role. How to deal with this whimsicality in the policy process and what does it mean for science and policy? In this paper we go into this question by examining two cases in the transitional area between the river and the sea. From these case analyses, we show that whimsicality is the normal state of the social system regarding sediments and we show how societal actors can deal better with this capricious environment through learning and consolidation of knowledge.

**Methods:** Two cases are analyzed. The first case is the policy process about the broadening of the Western Scheldt estuary. This case is extremely complex, involving two governments (i.e. Flanders and the Netherlands), issues of economics (the entrance to the port of Antwerp), nature restoration and development, agriculture and safety for flooding – combined with a complex physical system. It appears that contingent events and coincidence are as decisive for the final outcomes as are planning and design. Such events stem from both the physical system and the social system. Physically, the Western Scheldt is deemed on the verge of collapse and the decrease of, for example, intertidal areas seem to indicate so. However, there was uncertainty over the future development of the estuary, which affected the policy system in such a way that it had to respond rather than to govern the estuary. Socially, because of its broad scope, the societal actors coupled the broadening to several other developments, which in turn were decisive for the final outcome.

The other case is about dredging in the polders in the west of the Netherlands, the low lands between the river and the sea. In these areas the Water Boards are responsible for dredging. This task, however, was neglected in the past 20 years, and a backlog in dredging has been created. This backlog must be eliminated quickly so there is an urge to dredge. This urge within the Water Boards, however, is not shared among the stakeholders involved. Two experiments within the Water Boards has been set up to involve stakeholders in a very early stage of the planning of the dredging activities. These participatory processes have a clear idea about the involvement of stakeholders and a certain structure, which is open enough to cope with the dynamics of the process. The whimsicality of these processes is illustrated with critical events that occurred, the important roles people played and coincidence at certain moments that opened up new solutions. We will show how different kinds of knowledge (i.e. expert- , lay- and local knowledge) are being offered and used and played an important role in the understanding and especially new framing of the problem, which was a precursor for dealing with that capriciousness.

**Conclusions:** The whimsicality of the policy process does not mean that it is completely unmanageable or cannot be structured. A new approach is needed to deal with the dynamics of sediment management. Existing regulations and laws cannot cope with the new demands of this approach. The new approach is process oriented and has an open structure. ‘Organizing coincidence’, dealing with human factors and preparedness for a timely and adequate response on events are critical factors to deal with for policymakers. The role of knowledge in these policy processes is very important, but has changed. Lay knowledge and local knowledge have become more important and scientists and experts have to bring in scientific knowledge into the policy process in new, interactive, ways.

**References:** [1] Norgaard (1994) *Development betrayed*; [2] Byrne (2005) *Theory, culture and society* 22:95-111; [3] Cilliers (2005) *Theory, culture and society* 22:255-267; [4] Kauffmann (2000) *Investigations*