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ORIGINAL ARTICLE

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Participatory Integrated Assessment in local level planning

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Abstract The topic is introduced by a short but critical discussion of criteria and needs of Participatory Integrated Assessment (PIA) and participatory local planning. This paper depicts differences of participation in Integrated Assessment and in local level planning but provides also conditions and ideas how PIA can be used for local planning including implementation. A small review of PIA and participation in planning illustrates the relevance of PIA in a knowledge economy trying to adopt principles of good governance. A better incorporation of participatory research into local level planning seems to be crucial. The applicability of PIA in practices leading to participatory monitoring and evaluations are discussed. The outcomes of the paper show that possibilities exist for integrating PIA and participatory monitoring and evaluation into the implementation of the European Water Framework Directive (WFD). PIA adds local information to water management planning and supports individual learning processes. The setting up of such a monitoring and evaluation system may contribute towards a transparent implementation of the WFD, it enhances commitment of citizens towards local government planning and eventually it increases self-determination of citizens, a major objective of good governance.

Keywords Participatory Integrated Assessment · Water Framework Directive · Community-based Monitoring · Local Water Management Planning

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Introduction

Informing the public or specific stakeholder groups about a problem, an issue or an activity is one objective of participation. Another objective could be the elicitation of knowledge by consulting the public or stakeholder groups. Different participatory tools and methods are applied to achieve the two objectives. Some of the tools may serve both purposes: to inform (e.g. the scientific knowledge about an environmental problem) and to gain information (e.g. the perception of the public regarding an environmental problem).

This paper illustrates the differences of participation in local level planning and in Integrated Assessment and discusses the role of information. The purpose of participation in Integrated Assessment is mainly to collect practical information for scientific assessments and policy-making. It is therefore science-driven. Participation in local level planning serves to better adapt activities and measures to local conditions, to include the people concerned in the design process and eventually to raise public acceptance. Here, the objective is clearly on improving implementation. Both approaches are based on the assumption that the top-down implementation of policy measures or plans for local development in many cases has to be replaced or at least complemented by participatory processes.

Local level planning comprises many activities and there is not one all encompassing definition. For the purpose of this paper, it is understood as all activities that are planned and carried out by or in co-operation with local governments. In general, it is the development and implementation of plans and activities of different sectors of local significance. Local level planning necessarily incorporates a management component. ''Good'' participation in local level planning involves stakeholders from the stage of problem identification onwards. Participation continues during planning and implementation of activities, until the stage of monitoring and evaluation. In the context of this paper, special emphasis

is on local level planning in relation to water management issues.

One problem of participation is to make a clear distinction between involving the public at large, and involving specific stakeholder groups and participants from the policy side. One example is the use of scenarios in Participatory Integrated Assessment (PIA). Principal participants of such a policy exercise are scientific experts from disciplines of critical importance to the subject, and representatives of major actors, influential policy-makers, and stakeholders from the policy side (EEA 2001). This is a very effective way to gain information in the form of expert judgements, for example, on adopting a new traffic policy and its impact on climate change. For other topics like changes in the lifestyle of individual citizen and their impact on climate change, it is necessary to make similar PIAs with the general public. Here, one may develop specific information tools to establish the link between the abstract and global issue of climate change and the lifestyle of individuals (Schlumpf et al. 1999, 2001). In the context of this paper, we only consider participation of the general public at the level of local governments for scientific (PIA) or practical purposes (participation in local planning).

Several definitions of Integrated Assessment exist. According to the European Environmental Agency (2001), ''Integrated Assessment is defined as an interdisciplinary process of synthesising, interpreting and communicating knowledge from diverse scientific disciplines in order to provide relevant information to policy-makers on a specific decision problem''. One option in integrated assessment is making use of computer-based models. In addition to integrated models, PIA makes use of selected public participation methods like focus groups, or simulation and gaming techniques to include local knowledge and additional information into the assessment process. Under certain circumstances, if required by the research question, PIA may also involve a larger part of the population.

An important assumption of the paper is that public participation in Integrated Assessment and, in research, in general has often been applied without taking into account potential negative implications for local level planning. The number of researchers is increasing who experience a negative attitude of the public towards participation. If, for example, scientific projects use information for improved decision-making in abstract national policies, the risk is high that people do not see their direct benefit. If the goal and the target group for the assessment are not specific and not well communicated, it is likely that people may feel being ''used for experiments''. In the context of evaluating the political quality of PIA inputs into decision-making, Rotmans and van Asselt (2002) argue that the impacts of these decisions are often felt decades later. The impact of participatory processes on participants can also often be only experienced with a delay. It is of significance not only to evaluate the political quality of participation in IA but also the positive or negative impact of participation itself.

Accordingly the paper investigates:

- What are the risks of PIA and why should PIA be better embedded into local planning processes?
- How and where can PIA help in local level planning processes?
- How can PIA support the local implementation of the European Water Framework Directive?

It is widely accepted that for successful participation, it is necessary to develop trust and confidence among the different parties involved in the process. Among a number of relevant issues to be considered, respecting the following minimum principles would already help to achieve this objective. These principles mentioned below—sometimes also given as quality indicators for participation—are often cited in practice-oriented literature but the authors of this paper are not aware of one commonly accepted selection of principles for participation.

- The role of stakeholders and/or the public must be clearly defined and communicated.
- Stakeholders or the public involved should have visible direct benefits.
- The process should be transparent.
- Stakeholders involved should be representative.
- Stakeholders should be involved from the beginning of the process.
- Stakeholders should receive an adequate and timely feedback showing the results and how their inputs were used.
- Participation should lead to learning and capacity enhancement.

In early applications of PIA, these principles were rarely applied. One problem still lies in the inherent nature of research projects that are rather supply-driven. In addition, one has to be aware that early applications of PIA followed the logic of Integrated Assessment developing policy-optimisation models (see Rotman 1999). They were still based on the idea of top-down policy processes based on governmental intervention. These flaws may lead to the situation that, if PIAs are carried out at the local level with the public, e.g. a lack of communication of PIA results to the participants later on may contribute to the general loss of trust in participatory processes. The already existing fatigue of people to participate in democratic elections and other voluntary aspects of local self-governance will be further increased. In this case, PIA may contradict international attempts to spread the idea of good governance including the promotion of public participation.

Creighton et al. (1998) suggested that by the means of public involvement, assessment processes (social, environmental, demographic...) should be integrated into the planning process. Moss et al. (2001) already made suggestions about how management and integrated assessment could be fruitfully combined. A problem-oriented, well-elaborated participatory process targeted at implementation may, for example, be complemented by

the development of a multi-agent based model in parallel. The model is used in processes of social learning that are part of the implementation and planning processes. Here, both parties benefit: on one hand citizens' awareness for a specific problem will be raised and they can actively influence policies based on their discussions' results; on the other, scientists receive better information to improve their models and hereby increase the quality of their outputs for decision-making. The assessments become more realistic if the goal of participation is tangible and embedded into a real policy and planning process.

Besides tangible results, the role of information is also crucial in this analysis. For this purpose, the possibilities of participatory monitoring and evaluation in the context of implementing the WFD will be examined. Participatory monitoring and evaluation does not only offer to gain additional information but also helps to control and direct the process.

The questions discussed in this paper can be summarised in the overall question: What is the role of Participatory Integrated Assessment in local level planning? Science is supposed to be independent of political influence. This should not be questioned. But in that moment when science interacts with society—by the means of participation—the changing society and changing political culture must be taken into consideration. If we agree that participation in local level planning is generally something positive that should be further promoted, we should also carefully consider evolving constraints. One of these constraints could be triggered through PIA that does not respect the needs of the stakeholders. Once a participatory process is initiated, it should always be kept in mind that the participants should be motivated to get involved into a similar process again.

Responsible application of participation in research and planning

Many scientists and also politicians nowadays recognise the need to actively guide the societal change towards a knowledge economy [1]. Besides technological aspects, a knowledge economy is based on the idea of life-long learning that is not restricted to the intellectual elite but to all the members of society. This transforming society does not only have impacts on economic development and education but also on governance. It gives more autonomy but also responsibility to the individual. Hence, it requires different decision structures than the existing vertical structures.

[1]The terms knowledge economy, knowledge society and information society vary little in their definitions. They all refer to information and/or knowledge increase and an increase of networking and connectivity (especially by modern information and communication technology) of individuals and organisations. The authors of this paper use the term 'knowledge economy' based on the argumentation of Stiglitz (2002).

Stiglitz (2002) argues that knowledge needs are being acquired by learning and that learning functions best once the learner gets actively involved. To foster the active involvement, the motivation should ideally be intrinsic to the activity. Here, we come back to the simple principle of participation providing direct visible benefits to the participant. Every experience of people with participation influences their perception of, and reaction to it in similar situations. This requires that all kind of participation—for research purposes as in PIA or in local planning and self-governance should meet minimum principles of quality assurance in participation. Societies moving towards a learning society or knowledge economy cannot afford having citizens with frustrating experiences once they participate in research, policy-making or planning. Figure 1 summarises how participatory processes can bear inherent risks.

The danger of carrying out bad participatory research does not only have qualitative but also quantitative aspects. If a participatory method involving only few people in focus groups ends up with frustrated participants because they do not see their inputs later on reflected in the outcome of the research, it certainly obtains a different risk potential than a community survey combined with a series of community workshops.

A careful selection of a specific participatory tool to adequately address a given research question is standard. But the research design should not only minimise the risk of project failure but also the risk of flaws in the participation process. The latter is not automatically covered by recognising the first! It can be concluded that in our European societies, it is no longer a question to carry out participation but how to carry it out.

One aspect that needs being considered for the design of participatory processes is the visibility of direct benefits for the participants. Do participants recognise their direct benefits from the beginning? Or, will the participatory process being designed to raise awareness and clarify potential benefits for the participants? This is only one example of how careful the participatory approach should be selected according to the chosen objectives of the project in question.

This paper refers to mainly three forms of participation (compare Fig. 2):

- Supplying information to the public and stakeholders,
- Consulting the public/stakeholders to gain information and
- To actively involve them into decision-making processes.

A basic form of participation is informing the public or the stakeholders concerned. Here, information is supplied. In contrary, PIAs often use people for information supply, which represents another form of participation, what is also called consultation. It is used to gather information from those involved to develop solutions based on their knowledge. But here "the process does not concede any share in decision-making, and

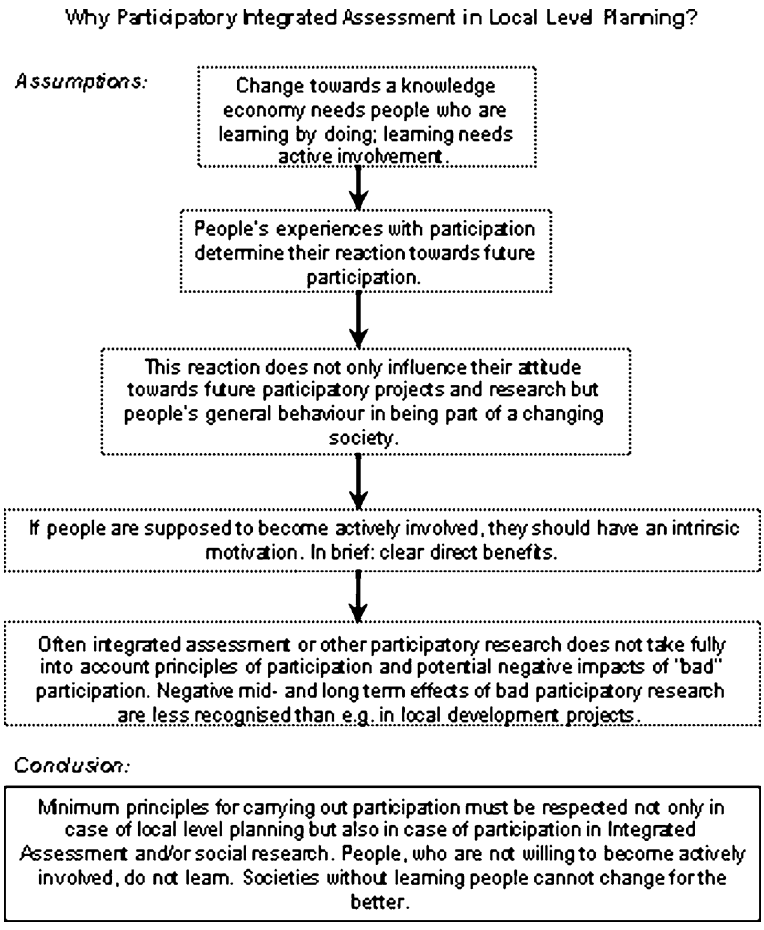

Fig. 1 Participation and its risks in a changing society

professionals are under no formal obligation to take on board people's views'' (EU Drafting group 2002a). The information supply goes either into one direction or into the other, but no exchange or dialogue takes place. The result of information supply to the public and stakeholders can be described by the term co-knowing (EU Drafting group 2002b).

This interpretation matches the definition of IA given earlier by the European Environmental ''Agency to provide relevant information to policy-makers on a specific decision problem.'' Emphasis is here on the policy level. According to this definition, we can conclude that PIA is remaining on the level of co-knowing.

But PIA can be applied under different circumstances too, if integration into a larger context happens. In case of participation in local development projects or general local level planning, it is not co-knowing, what is requested but to initiate a dialogue between the community and the people concerned, interest groups like NGOs and business and eventually the political and sector representatives of the local government. To achieve this, a PIA and its tools like group model building and (simulation) gaming could be included into planning tasks under the responsibility of local governments. The final objective should be the joint definition of problem-oriented measures and as far as possible an implementation of measures that is actively supported by the public.

Hence, the definition of IA by Rotmans (1999) as an ''interdisciplinary process of combining, interpreting and communicating knowledge pieces of diverse scientific disciplines in such a way that insights are made available to decision makers'' is more applicable than the definition given by the EEA before, because the focus of Rotmans is on decision makers instead of policy [2]. Further, one has to take into consideration that IA practitioners have gradually changed their view on decision making processes from a single decision maker implementing policy in a top-down process to a complex polycentric process with many stakeholder groups involved (Morgan and Dowlatabadi 1996; Pahl-Wostl 2002). Then PIA is applicable to planning too and the scale for its application ranges from local up to the global level. The definition of IA given by Rotmans and van Asselt (2002) takes the development of participation in IA into account. Besides the participation of scientists, also mentioned is the participation of representatives of societal actors, such as the policy community, the business community, non-governmental organisations (NGOs) and the general public''. The changing defini-

[2]The authors of this paper interpret policy from a planning perspective as a coherent set of decisions with a common long-term objective (or objectives). That means policies are understood as planning frameworks and not plans. They are commonly defined on national or regional level but not further below.

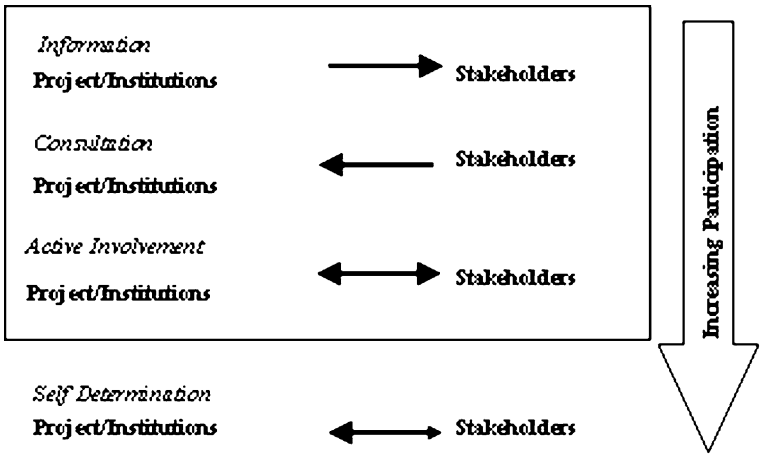

Fig. 2 Levels of participation and the direction and intensity of information flow. (The first three levels *inside the box* are discussed in the paper)

tions clearly depict the increasing importance of integrating non-expert knowledge into research and planning by putting more emphasis on non-governmental actors and the general public.

Good governance, decentralisation and eventually participation are concepts that are widely promoted to achieve improved local level planning and implementation of projects. One example is the "Habitat Agenda" that requires "establishing regular and broad-based consultative mechanisms for involving civil society in decision making in order to reflect the diverse needs of the community (UNCHS 1997)". Although it is widely accepted that different tasks and situations at different planning levels require different forms of participation, one risk is identical: every time a participatory process is initiated, expectations of stakeholders are raised. That means even in case of participation merely for information supply, the process cannot be restricted to the depicted one way direction of information flow. It includes at least the communication of the reasons why this information is collected, how it will be used and eventually summarising the information gathered as a feedback to the people who provided it. In the worst case, bad participation may trigger effects that are not at all intended like the unwillingness of participants to cooperate in similar processes. The turnout at the local elections may decrease as well as the willingness to participate in voluntary community work. As potential negative effects of participation can be caused by participatory research or participatory planning, the principles of participation must be respected in any case. PIA that is not well embedded into local level planning bears a higher risk of "bad participation" than participatory planning by local governments because

- The time horizon of research projects is generally too short to incorporate proper ex-post evaluation;
- Relevant contact persons are only temporarily (during the project) based in the area;
- Research projects are less dependent on the cooperation of the local people in future than local governments.

The approach of PIA to generate more applicable research through the means of participation should be avoided if the participants do not have a clear direct gain out of it. To meet this problem it is desirable to further integrate participatory research including PIA into existing planning activities. Despite existing efforts to show the applicability of PIAs in planning (see Pahl-Wostl 2002) systematic attempts to analyse their usefulness into different phases of planning are missing. Even the integration of PIA into planning does not automatically eliminate the risk of ending up with frustrated participants who will never ever get involved into a similar process again. But local planning issues are less abstract to people and their individual gain due to participation is easier to communicate. Additionally, further research should identify how principles of participation differ in their application to local planning and to participatory research. Examples for selected principles are given in Table 1.

PIA and local level planning and management

Participatory Integrated Assessment can contribute to a typical project cycle in local level planning and management. A typical planning cycle can be simplified by distinguishing:

- Analysis including data gathering,
- Planning,
- Implementation
- And finally monitoring and evaluation (that in reality starts at least parallel with the implementation process).

Different tasks and steps in environmental planning, e.g. in land use planning but also for implementing the WFD can be attributed to the phases given above.

Once the need for a better integration of a PIA into local level planning is identified, it is obvious that PIA and its tools like group model building, scenario building and gaming could be incorporated in the analysis phase very

Table 1 How principles apply in participatory research and in planning

Principles	What does it mean for PIA?	What does it mean for Local Planning?
People should be involved from the beginning	Being involved in research design and data collection	Being involved in project design and problem identification
Role of participants should be clearly defined and communicated	Contributions of participants mainly serve an academic purpose. The linking of scientific results to policy-making generally takes a long time and may not be evident to the participants	Over-expectations of the stakeholders should be avoided; it should be made clear that final decision-making remains with the relevant authority
People involved should be representative	Participants should represent a "typical" cross section of the population or all interest groups should be involved	All interest groups should be involved
People involved should have a clear benefit	Information gathered should be directly useful for the participants	Also short-term benefits must be visible besides mid or long-term community improvements
Stakeholders should receive adequate and timely feedback showing how their inputs have been used	Research results including the stakeholder input must be adequately communicated. That requires a clear and easy language and clear objectives of the assessment process	The feedback process back to the public and to organised stakeholders should be open—meaning the systems must be adaptive to change (within given limits) and implementation delays be explained
Participation should lead to learning and capacity enhancement	Participatory research projects are designed in ways, which enhance the learning capacity of the participants in the process	Participation in planning is designed in ways which increases self-reliance of the community

well. Models can enhance local knowledge about the environment and are especially useful to demonstrate the connectivity of problems and potentials.

Even further potential for applying a PIA and its results is given if the PIA serves for (community-based) collaborative indicator development. This could be achieved in connection with a community-based environmental risk assessment that is complemented by modelling tools and the development of scenarios to discuss alternative options and measures [3].

A community-led Environmental Risk Assessment comprises among other methods and tools, the collaborative indicator development and the application of indicators during community self-surveys. The community self-survey leads to problem identification and indicator development. The indicators are used to define the Status Quo and later on during the phase of monitoring and evaluation to measure progress and failure of activities. The PIA improves especially by showing the connectivity of problems the information basis during the analysis phase and provides the starting point for participatory monitoring and evaluation.

Participatory monitoring and evaluation enhances negotiations and this leads to learning. This form of monitoring and evaluating can only work once the system design is flexible enough to react to changes (Gaventa and Guijt 1998). Another advantage of participatory monitoring and evaluation is that participating citizens, stakeholders and the local administration work together. This helps strengthening the links between locals and the public administration and builds trust among community members and officials.

[3]One example where such a tool is applied can be found in the Community-Based Environmental Management Information System (CEMIS), a community planning method developed to improve the urban environment (see Dzikus et al. 2001)

Could European water management benefit?

In the context of implementing the WFD on sub-basin or water body level, we face the problem that the means by which active public or stakeholder participation should be achieved are nowhere defined. The preceding section has depicted the potentials of PIA and participatory monitoring and evaluation for local level planning, which is also applicable for implementing the WFD. Additionally to the already mentioned advantages of enhanced negotiations and learning, participatory monitoring and evaluation leads to (Shah 2002):

- Shared control over the content, the process and the results of the M & E activity.
- Engagement by the stakeholders in taking or identifying corrective actions.

Figure 3 shows how tools of a PIA could be used during the first analysis of the river basins on local levels. It is

not realistic that such a high level of participation can be realised in all sub-basins or for all water bodies. Therefore, it would be advisable to gain first experience with this systematic approach where conflicting interests are very likely to occur. According to the WFD, a first overview of characteristics including results of the potential risks for water bodies is supposed to be ready by the end of 2004. This analysis may help to further define these locations where more information and deeper involvement of the public could be of major benefit. The PIA cannot only help to better identify the problems by making use of local knowledge but, especially, the participatory development of alternative scenarios by combining different measures would lead to a higher acceptance of local implementation of the river basin management plan and the plan of measures. This certainly requires the serious integration of PIA results into the River Basin Management Planning and may demand an openness of the planning to this bottom-up process. The objective is to identify the local water-related problems and the appropriate solutions that are evaluated based on available technology and affordability. The motivation of local stakeholders to get involved into the process does not stop by providing information, e.g. cost-effective implementation of measures could be guaranteed with the support of interest groups and the general public.

One example is recent discussions on anglers' associations of how they are affected by the WFD and how they may even benefit. Practical solutions by local anglers' groups are already discussed. Some are willing to take over the implementation of measures like establishing fish ladders, carrying out work at the river embankments and conduct the monitoring of fish populations. Here, the flexibility of local governments is also requested because this kind of work must be in return rewarded, e.g. by granting the fishing rights to the local anglers' club.

Although the first phase of implementing the WFD (collecting data and information) has already started, Fig. 3 shows that there is still scope to make use of local PIAs to elaborate the basis for a later participatory monitoring and evaluation as a means of better achieving the set goals. Participatory monitoring can especially contribute towards a more holistic approach to water management by adding qualitative aspects that are not measured by traditional quantifiable means (see Blackburn et al. 2000).

An example from Ontario, Canada, shows that committed citizens can even cope with more sophisticated monitoring tasks. A local NGO took over environmental monitoring tasks that otherwise would have been stopped due to serious governmental budget cuts. The monitoring program was in fact adapted to the abilities and interests of the citizens. A crucial role was played by the university that functioned as facilitator (Gore et al. 2003). The example depicts the advantageous economic benefits of participatory monitoring.

In the case of the WFD, it means that we try to achieve the following series of activities:

1. The identification of local problems,
2. The development of adequate community-based indicators,
3. The scenario-building based on the combination of measures, and eventually
4. The use of indicators during the monitoring phase.

The PIA would contribute to better accountability and transparency of the implementation process of the WFD. In practice, there would be the need to develop a community-based group of interested persons or representatives of interest groups that take over this task on a continuous basis. They would function as a source of information, but also for dissemination of information. Eventually, they support implementation and monitoring. For initiating such participatory activities for local

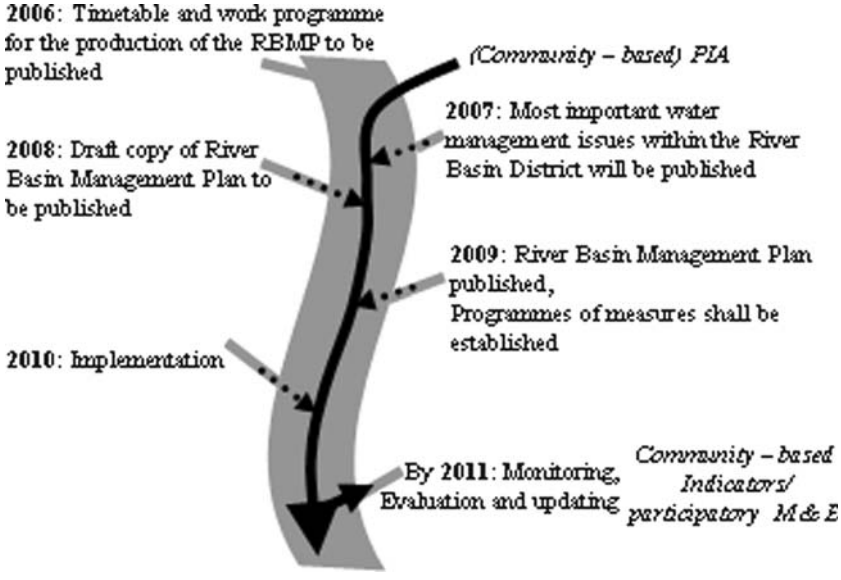

Fig. 3 Participatory integrated assessment and the water framework directive

WFD implementation, it is advisable to make use of running activities. One possibility is to make use of existing activities for the implementation of the Local Agenda 21.

First results of integrating different actors of society into sustainable development exist in many European countries. One example is the implementation of the local Agenda 21 in North-Rhine Westphalia. Local indicators were jointly developed among employees of the local government administrations, NGOs, migrants, women, politicians, external advisors, representatives of the local economy, and the general public. Despite the mentioned problems like organisational deficits, bureaucracy, lacking personnel and time, etc., the local governments evaluated the indicator development in general positive.

The benefits of integrating PIA into the local implementation of the WFD (see also MSWKS NRW 2000) can be summarised as follows:

- Integration of those most directly affected into the assessment design for joint analysis.
- Early negotiations about water-related issues create higher acceptance of the WFD.
- Community-based indicators help to create better understanding and the requested transparency of the process.
- Actors have a feeling of success, high motivation and more commitment towards the implementation of the WFD.
- Participatory monitoring & evaluation initiates learning.
- Increased self-determination of citizens.

To carry out an early PIA also allows starting a continuous monitoring process directly after the analysis. Evaluation activities that start earlier than 2015 even allow the implementation of the WFD to be more flexible and adaptive to changing circumstances.

Once PIA and its tools get recognised also by practitioners of administrations and authorities as useful for local level planning, it may receive a wider recognition and will be more systematically embedded into planning activities.

Conclusion

The science-based PIA cannot only improve the link between science and policy-making but also improve the link between science and implementation. The precondition to achieve it is a better integration of PIA into local planning activities. Such a better integrated and more responsible application of participation also complies better with the requirements of a knowledge economy.

Tools that are available for conducting a PIA are generally new to participatory activities in local planning. They may help improving the knowledge base during the analysis phase of a planning process. The participatory way of how the information is gathered and elaborated eases the way for a participatory implementation of measures and even a participatory monitoring and evaluation. This certainly demands a process setup that goes far beyond informing and/or consulting the public but requires their active involvement. The method of achieving the active involvement of stakeholders and the general public in the context with the implementation of the WFD is discussed in detail. The paper provided some ideas about the possibilities and ways in which PIA may help in this task. The difficulties of carrying out good participation arise once you look into the details of the process and hence are beyond the scope of this paper.

Additionally, to the general problems of participation in practice, the time pressure to implement the European WFD is high. It is obvious that early stakeholder integration into the process will be difficult. Relevant authorities are lacking the time and are partly uncertain about how to carry out participatory activities. If the coordinating authorities of river basins did a good job, the interest groups and the general public in the pertinent basins are informed about the framework directive, its content and the local implications. But in many cases, the information was rather limited. We are not aware of any cases where water authorities went even further and strived to establish a local dialogue among potential interest groups of a river sub-basin at this early implementation stage. Hence, the expectation to fully integrate stakeholders and the public into European water management remains, at this stage, hardly achievable. Nevertheless, the WFD still offers sufficient time to explore the possibilities of creating a more ambitious participatory process in selected cases. PIA and participatory monitoring and evaluation should be part of this process. These tools support individual and societal learning processes and correspond not only with general principles of participation but ease the way towards a knowledge economy.

Despite the depicted risks of participatory research and participation in IA, it is obvious that PIA does not contradict local level planning but planning should make use of PIA, if applicable. The trend towards ''PIA in (local level) planning'' will continue and should be strongly supported by scientists who strive for a practical relevance of their research for people.

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