Commentaries

Management of Sediments Through Stakeholder Involvement

The risks and value of engaging stakeholders when looking for solutions for sediment-related problems

Lasse Gerrits* and Jurian Edelenbos

Centre for Public Management, Erasmus University Rotterdam, P. O. Box 1738, 3000 DR Rotterdam, The Netherlands

* Corresponding author (gerrits@fsw.eur.nl)

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Abstract

Goal, Scope and Background. The management of sediments poses complex problems. One of the problems is the division of decision-making power, knowledge and money across different actors. These interdependencies call for stakeholder involvement. The various risks of stakeholder involvement are discussed from practical experience. Following this discussion, recommendations will be made regarding the interactive management of sediments in national and cross-national rivers.

Main Features. The first two sections will show stakeholder involvement to be both required and necessary. Stakeholder involvement ranges from no involvement, e.g. just being informed, to the other side of the scale where decision-making power is handed over to the stakeholders. Each level of participation has its own rules and roles for stakeholders, experts and policy-makers. Once a certain level is chosen, the participants should adhere to it. The third section focuses on the risks accompanying stakeholder involvement. Two kinds of pitfalls are presented and discussed. The first covers general pitfalls that may occur in all kinds of processes. They comprise a lack of representativeness among the participants, the different levels of knowledge between experts and laymen, lack of communication between parties, clashing expectations when parties expect a different process than others, and finally the problem of neglecting the stakeholders when the policy process arrives at the decision-making phase. The second kind of pitfall occurs in international rivers. Matters become even more complicated when rivers cross borders. In that case, stakeholder involvement means dealing with different cultures and institutional differences as well.

Results and Discussions. All these pitfalls mean that the process of stakeholder involvement is not as straightforward as it may seem. Every pitfall noted is accompanied by recommendations for the participants in future interactive processes of sediment-related policy-making.

Conclusions. Involvement of stakeholders when dealing with sediments is complicated. The pitfalls mentioned call for a deliberate approach and set-up of such a process. Since European policy-makers tend towards a higher appreciation of stakeholder involvement, it would be advisable to pay attention to those differences.

Recommendations and Outlook. Apart from the recommendations given in this article, it is recommendable to carry out more empirical research into policy-processes regarding the management of sediments. To date, much research in this field has been of a theoretical nature, so that more empirical data is required.

Keywords: Interactive decision-making; sediments, management; stakeholder involvement; sustainability

Introduction

The management of sediments poses some complex problems. Apart from the technical problems with sediments (i.e. the dredging or storage of contaminated sediments), the size of the river basin proves to be a challenge to the actors dealing with it. The complexity of the technical problems means that no single actor may solve them all and must therefore look for partners to work with. Different values and interests are at stake when solving the problems with sediments; thus, there are no clear-cut answers. Also, the scale of the problems means that co-operation is necessary in order to avoid a fragmented approach (Apitz and White 2003) and to avoid policies in water and sediments that are not supported by the stakeholders (Van Ast and Boot 2003). Most actors involved in sediment issues come from public, private or societal sectors and are interdependent in one way or the other. For example: a government might have the power to enforce laws regarding the dumping of contaminated sediments, but it does not have all knowledge required to formulate those rules. A dredging company might be able to enforce a change in laws to its benefit, as it has some of the knowledge required. However, it can not develop that knowledge if customers (e.g. port authorities) won't buy their services, which in turn leads to a lack of resources for research and development. Moreover, stakeholders, like farmers, NGOs and environmental organisations, also have a say in developing policy; they have the means to obstruct this development. Consequently, dredging companies and government agencies also depend on their input. This example of interdependency shows the essence of being part of a modern network society (Castells 2000). At the heart of this matter lies the simple rule that no single actor can operate without the input of others. This input consists of many factors – money, support, knowledge, authority, etc. Even actors unaware of the interdependencies will be caught up by others in the end due to reciprocal behaviour (Hahn 2003), or because selfishness does not provide rewards in the longer term (Frank 1988).

Apart from all this, internalisation of sustainable behaviour can be reached best through interaction between the various stakeholders of the river (Van Ast 2000a). It is therefore not surprising that the European Commission has demanded international water management to become increasingly interactive (Van Ast and Boot 2003), most recently through the Water Framework Directive (EU 2000, preamble no. 14), but also through other directives and agreements. To put it short, the plea for stakeholder involvement when dealing with sediments in rivers seems to be a solid one.

But involving other actors in such a process isn't as straightforward as it may seem. There are some considerations to be taken into account before entering a process of stakeholder involvement aimed at sediment issues. Ignoring these considerations might lead to a dysfunctional process and, consequently, to an unsatisfactory outcome. These considerations are explored in this article. Stakeholder involvement has potential advantages, most notably the enrichment of the process in the number of ideas and solutions and the increase of support for the proposed policy. However, because of bad implementation of stakeholder involvement in practice these advantages are often not realised. We argue that contemporary politics in North-West Europe oftentimes overlooks the difficulties of stakeholder involvement and run blindly into these complex processes. Our intention is to address these implementation failures, so it is possible to learn from them.

The article consists of two parts. First, we will determine what stakeholder involvement is by highlighting central characteristics (section 1) and degrees of stakeholder involvement as defined in social sciences (section 1.1). In the second part of this article, we will present the potential risks, based upon experiences with stakeholder involvement with respect to management of sediments. Since the design of an interactive process will differ from each case, it is not possible to present a standard design for such a process. Instead, we want to make policy-makers and scientists aware of the risks and values they may encounter once they engage such a process. Each risk or pitfall leads to a recommendation for practitioners and scientists as stakeholder involvement is considered for dealing with sediment issues (sections 2.1 to 2.3). Also, attention will be paid to the difficulties of stakeholder involvement once rivers cross borders and the policy process has become international (section 2.4). In the final section, we draw the conclusions from this overview of risks and values of stakeholder involvement in the management of sediments.

1 The Essence of Stakeholder Involvement

Nowadays, considerable energy and hope have been invested in stakeholder involvement in policy problems. In the realm of (international) water management, the recent Water Framework Directive (WFD) issued by the European Commission shows support for the idea that solving problems with water management must be done in co-operation with stakeholders. Preamble 14 and article 14.1 state that the European Commission demands member states to involve all stakeholders at the river basin in the policy process (European Commission 2000). The tendency towards stakeholder involvement in general can also be observed in many countries (inter alia Renn et al. 1995, Healy 1997, Coenen et al. 1998, Tunstall et al. 1999, DeLeon 1992 and 1994, Durning 1993, Fischer 2000, Mason 2000, Dobss and Moore 2002, Murray and Greer 2002). Stakeholder involvement exists under different names, such as interactive governance, participatory processes, joint-up processes, and so on (Healy 1997, Mason 2000, Edelenbos 2000, Pollitt 2003). In the relevant academic and professional literature, many definitions and descriptions of stakeholder involvement can be found (Renn et al 1995, Healy 1997, Verweij and Josling 2003). A common element in those definitions is that governments develop policies in consultation and co-operation with stakeholders, which can be either professional organisations or individual citizens. Stakeholder involvement, however, is a multi-faceted phenomenon that can be viewed from a number of theoretical perspectives. In order to avoid semantic discussions, we will simply define stakeholder involvement as "the early involvement of individual citizens and other organized stakeholders in public policy-making in order to explore policy problems and develop solutions in an open and fair process of debate that has influence on decision-making" (cf. Edelenbos 2000:39). Stakeholder involvement differs from traditional public consultation procedures mainly in that stakeholders are involved early enough to influence policy as it is formulated, as opposed to merely being given the opportunity to modify proposals slightly after they have been developed, or not giving them an opportunity at all.

Policy-makers and administrators are vulnerable to the criticism that their plans and decisions are the products of a predominantly inward-looking politico-administrative assessment process. In other words, that decision-making is opaque and excludes important stakeholders, especially 'ordinary' citizens and non-experts (Fischer 2000). This state of affairs is neither healthy for democracy nor conducive to quality of policy (King 2003, Verweij and Josling 2003). Stakeholder involvement is seen as instrumental in opening up the policy-making process, making it transparent and understandable.

Advocates of stakeholder involvement point out that citizens and pressure groups have **obstructive power**. Involving parties with obstructive power in the development of policy at an early stage reduces the risk of a policy's implementation being impeded by legal proceedings and other tactics employed by those who oppose it (Renn et al. 1995, Healey 1997). The involvement of citizens and stakeholders may extend the early phases of policy development, but through securing support, policy implementation is speeded up enormously. Involvement can also been seen as a strategic measure since it can be used to counteract the possibility of obstruction.

Furthermore, citizens and pressure groups can **enrich** the policy-making process by providing knowledge, information and other forms of input that would otherwise be difficult for 'deskbound' policy-makers and administrators to acquire (Fischer 2000). No one can provide as much local insight to aid planning for the development of a dumping facility for dredged material as the local dredging companies, the people living in the vicinity of the site and the pressure groups that work to protect the natural and human environment in the area. Other actors are also possible. Such parties should therefore work together as closely as possible with the officials and experts behind the project to devise sound plans and ideas. Apart from this, there is also a consideration of a **democratic** nature. In a democratic society, it is deemed fair to have other actors affected by a certain policy (i.e. the construction of a dumping site) to have a say in the decision-making process. Mostert (2003) shows that par-

ticipation of stakeholders in water management complements and amplifies democratic systems and Norris et al. (1998) carried out a worldwide survey showing a global tendency and growing support away from hierarchic steering by authorities towards more bottom-up forms of democracy.

To summarise: stakeholder involvement can improve the quality of processes of decision-making. Through the involvement of other actors, more ideas, solutions can be generated and local knowledge can be unlocked. At the same time, it might diminish the resistance against policies.

1.1 Degrees of stakeholder involvement

Stakeholder involvement can be realised through different degrees of participation. This ranges from simply informing stakeholders to delegating the decision-making power to them. While the first option does not resemble the early involvement of stakeholders, the latter is on the other side of the scale where a delegation of powers has taken place. Based upon these two dimensions, obstructive power and enrichment, the following table can be drawn.

Table 1 illustrates that there is no single and best way of stakeholder involvement. Several degrees can be distinguished, each degree having its own rules of the game and roles for the actors in play. In general, there are three different types of actors: (1) policy-making actors, (2) experts, and (3) citizens and non-governmental organisations. The first group of actors comprises governments (administrators and politicians): these actors will most often be the ones deciding on money and power. In most cases, they will make the decision about an issue brought to their attention. The second group consists of scientists and consultants able to deliver the knowledge needed to decide on measures to be taken – which is necessary, given the complexity of the management of sediments. The third group encompasses all those people and organisations that are affected by, or have an effect on, the policy concerning the sediments. They may be people living near a river or a (future) dumping site. But it may also concern

Table 1: Degrees of participation and influence in policy processes

Degrees of influence according to the scale by Edelenbos and Monnikhof (1998)	Governance styles within the scale of participation according to Pröpper and Steenbeek (2001)	Role of the stakeholder	Role of the expert	Role of the policy-maker
Stakeholders are not involved	1. Closed authoritarian	1. None	1. Delivers information to the policy-makers on demand; no information to stakeholders	1. Policy-makers determine policy; policy process is closed, no information is issued
1. Stakeholders are informed – they remain passive	2. Open authoritarian	2. Stakeholders receive information but do not deliver input to the process	2. Delivers information to the stakeholders on demand of the policy-makers	2. Policy-makers determine policy; information is issued to the stakeholders
2. Stakeholders are consulted	3. Consulting style	3. Stakeholders are consulted, act as interlocuters	3. Delivers information to the participants on demand of all parties; experts provide another flow of information to the process, next to the flow of the stakeholders	3. Policy-makers determine the policy and opens the process to input by stakeholders, but is not obliged to adopt their recommendations
3. Stakeholders give advice	4. Participative style	4. Stakeholders become advisors to the process	4. Delivers information to all parties on demand of all parties and investigates suggestions from participants on demand of the policy-makers	4. Policy process is open to input (other ideas, suggestions, etc.) by stakeholders; they take the input into account, but have the right to deviate from it in their decisions
4. Stakeholders become co-producers	5. Delegating style	5. Co-decision makers within the set of preconditions	5. Experts treat policy-makers and stakeholders as equal clients; advice and knowledge provision to both actors	5. Policy-makers make take the input of stakeholders into account, and honour it if it fits into the set of preconditions
	6. Co-operative style	6. Policy-partners on the basis of equivalence	6. Experts treat stakeholders as equal knowledge providers; must keep an open mind to suggestions and ideas from the stakeholders	6. Policy-makers interact with stakeholders on the basis of equivalence, they take the input of stakeholders very seriously
5. Stakeholders do not only produce solutions, but also decide about them	7. Facilitating style	7. Taking initiatives, making decisions	7. Experts support stakeholders with knowledge; experts treat stakeholders as their clients, need no approval of the policy-makers	7. Offers support (money, time of civil servants, etc.) and leaves the production of solutions and decisions to the participants

companies that contaminate sediment by dumping wastewater, and companies that dredge or clean sediments, etc.

The five levels of stakeholder involvement illustrate an increasing influence of citizens and non-governmental organisations on the policy process. These stages represent a scheme for participation. It does not state what the requesting organisation should do, but it illustrates that 'involving stakeholders' can be exercised on different levels, with each level requiring a different approach to the process. Different rules of the game and different roles for the actors to play in the participatory process – the manager of the process should be aware of this at all times.

Involving all stakeholders might be wholly impossible since they are many, perhaps too many when implemented at a river basin scale. The group would be too large to deal with and the process would become unmanageable. To counter this, one has to realize that not all stakeholders need to be involved at the same level. Some stakeholders just want to stay informed, while others want to give advice. Therefore, it must be taken into account that a process does not take place within a single level of participation. And each tier means a different amount of effort from all parties involved. At the same time, exclusion of stakeholders is not a wise thing to do.

A case study by Van der Meulen et al. of the Maaswerken project (2004) shows how the exclusion of stakeholders can invoke public resistance. The Meuse (Maas) is a river running from Belgium through the southern part of the Netherlands and debouches into the North Sea. Once it has crossed the border in the south of the Netherlands, it is deemed the Grensmaas, or Bordermeuse. Here, the river needs to be widened so it can process higher peak discharges. The responsible governmental bodies wanted to conclude a deal with the gravel extraction industry. The gravel extraction industry would carry out the widening and, in turn, would sell the excess soil and sediments from the operation on the market. However sound this deal seems, no other stakeholders were consulted in the planning phase. Once this deal became public, the local stakeholders (people living along the Meuse) met the plans and the project with resistance. Based on events in the past, they had a negative view on the extraction industries and did not like the idea of having them widen the river at all. The project was severely delayed due to this resistance. The authors conclude that it would have been wiser to have the stakeholders to participate in the whole process, rather than letting them face a concluded deal with a suspected party. This example shows what exclusion of stakeholders can have a negative impact on a process.

2 Experiences with Stakeholder Involvement: Some Risks and Lessons

Besides being aware of the different degrees of stakeholder involvement, it also comes with various risks, or pitfalls, as we will call them. In this section, we will present some experiences with stakeholder involvement (amongst others, Healy 1997, Tunstall et al. 1999, Edelenbos 2000, Mason 2000, Edelenbos and Monnikhof 2001) and we will illustrate them with examples from the practice of the management of sediments. We will describe the potential pitfalls with regards to asymmetry (section 2.1), stakeholders' expectations (section 2.2), continuous involvement of the stakeholders (section 2.3) and international co-operation (section 2.4). We draw lessons from these risks of stakeholder involvement in order to deliver a practical contribution to the development of stakeholder involvement for the management of sediments.

2.1 Asymmetry in stakeholder involvement

In this section, we will discuss one of the main themes of stakeholder involvement, which is asymmetry. When involving actors in a process it will be clear that there are, and always will be, several asymmetries between them. In other words: most of the participants will not be equal in terms of representativeness (section 2.1.1), knowledge (section 2.1.2) or communication (section 2.1.3).

The term asymmetry indicates the inequalities between actors. When acknowledging that there will always be differences between the actors involved, no genuine symmetry between them can be reached and inequalities can't be ruled out. This raises the question, nevertheless, as to whether or not symmetry should be persuaded. The answer is that even though actors might be symmetrical in terms of representativeness, knowledge and the way they communicate, there is still the continuous change of the environment, the entrance of new actors in the process and the development of new insights and information. In other words, perfect symmetry is a hypothetical situation that will not occur in practice. Nevertheless, the asymmetry must not be too large, as we will argue below. The question concerning whether asymmetry in a case is too large or not is not something that can't be answered in general here as it differs from case to case. Much depends on the target group the group of people policy-makers want to address.

2.1.1 Lack of representativeness

An oft-mentioned reason for pessimism concerns the stakeholders not being genuinely representative. It is argued that the actual participants in stakeholder involvement, other than the institutionalised ones such as water boards, are a kind of elite made up of well-educated male participants over the age of 40, a group of people who do not necessarily represent the inhabitants of a certain site, although they are supposed to do so. Critics who worry about the representativeness and the diversity of the stakeholders believe that the emphasis on stakeholder involvement cripples decision-making, since the process does not deliver results that reflect the will of the people any better than the results of decision-making by elected or appointed decision-makers. Therefore, it is of importance to select the people who will join the process well. Attention must be paid to the diversity and the representativeness of the stakeholders, and the accessibility of the policy process. Homogeneity must be avoided as long as it does not represent the characteristics

of the societal target group. This can be realised through careful stakeholder mobilisation and selection. The following steps must be included in the process of selection. Once the issues at stake are known, one has to carefully map the potential interest groups and try to mobilise them separately and personally. General invitations through advertisements in a local paper, for example, will often not work; they do not appeal to the specific interests of the stakeholders as their interests might differ. The second step is to build a network of the selected people and to involve them actively. It sometimes takes some persuasive power to get them onboard. It must be made clear what the advantages are of joining the process. Institutionalised actors will have a clearer view on what their interests are, so less powerful stakeholders should be helped to organise themselves. During these stages, the composition of the group of stakeholders must be in accordance with the composition of the target group.

Since the Netherlands is located at the mouth of three major European rivers, the Rhine, the Meuse and the Scheldt, regular dredging is required in order to keep navigation possible. The excess dredged material frequently is stored in depots. Fierce public resistance often obstructs the building of deposit sites. This also happens in the province of Gelderland where contaminated sediments are to be stored in an abandoned gravel pit near the village of Ingen. The application for the permits for the storage of the sediments has been through most of the legal procedures, but strong opposition from the local community have delayed plans severely. The authorities did not take their perspective into account. This opposition has been organised by a limited number of people. They have been very vocal and, subsequently, some local politicians have expressed their doubts about the plan. The problem here is that a selection of stakeholders has not been carried out. The decision-making process was never intended to be interactive, but some stakeholders have still expressed their resistance against the process. Now this group receives all attention and even sympathy, but the question whether there is asymmetry in the representation of all different interests is legitimate. Regardless of the possible solution of the issue and regardless of the question which is right, it would have been wiser to have all parties represented rather than first putting all attention to the authorities and then, when that fails, to an opposition group.

2.1.2 Different levels of knowledge

Getting other people involved in a process means one will have to deal with people who might not have expert knowledge and experience on the subject. There is no doubt that this applies to sediments as well. For example, morphology is extremely complicated when viewed through the eyes of laymen. At the same time, experts may lack knowledge as well. Often, only scientific knowledge is regarded as real knowledge. But the knowledge from laymen, such as experiences from daily practice, is as valuable as scientific knowledge. Bringing in different kinds of knowledge can result in richer and more comprehensive results. Isolating important decisions from public involvement will generate policy errors (Peters 1996:55), that is the policies being carried out that do not address the right problem. Involvement of stakeholders makes decision-making on sediments less technocratic and more democratic (Fischer 1990). 'An expert is not a special kind of person, but each person is a special kind of expert, especially with respect to his or her own problems' (Mitroff 1983: 125). In other words, there is a difference in knowledge between the people involved. On the one hand, there are the lay-people who don't possess the knowledge required to understand the complexity of the management of sediments. On the other hand, there are the scientists who lack the daily experience from local people.

Once this is understood, it is important to reduce these differences. It is helpful to allocate resources to educate lay-people who do not possess the necessary information or knowledge. This education can be done in two steps. The first step is to discuss the facts that are relevant in the specific case. If the case is about the storage of contaminated dredged material, the discussion might include the health hazards of the contamination and the seeping-through of the contaminated sediments from the site to the environment. During these discussions, it will become clear which facts lay-people are familiar with and what kind of information they don't possess. After registering the remaining gaps of knowledge, experts will have to find ways to transfer the knowledge. Lectures might be a good way, but one has to consider that the language used should be simpler than when educating academics. At the same time, stakeholders must be asked to bring in their knowledge. It is important to allow the know-how used to become a fusion of different types of knowledge in order to reach a higher order of knowledge, negotiated knowledge (Van Eeten & Ten Heuvelhof 1998). This is a kind of knowledge that is the result of careful debate and negotiation among actors with different interests and world views. It is knowledge that has been agreed upon and which meets scientific standards.

The Western Scheldt estuary is the maritime access for the port of the city of Antwerp in Belgium. Because of trends in shipping, the dimensions of the ships are continuously increasing. Consequently, the Western Scheldt needs to be dredged to maintain the current depth and, from time to time, additional dredging must be carried out to reach greater depth, as ships require this. Meijerink (1998) has carried out a detailed study about the negotiations regarding the deepening of the waterway. Following the deepening to 38 feet, in 1997, the Flemish government has requested a new deepening. The research reports will be finished mid-2004. The organisation that supervised the research process had taken into account the fact that the stakeholders involved did not possess the knowledge or information necessary to understand the consequences of the deepening to the morphology of the riverbed. To meet this deficiency, the organisation set-up meetings, open to all stakeholders, where experts tried to explain the basics of morphology. This led to a better understanding of the research findings on the Western Scheldt estuary.

2.1.3 Confusing communication

In the world of science, and especially when it comes to a highly specialized topic like the management of sediments, there is a real danger of communication problems. For example, when experts talk about morphology they use a special kind of language, i.e. jargon which is difficult to understand for ordinary citizens. This can create a lot of confusion.

It is important that one has to be aware of the different languages being spoken by experts and non-experts. If possible, one could try to develop a common language that everyone can understand. This is a time-consuming activity and takes place in the initial phase of the process, but it can save a lot of confusion during the process of stakeholder involvement. The invested time can be regained as time-consuming quarrels and misunderstandings are prevented.

2.2 Clashing expectations

Inviting stakeholders to join raises expectations about their role in the process and their influence on the output of that process. Earlier in this article the various degrees of participation were discussed. It was mentioned that there are differences between informing stakeholders, and committing them to the production of a solution. The major pitfall here is that the actors involved have different expectations about the degree of participation and, hence, might become dissatisfied when the actual involvement does not match expectations. For example, a governing body of a river can invite people living near a dredged material dumpsite to come up with new ideas about how to address the dumping of contaminated sediments. They are consulted, asked to give a recommendation. However, should this not be properly communicated, the invitees might expect to take part in the decision-making. The result will be that their expectations rise too high, thus cannot be met, resulting in distrust, downright pessimism and obstruction of the process. Next time, it will be far more difficult to invite them again and to convince them of the measures proposed. Furthermore, it is likely that the stakeholders will not co-operate in implementing the decision, and will try to obstruct it. In this example it might happen that they will use all means available to prevent the construction of the dumping site.

This is not a plea for total openness of the policy process. Neither is it necessary for the inviting governments to fully accept the advice, comments or any other output by the stakeholders' panel. It is necessary, however, to make very clear what is expected from the stakeholders, and what will be done with their input.

The following lesson can be learned from this experience: make very clear what the degree of participation (their influence in determining the outcome) is when stakeholder involvement is considered. Point out that 'being invited to join the process' does not necessarily mean that the participants will have a say in the final decision. A careful management of expectations before starting stakeholder involvement is required to make it successful.

2.3 Keep stakeholder continuously into play

Practices of stakeholder involvement show that they are temporary and often lose meaning as the phases and procedures of decision-making draw near. In this changeover, that often takes much time, stakeholders lose sight of the processes and their input. Governments try to convert the input out of the process of stakeholder involvement into policy. Often, stakeholders' disappear in this new phase of decision-making. That creates disappointment, distrust and perhaps even obstruction of the policies to be carried out. For example, when it is agreed that sediments can be dumped at sea, stakeholders must be kept informed of the possible decisions made after the process took place. If, one day, they find out that the sediments are not to be dumped at sea but rather on land – perhaps because of advancing insights – they will be surprised, to put it mildly.

The lesson learned is that stakeholders must be kept in play also when the phase of decision-making arises, and governments must make their final considerations and decisions. Stakeholders have to be informed continuously about new developments, considerations and assessments that take place during the procedure of decision-making. If possible, let them be part of the decision-making process.

2.4 Cross-boundary co-operation: clashing cultures and institutions

So far, the discussion covered general pitfalls that can occur in every stakeholder process. In this section, we will determine the risks when international co-operation is concerned. Cross-boundary co-operation in environmental issues is still underdeveloped (Mitchell 2002). Moreover, many of the early initiatives were mere agreements on paper that often lacked ratification and implementation (Van Ast 2000b). Nevertheless, rivers often cross borders, or are a border themselves. This means that the issue of sediments has an international dimension. For example, if a plant in one country dumps wastewater, and contamination combines with sediments, the particles will be transported to the next country, transferring the burden of cleaning to that country. Policy-making for international environmental issues has its own dynamics and complexity – which can't be solved in a fashion like international security (Baylis and Smith 1999). Moreover, for a long time, environmental problems were not regarded as sustainable issues but as matters of economic nature – which does not fit today's demands (ibid.) – and the process of negotiation and co-operation was left unstudied (Mitchell 2002). This means that there is still a lot of experience and knowledge to be gained when dealing with sediments in rivers that cross borders. Concisely: the international dimension of some rivers adds a new facet of complexity to the issue of stakeholder involvement. In this section, we will discuss a few issues that, although perhaps obvious to some, still need attention as they are overlooked too often (see, for example, Adler 1986: 484).

Most people are aware that there are discrepancies between, for instance, Europe and Asia when it comes to cultural and

institutional structures. It goes without saying that these differences play a role when participants, both individuals and organisations, from different countries are invited to participate in a process on sediments. When a river crosses borders, it is likely that the cultural differences concerned are less apparent than is the case between Europe and Asia. Even countries that are adjacent to each other, such as Germany, Belgium and the Netherlands – also called 'cultural families of nations' (De Jong 1999) – have a very different cultural and institutional design. Those two obviously can't be separated from one another, since the cultural dimension influences the institutional dimension, and vice versa.

As far as the cultural dimension is concerned, it shapes the way people act and think. This goes much deeper than the obvious differences, such as how to greet someone. Even when actors do understand how people from other countries think and act, he or she most likely will still interpret the underlying motives from a personal perspective (Hall and Hall 1976). Culture, therefore, is a process of representation and interpretation and, as such, is not easily understood (Sperber 1996). Too often, this fact is ignored. When dealing with people from other countries, actors think they comprehend the other, but often they only perceive the uppermost layer of a culture. Dealing with different cultures, therefore, demands a careful approach. Some even suggest that the only way to understand how others think is to work with them for a while.

Apart from the cultural dimension influencing international co-operation, institutions play a role as well. Institutions comprise the organisations concerned, especially with regard to the division of authority, and the national and international legislation. With international co-operation, it appears that when countries believe they are similar, their players tend to underestimate the subtle institutional differences that exist between them (De Jong 1999). Nevertheless, institutions play a very important role in the management of sediments. As to the selection of people who are to be involved in a process, attention must be paid to the division of powers in combination with the various degrees of stakeholder involvement, as shown in Table 1. For example, when one wants to reach a decision with the stakeholders, they will need to have the authority to make a decision. But one cannot safely assume that an administrator from a certain department in a certain country will have the same level of authority as his counterpart from another country.

Legislation is also part of the institutional dimension of international co-operation. So far, international laws concerning river management have often proved to be as fragmented and inadequate as national laws (Palmer, Peckham and Soltau 2000). The main issue here is that ratification and implementation often occur at different paces. When involving actors from other countries in a process (regardless of the actual degree of participation), one must consider that not all countries have implemented the laws. This will be an obstacle for the process, as the discussion must include those differences.

Next to the cultural and the institutional dimension are the different (conflicting) interests and orientations. Countries upstream benefit from the low-cost discharge a river crossing borders may provide. But it leaves the costs of cleaning to the countries positioned downstream on the river. This results in different interests and orientations. Reconciliation of such differences is a long-term process and sometimes even not possible. International treaties and laws are then the favourable solution. Meijerink (1998) shows how the improvement of the water quality by all countries (Belgium, France and the Netherlands) involved took almost thirty years in the Western Scheldt. These, and other cases, show how different interests and orientation can obstruct a process for a long time.

The lessons learned in international co-operation are that one has to be fully aware of the cultural and institutional differences and understand that people from other countries will think and act differently. Moreover, the institutional settings (legislation, policy, procedures, and so on) differ between countries. It seems wise to take time to investigate which institutions are compatible and which are not, and to start from that point. After assessing the 'how', the next step is a careful analysis of the interests at stake. This should provide insight in what countries will demand. Negotiations can commence from that point.

3 Conclusions

Involving stakeholders such as non-governmental organisations, private companies and citizens are necessary when dealing with sediment problems. In this article, we first explained why decision-making cannot work without the involvement of stakeholders. Stakeholder involvement can have many advantages, for instance increasing support for policies and an increase in their quality. In that respect, stakeholder involvement can be seen as very valuable for the process of finding solutions for sediment-related problems. We also argued that stakeholder involvement isn't as straightforward as it may seem. Such a process demands a careful process approach. In this article, we showed several pitfalls that should be avoided when engaging such a process. These pitfalls were deduced from practical experiences. A number of lessons were formulated from these experiences.

In practice, stakeholder involvement often evolves according to agreements about substance, participation and rules of the game for the decision-making process. These are known as the process design (Edelenbos 1999). Since the process design supports the interaction of the parties, it is of paramount importance that the participants accept it. Hence, there is no standard design or blueprint for stakeholder involvement and, therefore, we decided to show the major pitfalls rather than attempting to give a standard design. The actual design of stakeholder involvement depends on specific situational features in which the process has to be carried out (Edelenbos 1999). There is still a lack of knowledge about stakeholder involvement in case of sediments. More research has to be conducted in this new field, which will be becoming a very important aspect of water management in the near future.

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