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# Obstacles in Launching a Participatory Group Discussion and Modelling Process

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**Abstract:** The combination of model-building and group discussions seems to be a promising approach to support learning processes among stakeholders involved in management problems since it allows combining factual analysis and qualitative and quantitative model simulations with an analysis of subjective perceptions and mental models. However, the step of launching such a participatory process might fail due a lack of willingness of the stakeholders to participate in the process. This paper reports about an attempt to involve a specific group of stakeholders and the problems encountered during this process. Although the stakeholders mentioned different reasons, the most important but primarily hidden reason appeared to be the political sensitivity of the issue. In this situation, a sensible alternative for the group model-building process seems to be the construction of the model by the researcher on the basis of single interviews with the stakeholders. Subsequently, the completed model can be offered to the stakeholders as a simulation tool for testing development scenarios and management measures which is assumed to support a learning process and raise the awareness of stakeholders regarding mutual dependencies and the possible need for collective action. Finally, the paper discusses recommendations drawn from these experiences.

**Keywords:** Group Model-building; Stakeholder participation; Wastewater Disposal

## 1 INTRODUCTION

The sewage disposal in former East Germany faces a great challenge: the realization of an appropriate public or private disposal system. At the Institute of Environmental Systems Research in Osnabrueck a project is being conducted to investigate this problem within a regional case-study by using agent-based simulation. Initially, an additional aim was defined which proved to be unfeasible during the first organizational steps: The intention was to organize an intensive participatory discussion and group modelling process with the relevant stakeholders to stimulate a learning process among them and to investigate the requirements for collective choice processes.

The paper discusses the reasons why launching this group process failed. We present the alternative approach chosen for building and using the model. Finally, we discuss from these experiences how to deal with this kind of problems and what should be taken into account for planning participative group discussion and modelling projects.

## 2 TWOFOLD PROJECT GOAL: MODEL-BUILDING AND GROUP DISCUSSION

After the German reunification the waste water management in the region to be investigated in former East Germany faced a great challenge. Sewage treatment plants were limited so far to industrialized cities, and their purification capabilities were mostly insufficient. Where no public infrastructure existed private collecting pits were used, which often now turn out to be leaky. Therefore, in the last decade, the municipalities spent a huge amount of money to construct an appropriate public infrastructure with modern waste water plants and canalization. But today new problems appear: A legal sewage treatment is not yet fully realized, but further investments would exceed the financial resources of the municipalities, subsidies are reduced and the rising fees cause public opposition. Due to the region's negative demographic development and reduced water consumption some sewage plants are not working to full capacity. Future developments could further weaken the

system. Now the questions arise, whether it is reasonable to continue connecting settlements to existing sewage plants respectively to build new plants and, where no public infrastructure is planned, how people can be forced to invest into private sewage plants.

To investigate the dynamics and effects of socio-technological developments in infrastructure systems and to test the impacts of different management strategies, a research project is conducted within the framework of a PhD-thesis at the Institute of Environmental Systems Research at the University of Osnabrueck, Germany. The system dynamics in the development of the sewage disposal are based on the actions of the different stakeholders involved, their mutual influences and the implications on other, non-personal system variables. This information is to be elicited directly from the regional stakeholders in a participative manner in addition to secondary literature and theory. To formalize and investigate the system we decided to apply an agent-based modelling approach, since the actors (e.g. ministry, sewage associations or citizens) and their behaviour can be represented as autonomous, interacting agents. The agent-based modelling approach gives the opportunity

- to improve the understanding of the system dynamics, i.e. the behaviour and interactions of the stakeholders,
- to investigate the impact of different assumptions about the actors' behaviour,
- to assess the consequences of changing conditions on the further development of the sewage disposal system and
- to test the effects of possible management strategies and measures.

The goal of investigating the issue using agent-based modelling is not only to derive an increased understanding of the dynamics of the system. The project aims in particular at using the insights gained from modelling to stimulate a learning process among the regional stakeholders. Thus, the above mentioned insights from modelling should become an integral part of a critical discussion in the stakeholder group. On the one hand, this can be done by using the completed model as an experimental tool, for instance within a workshop or presentation at the end of the project [see e.g. Gilbert and Troitzsch, 1999 and Herz and Blätte, 2000]. However, apart from learning by using the results from a model, it is emphasized in different publications that the potential for learning is particularly high for the persons involved in building the model [Vennix, 1996; DeGeus, 1990; Pahl-Wostl, 2002b]. The model building process

becomes part of a process of social learning. Social learning is to be fostered by integrating model building and analysing into a broader group discussion process. Mental models and subjective perceptions of stakeholders are elicited and subjected to a discussion in the group. Stakeholders should realize their differences and learn to deal with them constructively. They should become aware of their interdependence and develop plans for collective action. During this process, the stakeholders build an ownership of the models which should result in an increase of the likelihood for the results from model simulation to feed into management decisions. A number of projects have recently been conducted which report on positive experiences in participative model-building with the stakeholders relevant for the problems at hand leading at best to social learning processes concerning potential management strategies for problems [see as project examples Barreteau et al., 2001; D'Aquino et al., 2003; Hare et al., 2003; Pahl-Wostl, 2002b]. Following these experiences we intended to organize a participative group discussion process integrating model-building and application with the regional stakeholders of sewage disposal. The intention was to bring together the stakeholders - or some representatives - relevant in the development of sewage disposal. Within several group sessions, they should have had the opportunity to define the actual problems from their point of view, to reflect about the factors and relations of the system and to discuss about possible scenarios and suitable measures. The agent-based model built on the basis of the information provided in these discussions and particularly in a special group model building session was planned to be used within the stakeholder group as a tool to support the discussion. Altogether, this approach would have implied an intensive process of stakeholder participation.

However, such a participatory process requires a considerable degree of trust both within the stakeholder group and between the stakeholders and the research team as pointed out by Pahl-Wostl and Hare [2004]. The effort to build this level of trust should not be underestimated. A lack of trust proved to be a key problem in setting up a participatory process in the project we analyse in this paper.

### **3 DIFFICULTIES IN LAUNCHING THE INTENDED PARTICIPATIVE PROCESS**

After a first approach to the issue of the project by a rough problem- and stakeholder-analysis encompassing the analysis of documents (publications, internet, media) and first consultations of external experts we started to contact the stakeholders. As we envisaged the Ministry as a super-ordinated key actor to become a potential promoter we contacted it first and asked for its support making clear that we would be flexible concerning the concrete project design. In general, in these first contacts we introduced the issue we wanted to examine and asked people about their interest in providing some information and discussing the subject with us or other actors. During the contacts we were rather cautious introducing the modelling aim since it appeared to be difficult to explain the meaning of modelling on the phone. But this proved to be not the main problem: It became apparent already from the very first interviews that an intensive participation process in the intended manner would not be possible since some actors and particularly the Environmental Ministry showed some reservations concerning their involvement in the issue in general or their participation in the discussions in particular. Several reasons were mentioned:

- Awareness of influences: Particularly the Environmental Ministry did not consider it appropriate to participate as a central actor in a discursive process about the region's disposal system, since the municipalities or the sewage administration unions respectively are formally responsible for the sewage disposal. Influences by determining the political and legal conditions and by providing subsidies for special technologies were not estimated to be very important.
- Problem and option awareness: Some stakeholders did not see any need for debate. From the Ministry's point of view, existing ecological and managerial investigations provided a sufficient scientific foundation for deciding about further investments. A few sewage administration unions argued that due to the restrictions posed by their previous investments or by the legal conditions their actions are rather determined, they stated to have no options to decide about.
- Time constraints: Other important arguments were the time constraints and the limited personal capacities which prevent the participation in a time consuming discussion process.

Most of the stakeholders contacted right at the beginning of the project mentioned one or several of

these aspects in order to explain why they were not willing to participate in the process. We did not manage to convince them of the value of a discussion process. However, contacts with additional stakeholders and experts confirmed our impression that the political sensitivity of the issue was the actual, hidden reason of some stakeholders' caution and rejection: In that region, the issue of sewage disposal is a very sensitive subject. The undesirable developments led to a quite aggressive and polemical public discussion in the media. Citizens' groups were set up which organized actions up to a hunger strike. The public accusations are directed to the political representatives and to the administration of the state, the sewage administration unions and the municipalities. These actors are accused of corruption, lobbying and a lack of democracy. On the other hand, the citizens' groups, the media and the companies offering alternative technologies are reproached with arguing factually incorrect and ignoring the legal and economic circumstances of the past and the present. We assume that primarily due to these negative experiences some actors now reject to meet some others in a discussion. Those who are supposed to be responsible for the problems by the public seem to avoid the issue and wait until the public calms down.

However, regarding the political sensitivity of the subject, a discussion process among the actors would run the risk of becoming uncontrollable and less expedient and would probably overtax the personal skills of the researchers involved in this project.

The problem of political sensitivity of this project is obviously not an exception as it is addressed in several publications reporting on participative processes. Glicken [2000], for instance, points out that public participation processes "often focus on issues with a high emotional content". This increases the significance of value-based knowledge, i.e. moral and normative valuations within the debate, especially if issues are complex and stakes are high. Since decisions concerning environmental problems are usually based on cognitive or scientific knowledge, participation might involve people with a very different kind of knowledge and argumentation which might cause communication problems. Vennix [1999] as another example focus on messy problems in group model-building. Messy problems encompass "situations in which there are large differences of opinion on the problem or even on the question of whether there is a problem." Such problems are characterized by the typical behaviour of defensiveness due

to the fear of losing face and by the mutual expectations of not being understood by other participants. Although both authors refer here to problems occurring during group discussions, the anticipation of these problems might explain the unwillingness of people to attend a group discussion process.

#### **4 SOLUTION: ADAPTATION OF PROJECT DESIGN**

Due to the sensitivity of the subject and the difficulties in bringing the stakeholders together, the intended project design was challenged. The additional goal to initiate a common group discussion and learning process as integral part of the model-building process was given up. However, the aim of investigating socio-technological developments in infrastructure systems by means of agent-based modelling could be maintained anyway. But we realized that the project required a shift in emphasis and approach towards analyzing causes for conflict and building up a certain degree of trust and mutual understanding in a stepwise process. Hence, the project design was changed in the following manner. Instead of a common discussion and group model-building processes encompassing all important stakeholders, in a first phase the model is being built by the researcher on the basis of individual interviews. Besides, regional and national statistics, literature about the waste water disposal as well as behavioural and diffusion theories provide decisive information for the construction of the model. This approach is inspired by a number of other projects in which models are based as well on information from interviews, observations, data, literature or theory without an explicit group model-building discussion within the stakeholder group [see for example Gimblett et al., 2002 or Berger, 2001]. In our project nearly all stakeholders agreed to give such interviews. People seem to be more familiar with individual interviews and assess them as being more controllable than broader discussions with more stakeholders. Since the investigation was not initiated by one particular stakeholder group but by a “neutral” third party, the interviewees were quite open and argued in a way they probably would not have done in the presence of other stakeholders. They tried to convince the interviewer from their point of view. Only the representative of the Environmental Ministry was not willing to meet until first results of the other interviews could be presented. Presumably this was due to the initial goals of the project presented during the first contact. Since the Ministry did not agree to the initially intended

approach, it reacted cautiously to the new approach as well.

The interviews were conducted as in-depth semi-structured interviews with a few representatives of the most important stakeholders chosen from the stakeholder-analysis. Although the small number of interviewees raises a lack of representativeness, they provide a rather deep insight and enables the emergence of new aspects. The execution and analysis of the interviews have to meet the special requirements of agent-based modelling. For instance, information is needed about the aspects to be represented in the model. Hence, one should know which problems are most important from the stakeholders’ point of view as emphasised by Hermans [2001], and how they evaluate the quality of waste water disposal. The interviews confirmed that the stakeholders have different concepts about reasons and goals. The interrelations and influences between the actors, their behaviour and the arguments influencing their behaviour have to be derived as precisely as possible from the interviews since they are the base for the model-rules. However, the interviews included the following items:

- Development of waste water disposal
- Definition of a “good wastewater disposal”
- Problems and solutions
- Influences on the development
- Role of the interviewee (tasks, actions, reasons)
- Further development of the general conditions and the sewage disposal itself

The model is currently in the phase of implementation. It will represent a virtual world similar to the structure of the region under investigation regarding the geographical distribution of population and settlements. On the base of an initial setting the model is expected to retrace – with a certain level of abstraction – the previous development of the sewage disposal system including the construction of public wastewater plants and canalisation or the dissemination of different types of private technologies. Additionally, it will give the opportunity to change parameters, behavioural assumptions, general conditions and policy measures in order to assess the influence of these aspects on variables like water pollution or costs.

In a second phase the model built by the researcher is to be presented to the stakeholders. As this phase has not started yet, we are unfortunately not yet able to report on the success of this second part of the approach. But according to some re-

quests during the interviews concerning the results, the interviewees are rather interested in the presentation, since the model is the result of their efforts. It might be possible to organize this feedback not only in meetings with single stakeholders, but also in little, homogeneous groups, e.g. with sewage administration unions and water agencies of the municipalities in order to stimulate a common discussion at least among these actors. In the feedback step the stakeholders shall be asked to assess the correctness of the model and to test some scenarios and management strategies. Since the model unites the view and the information of the different stakeholders in one encompassing system and will show possible developments and the implications of the implemented management strategies, we expect that it stimulates a learning process at least for some stakeholders. One can anticipate that the combination of the different current strategies of extending the public sewage disposal system with an ongoing negative population development will offer interesting conclusions and provide evidence where cooperative action is required. In the interviews, the negative demographic development was frequently mentioned as a central problem, but at the same time sensible strategies to react on this challenge seem to be unclear and contradictory. Additionally, it would be very valuable if the model could illustrate the importance of cooperation between different stakeholders and at best stimulate it. For example, the model will show the dependencies between the reconstruction or improvement of private waste water plants offering a great potential for water protection, the support of the realization by the private owners through measures of different actors like subsidies from the Ministry, administrative orders and the diffusion of information by the citizens' groups and the media.

## **5 CONCLUSION: WHAT TO LEARN FROM THESE EXPERIENCES**

Based on our experiences with launching a participative modelling and discussion process the following aspects seem to be particularly important.

The problem that arose in this project can finally be summarized as a discrepancy between the initially intended methodological project approach and the problem situation under consideration. The project was initially method driven since we started with the vision of realizing a participative group modelling-process. But the project approach has to be closely adapted to the nature of the prob-

lem situation [Glicken, 2000]. There does not exist any general pattern of participative modelling to apply regardless of the special problem situation and stakeholder-constellation. The methodology should not determine how the problem is approached, but it should be the other way around. This applies particularly to situations with great social dynamics, where some methods may be inappropriate or even unfeasible.

We decided about a particular concept of project design and participative approach only after a rather brief analysis of the problem and the local situation. At this early stage the actual nature of the problem and the stakeholder constellation was obviously misinterpreted. As emphasised by Varvasovszky and Brugha [2000] or Glicken [2000] a prerequisite for choosing a suitable approach is that the stakeholder constellation and the problem situation are sufficiently known. Therefore, a detailed stakeholder and problem analysis should be conducted. It would be quite useful to conduct such an analysis before the start of a project. The current practice of funding agencies (e.g. European projects) to strongly recommend the involvement of stakeholders as project partners already during the proposal preparation stage has to be judged as very positive in the light of the experiences reported from this project and probably made also during other projects. However, it would also be quite useful to provide financial resources for initial scoping studies.

Additionally, it is important to maintain methodological flexibility, especially if there are some uncertainties concerning the best approach to be applied. Even during the project some adaptations of the approach or the introduction of new methods might become necessary or sensible, either because unexpected problems and constellations arise or because people ask for them. Certainly, this requires knowledge about a broad range of different methods as for example Glicken [2000] and Vennix [1999] point out. Especially in the field of stakeholder participation mistakes are committed easily and can have negative impacts on the further course of the process.

For an external researcher it might be difficult to motivate the stakeholders to actively participate in a project. Personal contacts, particularly a promoter from among the actors often prove to be very helpful. However, the promoter has to be accepted by the stakeholders, otherwise the project goal might be expected to be biased towards his interests and people will not participate. In our case it turned out to be particularly difficult to find

an appropriate promoter. The Environmental Ministry was envisaged as the promoter but it was neither willing nor suitable because of its partiality. Fortunately another administrative body partly took over this role as it suggested contacting some particular stakeholders. Beyond this we did not find any appropriate promoter, since the field is sharply divided into advocates of either public or private sewage disposal.

The aim to bring together the actors as soon as possible was among others caused by the limited time available within the duration of the project. Planning and conducting all the steps of such an intensive participative group discussion and modelling process including stakeholder and problem analysis, organizing the participative process as well as model-building is rather laborious. Thus, such projects need to be provided with sufficient personnel and time. Furthermore, as pointed out in several publications [e.g. Vennix, 1999; Glicken, 2000] appropriate expertise and skills are a very important prerequisite for conducting these different steps successfully. The expenditure to acquire these skills is great and frequently underestimated. Given the typical duration of projects of about three years and the limited financial scope the ambition of a project has to be matched with the resources available.

The applicability of a participative method depends among others on the stage of the problem and the problem awareness of the actors [Pahl-Wostl, 2002a]. In our case, the problem is already in an advanced stage indicated by high public problem awareness, visibility of negative consequences and open conflict between stakeholders. Hence, a mediation process seems to be most appropriate. In other projects being in another problem stage (e.g. first problem definition, strategy development or implementation of already confirmed measures) combined with a lower level of conflict, the initialization of participative processes is assumed to be less critical. However, if a participatory process of group model-building is intended but proves to be unfeasible due to reservations of the stakeholders, the approach applied in this project might be a sensible alternative. Instead of a group model-building process, the model can be constructed by the researcher on the basis of individual interviews with the stakeholders. Afterwards, the completed model can be handed to the stakeholders as a simulation tool for testing development scenarios. This can support a learning process as originally intended in the group model-building phase and build trust in the method, the role of the scientist as facilitator and

analyst but as well in the need to engage in a participatory process with other stakeholders.

Finally, we recommend that each participatory model building project should be accompanied by a careful documentation of the stakeholder process and a critical evaluation of the methods employed. In particular one should more often report problems and failures to advance the state of the art and to improve the project design.

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