

# Matching specialist knowledge with end user needs

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**Van Koningsveld, M., 2003. Matching specialist knowledge with end user needs. Bridging the gap between coastal science and coastal management. PhD thesis, Twente University, Enschede, The Netherlands. ISBN 90-365-1897-0**  
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Historically, the abundance of resources in coastal zones has been a great attractor for human activities and settlement. The coastal zone, however, is a dynamic environment. It continually changes under the influence of natural processes as well as human interference. As a result societal values and interests are sometimes gained and sometimes lost. With increased socio-economic pressures on coastal areas, some form of regulation needs to be imposed in order to ensure safe and sustainable use and development of this fragile environment. In this context, coastal management is a continuous process aimed at harmonizing the drive for economic development and use on the one hand and environmental protection on the other.

Traditionally, specialists in coastal morphology and hydrodynamics play an important role in the above-described coast related decision processes. They may, for instance, assist decision makers in the design of effective and 'responsible' management measures and the impact assessment that is necessary for an objective comparison of alternatives. This interaction between coastal science and coastal management has been established in an attempt to facilitate more or less rational planning for an otherwise uncertain future. A significant amount of research is aimed at advancing the knowledge of coastal processes and the resulting coastal behaviour. The information produced by these 'specialists in coastal behaviour', however, is not always recognised as useful by those responsible for the eventual decision-making. This thesis describes an effort to better understand the nature of this dissatisfaction and get some grip on assessing what knowledge and information is useful to coastal policy makers and managers.

Based on first-hand experience as well as practical cases described in literature we may identify a variety of symptoms associated with the above-described sub-optimal cooperation between specialists and users of specialist knowledge. Although the existence of some kind of 'gap' is widely acknowledged, no adequate framework seems to be available to describe what goes wrong and to suggest potential ways to bridge this gap. To remedy this problem, the work reported in this thesis aimed to *"contribute to the insight in the situations and processes that are associated with a 'gap' between specialists and users of specialist knowledge that has been observed in practice and use this insight to develop a methodological approach to match specialist knowledge with end user needs"*. The framework for analysis,

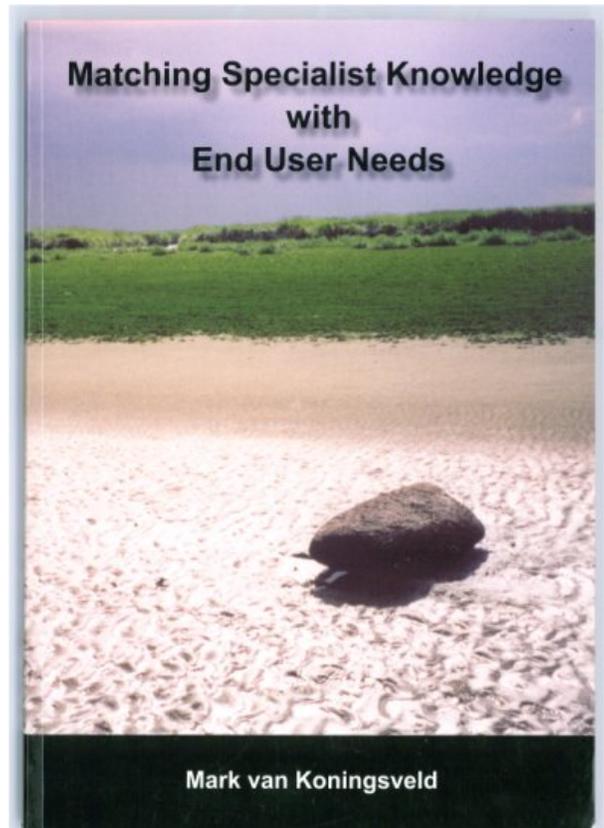
suggested in this thesis, regards coastal management as a chain of interdependent problem solvers that rely on each other for information. Each interaction in this chain involves two actors with a certain degree of knowledge and responsibility.

According to the analysis framework, the interaction between coastal science and coastal management -defined in this thesis as a generalist-specialist interaction is basically concerned with the effective introduction of detailed (scientific) physical information into a more aggregated decision process. When a research project has no end users -defined in this thesis as free research-, the presence of the earlier mentioned 'gap', consequently, cannot usefully be established.

Furthermore the analysis framework assumes a cyclic change of focus in the information need of each problem solver; at the (strategic) level of research funding, as well as the scientific level of the research itself. At a policy level, for example, this cycle can be recognised in the stages of policy development, application and evaluation. Different stages of this policy cycle, logically involve different activities and a different need for information. The same stages can be identified in the development of coastal engineering knowledge. After a development stage, knowledge should be applied and subsequently be evaluated. Although these stages may not be completely separated or even explicitly indicated, they are useful for our analysis. The pace of these cycles may be different at each level. The perceptions of end users as well as researchers vary with the progression of the aforementioned cycles. A divergence between the perception of researchers and end users of the problem at hand and the knowledge and information that is needed to deal with it, is suggested to be a fundamental mechanism underlying the 'gap' between coastal science and coastal policy and management.

Analysis of 14 research programmes shows that the usefulness of research is indeed a matter of perception and that the perceptions of researchers and end users *do* tend to diverge. Development of new policy, for example, is often paired with specific knowledge development. After some time policy makers who initially called for information to support their new policy *development* may have moved to the next phase of *application* at a policy level, while researchers are still developing knowledge for the previous phase as a result of a pace difference. At this point, perceptions of policy makers and researchers on what should be done within the framework of the research project start to diverge. Policy makers want to apply existing knowledge whereas researchers are of the opinion that the existing knowledge should be developed further to be suitable for application. When the difference in perception becomes too large, dissatisfaction grows and research programmes may be terminated or discontinued, or otherwise intervened in. Emerging new societal challenges may give rise to the initiation of a new policy cycle. When in reaction a new research programme is initiated, both perceptions are reset to 'development' and the process starts all over again.

The framework of analysis already indicated that the above described divergence has no meaning for 'free' research projects. However, in cases where end users do have an interest in the outcome of the research -in this thesis defined as driven research- this divergence *does* present a problem. Literature suggests improved communication between researchers and end users as a way to bridge this gap. But communication about what? Analysis of the 14 research programmes illustrates that the focus of research projects is often driven mainly by scientific interests. This promotes a continued divergence of perceptions.



Bridging the 'gap' by a translation of so produced end results has proven hard if not impossible. As a preferred alternative this thesis suggests to balance the research drive by a closer involvement of end users during the project. Practical experience shows that unguided communication between researchers and end users can easily lead to great confusion. A methodological approach is needed to structure the necessary technical interaction in driven research projects.

This thesis suggests a [methodology](#) aimed at structuring the discussions that are necessary to prevent or postpone the seemingly inevitable divergence of perceptions. A key element in this methodology is to use the end user's information need as an explicit starting point for knowledge development and to continually match specialist research with the information need of end users. As a guideline we suggest to make the essential components of coastal decision making explicit. A template combining these explicit elements -in this thesis defined as a (basic) [frame of reference](#)-, may then be used to guide the communication process. Analysis of practical cases indicates that successful policy development is related to a 'basic' frame of reference comprising explicit definitions of both strategic and operational objectives applied in a 4-step decision recipe of (1) a quantitative state concept, (2) a benchmarking procedure, (3) a procedure for CZM measures or intervention and (4) an evaluation procedure. The communication process may be guided by assuming that 'ideally' all elements of the 'basic' frame of reference need to be made explicit. An assessment of the elements that have 'actually' been made explicit reveals so-called 'white spots'. These 'white spots' represent the remaining information that is needed for successful policy development.

Applications of this 'basic' frame of reference approach show its high potential to better integrate coastal engineering science and coastal policy and -management. A test of the methodology's practical use in analysing existing and successful elements of Dutch coastal policy and identifying 'white spots', yielded positive results. Practical application of the approach in support of end user oriented knowledge development in the context of a coastal research project also yielded positive results. Based on these case analyses we conclude that the 'basic' frame of reference approach can be successfully applied in support of efforts to match specialist knowledge with end user needs. Whether or not the method works with respect to preventing or postponing the divergence in perception in the long run is not something we have been able to sufficiently establish during the limited time available for this research project, although the results so far are encouraging.

Projects where Frame of Reference approach has been used:

- <http://www.thecoastviewproject.org>
- <http://www.conscience-eu.net>
- <http://www.micore.eu>
- <http://www.ecoshape.nl>

More background information on the Frame of Reference, how it can be used and how it was used is found at the following pages:

- [Frame of Reference](#)
- [Frame of Reference - How to use it in 'driven' research settings](#)
- [Frame of Reference - Practical examples from previous projects](#)



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