Report on surfacing issues from the perspective of stakeholders and understanding measures to address those issues

Deliverable 5.1

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1 Background

In the Baltic Sea Region (BSR), pressures on land are multifold and characterized by increasing urbanization and intensification of agriculture that has led to conflicting interests in the management of water and land (UNEP 2005). MIRACLE focuses on developing new methods, concepts and governance approaches via a collaborative approach to reconcile diverging perceptions linked to different stakeholders on how to address nutrient and floods from a systemic perspective.

The process to engage and elicit stakeholder views acknowledges that managing water flows to reduce nutrient runoffs and reduce risk of floods requires an understanding of complex systems that include both human and biophysical components. To manage these systems, institutions and stakeholders representing different interests are called upon to work together. The MIRACLE project addresses these contrasting views with the ambition to facilitate a process to critically reflect on the multiple benefits of nutrient prevention measures that takes flood risk reduction into account and vice versa. The work package on social learning (WP 5) departs from a systemic perspective allowing for an examination of synergies and constraints of transforming flood and eutrophication prevention measures into ecosystem services providing multiple benefits. The WP's research is enabled by a social learning approach, allowing for engagement of different constellations of stakeholders in a co-enquiry process in the context of ongoing governance processes. In line with the theory of social learning, specific emphasis on the roles and values of different stakeholders and power dynamics will be considered (Checkland and Scholes 1990).

The emerging findings associated with the first phase of the project shows the need to frame issues considered important by a broad set of stakeholders (across scale, sector, class, age, scientific tradition etc within public, private and civil society spheres), that has the capacity to inspire engagement in issues that have previously not attracted the same amount of attention (for example - eutrophication in the BSR).

WP 5 has engaged in a broader multi stakeholder consultation process in each of four case river basins to identify the specific problem definitions connected to different stakeholders in the four basins. The results have been analyzed to identify broader common links between specific problem definitions connected to actors consulted in the project. That in turn led to the identification of a systemic issue: an issue that will serve both as a framing issue, but which also has exhibit properties constitute of a Meta level issue. Characteristic for a meta level issue is that measures applied to achieve quantifiable improvements in its status will also lead to improvements in other sub-issues (i.e some of the key problems articulated by stakeholders in the issue framing phase, including eutrophication).

This report focuses on the experiences connected to the process of issue framing and identification of systemic issues in the four case areas. The process elaborated on below has been designed to help stakeholders to develop possible measures to reconcile the issues they face. The first phase of the project can be categorized in two broader categories;

- The surfacing of socio-biophysical problems from the perspective of different stakeholders and ways to address actions and measures enacted in the four case areas.

- Defining the broader **systemic issue** in the four case areas that will guide the further implementation of the project and the identification of measures and actions for the project to assess and analyze. The approach and process leading to the identification of a systemic issue definition is further elaborated on in the next section of the report.

2 Social learning

The project applies *social learning* as an approach to facilitate critical reflections via constructive discussions, assessments and deliberations between key stakeholders representing different interests in the case areas. The work package on social learning departs from the understanding that issues connected to nutrients are complex (nonlinear), uncertain and controversial and thus call for the application of systemic and deliberative approaches to achieve a change. This in turn requires an approach that goes beyond the cause and effect type of analysis. Here, overdetermined problems are differentiated from "normal" risks, for which an explanatory relationship can be established between cause and effect. In contrast, over-determined problems are defined by non-linear relationships in which causes are causative but not explanatory (e.g. Powell and Jiggins, 2003).

Social learning and other collaborative processes have come under intense criticism in recent times on account for not being attentive to the power dynamics that silence some voices and promote others. Westberg's and Powell's (2015) study of so called collaborative processes in the implementation of the River Basin Management Plans in Sweden suggest that, ultimately, emerging plans and governance actions were shaped by those who had the most agency with the implementing organizations. These important findings have been embraced by the MIRACLE social learning WP. Namely, it is important to recognize "that different position-holders (implementers of actions) make competing claims, not so much over divergences in interests, but rather over whom should have the agency in the enactment of governance" (Powell et. al. 2016). In MIRACLE, special emphasis is put on the identification of stakeholders in each of the four river basins included in the project based on a recognition that the constellation of stakeholders is, in addition to the specific stake in the system, also characterized by a diverse set of interests, cultures, functions and roles.

3 Soft system methodology

To guide the implementation of the social learning approach the project has adopted the soft systems methodology (SSM). The SSM is a methodology developed to clarify complex unstructured human problem situations based on holistic analysis and systems thinking. SSM is a participatory methodology that helps different stakeholders to understand each other's perspectives (Toderi et al 2007). It focuses on exploring the human activity systems and human relationships needed for an organisation or group to achieve a common purpose (Checkland 1991). In doing so, the methodology integrates perceptions about the logic of how to improve a situation with what is socially and politically feasible. SSM was developed during the 1980s as large organisations realised that top-down and highly mechanical approaches to organisational management were not working in a rapidly changing environment.

The SSM starting point is that if people participate in the process of conceptualising the problem and learning about ways to improve the situation, they are more likely to understand

and embrace the improvements suggested, feel a sense of ownership and be committed to change (Powell & Osbeck 2011).

Adopting an SSM approach involves recognition that the process of analysis (human interaction) is as important as precision in the data and outcomes. The engagement of stakeholders is based on an assumption that there will be a change process, including improved understanding of perceptions between participants as well as among researchers and participants. This arises because of the opportunity to explore views about the problem and possible solutions from different stakeholder perspectives.

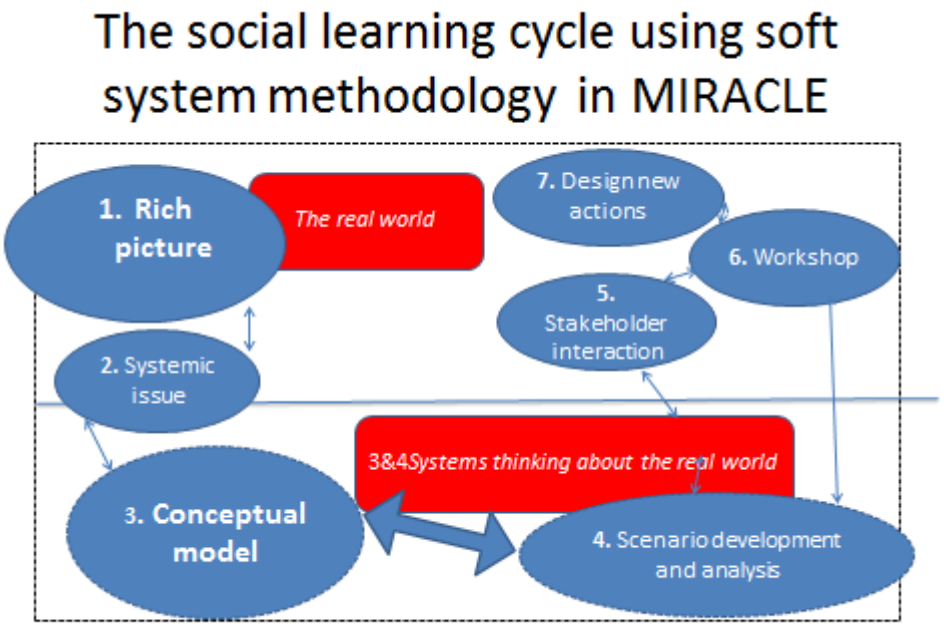

Figure 1. The social learning cycle using an adapted soft system methodology in MIRACLE. Source: Adaptation of SSM model from (Jackson 2003)

4 Rich picture - Stakeholder identification and consultation

In SSM the first step is to define the problem - a real-world problem (Fig. 1). The problem is assessed by exploring the systems linked to the problem. As described above, the MIRACLE project aims to engage stakeholders and facilitate a process to generate improved understanding of the perceptions linked to floods and nutrient management in the four case areas. In the consultation phase a broad range of stakeholders were invited to share their views. The initial identification of stakeholders was based on a mapping of private, public and civil society sectors, both upstream and downstream the river basins. A set of open ended interview techniques were employed that departed from the broader problem definition of the project on nutrient and flood management to explore stakeholder's views, interest and conflicts regarding the impact or performance of nutrient and flood management.

Based on the interviews, a rich picture was developed to describe the problem definitions of different stakeholder groups in the four case areas. The rich picture depicted a situation that illustrated the main factors and relationships that need to be considered in trying to understand the system/context and defining the scope of work needed to improve the participants' understanding.

The development of the rich picture provided a detailed overview of different perceptions of floods and nutrient management practices linked to different stakeholder groups. It generated a better understanding of the specific stakeholder defined problems.

Moreover, the rich pictures developed in the four case areas revealed the systemic interconnections between specific problem definitions, and thereby contributed to broaden the understanding of nutrient and flood management from a more systemic perspective. The rich picture thereby revealed relationships and connections that would have remained disguised in the absence of a co-enquiry process.

5 Stakeholder workshops

The consultations were an initial step that illustrated the importance of engaging different stakeholder groups. The first bigger stakeholder workshop was organized in each case area in August and September 2015 (Table 1). The main purpose of those workshops was to establish collaboration with a group of key stakeholders and to generate an improved understanding regarding which issues that MIRACLE would need to address in each case area. The first stakeholder workshop, involving key actors in each case area, was an opportunity to critically reflect on the issues identified in the consultation with stakeholders and to get feedback from participants on what we should focus on.

The workshops are seen to be much more than a dissemination exercise that communicates project findings. Rather, they enable the co-production of questions and findings and are part of a joint learning process with reflections about implications of actions, lessons and future outlooks. That calls for highly interactive forms of knowledge generation, where multiple stakeholders (including researchers) can engage in joint transdisciplinary knowledge production, dialogues and learning processes. Scientific research within the framework of the

MIRACLE project has a critical role to play in generating scientific understanding, but researchers also have to actively engage in interactive learning processes whereby their own and others' knowledge can be put to effective use and thereby support the work of the governance practitioners and other change agents.

The stakeholder workshops allowed stakeholders to critically reflect on the socio-biophysical problems they face in the case study setting. Emerging findings from the pre-consultation were presented from both the stakeholder and the researcher's perspective. That included, for example, contesting and deconstructing existing plans and regulations.

In the first session, participants were invited to present their visions for 2050 for the respective case river basins. It enabled a discussion based on perceptions linked to participants. Following the discussion about visions, the MIRACLE staff gave projections based on e.g. the HYPE model. The purpose was to introduce the model and data used in the project (and invite stakeholders to critically reflect on data and models). An overview of a plan of measures for the respective river basin was presented based on formal RBMPs. Participants were invited to critically reflect on the model and the plans.

Table 1. Timing and number of participants in the first set of stakeholder workshops in MIRACLE

Catchment, country	Participants		Time
	Stakeholders	MIRACLE	
River Helge, Sweden	12	3	6 September
River Helge, Sweden	11	3	12 October
River Selke, Germany	11	3	22 September
River Berze, Latvia	27	3	25 September
River Reda, Poland	13	5	9 September

6 Systemic Issue

The stakeholder consultations and workshops generated a complex web of problem definitions linked to different stakeholders. The specific problem definitions depicted different sustainability problems that stakeholder faced in the pilot sites. The probable interconnections were an important input for the hydro-chemical modeling, policy and cost benefit analyses.

It was agreed that, for the purpose of continuing a constructive stakeholder engagement in the MIRACLE project, the social learning process would benefit by having a systemic Meta level issue definition derived from the specific problem definitions identified. The notion of a systemic issue in the MIRACLE research grew out of earlier social learning research, which coined the notion socio-technical objects and/or mediating objects (Toderi, et. al 2007). A socio-technical object is a concrete artefact that: (i) can be adapted so that social learning can take place, grounded in practice or action (the technical part), (ii) brings different interests and meanings into a common social space, and (iii) enables participants to re-define their interests and build shared meaning (Slim 2004).

Thus, for the purposes of MIRACLE, a systemic issue was defined as: (i) a system property that has a demonstrable quantifiable or qualitative relationship with a subset of key stakeholder defined problems within the same context (ii) changes in the properties of the systemic issue

will lead to a change in stakeholder interpretations of their own and other problems (iii) an issue that has the capacity to bring different sets of clients and actors into the same social space[1] (iv) an issue that enables clients[2] and actors to redefine their interests and agency through the development of shared plans and actions.

Using the systemic issue definition as an arena for reconciliation of competing interests in the case areas enables the project to develop a platform where (1) co-learning is possible which is grounded in practice or action, and (2) different interests can contest, deconstruct earlier, and reconstruct new common visions and plans (Powell and Toderi 2003).

The work package on social learning conducted an analysis of the specific problem definitions connected to different stakeholders in each case area to identify a problem that both had a strong relationship (inverse or positive) to flooding and nutrients, and which had the largest number of direct and or indirect connections with the sustainability problems identified by workshop participants (Table 2). This higher level problem hereafter is referred to as a "systemic issue". It is called a systemic issue rather than problem because the same level of exposure of impact can have divergent effects across different stakeholders groups. For example, processes of nutrient enrichment can constrain one interest and promote another within same context. Hence, nutrient enrichment is more aptly referred to as an issue owing to divergent stakeholder interpretations within the same context. The same can be said for flooding. Flooding is an issue as its presence at the same level of exposure can be very positive from the perspective of one stakeholder group and very negative for another.

7 Conceptual models

Conceptual models are developed to depict interrelations and interdependences to show how systems might work better. As SSM is a systems methodology, the models are formed using systems concepts. In MIRACLE, the project has employed an adapted a version of the methodology where the conceptual model in SSM has been adjusted to allow for the pre-decided methodologies in the project, including hydro-chemical modeling, cost effectiveness and cost benefit analyses, to generate input to stakeholder dialogues (Fig. 1). The results of modeling, policy analysis and economic analysis are expected to contribute to the stakeholder interactions and dialogues. As part of the continuing engagement of stakeholders, the insights from the issue framing phase coupled with the identification of a systemic issue to mediate the social learning process in each of the case study settings.

Thus the critical reflections of stakeholders are guiding the modeling and analyses done in other WPs in the project. The iterative process has led to the emergence of new problem definitions and identification of new stakeholders. In line with the steps outlined in figure 1, it is expected that the project will lead to the design of new holistic actions.

[1] They are receptive to enter this social space because they have a material, financial, social or spiritual stake in the systemic issue.

[2] Clients have a material stake in a problem or process sometimes referred as interests. Actors and those who implement measures or policy to change a situation sometimes referred to as agents.

Table 2. Systemic issues and stakeholder specific problems identified in the first round of workshops in four case river basins in the MIRACLE project.

Catchment	Systemic Issue	Specific problem definition
Berze river	Ecosystem function	Excessive nutrient loading to surface waters from agriculture activities and household/ municipal wastewater treatment facilities and storm water collection discharges and, to a lesser extent, nutrient leaching from forestry operations. Hydro morphological alteration of the river channel and regulation of water flows by polder dams, small hydroelectric facilities and natural factors
Helge river	Brownification	Extensive historical drainage in the catchment for agricultural purposes and establishment of dikes in forest sector. Degradation of biodiversity. Hydro morphological alteration of the river channel. Weak enforcement of environmental laws. Rural developments promoted without appropriate consideration of potential impact on the natural resource base. Lack of clear mandate and administrative and financial support for River Basin Organizations. Incoherence in the implementation of EU Directives. In particular disconnect between Water Framework Directive, Rural Development Program and the Floods Directive.
Reda River	Flooding	Shortage of retention solutions to reduce flood risk; administrative, financial, legal, social problems, which are affecting their (retention solutions) development. Lack of sufficient control over the investments (difficulties to prevent construction of houses) in flood vulnerable areas. Lack of a unified, accessible to users, and not questionable database focused on potential and / or planned investments and water consumption in the Reda catchment. Need to establish long-term management perspectives in accordance with applicable laws, including adaptation to climate change, and sustainability principles.
Selke River	Biodiversity	Large scale farming with negative impacts on ecological status of water bodies. Nutrient enrichment leads to conflicts between agricultural interests and environmental/ecological

	interests. Agricultural activities impact on ecological status of water bodies and biodiversity. Lack of agricultural considerations in voluntary measures. Lack of cooperation and network activities across stakeholder. Conflicting objectives and effects of different policy instruments. Costs of environmental protection and biodiversity conservation for farmers. Lack of agricultural considerations in voluntary measures.

The conceptual models test the specific problem definitions connected to different stakeholders outlined in the first phase of the project. These conceptual models are then compared with the problem situation in order to identify desirable and feasible change. In MIRACLE, the conceptual model includes the calibration and use of the HYPE model in each catchment in the case areas. Modelling will be conducted to provide input to the analysis of specific stakeholder problem definitions identified in the mapping and consultation phase. The work package on cost-effectiveness and cost-benefit analysis will provide important input to the stakeholder deliberation process based on the problem definitions and suggested actions that emerged in the first phase. The work package on policy and governance will contribute with policy analyses. Scenarios designed to contribute to the deliberation of the systemic issue definition will be conducted as part of the conceptualisation.

Project information generated in the different WPs will be packaged and presented in a format conducive to share and deliberate on as part of meetings, focus group discussions and workshops. This is done using the visualization tool developed in WP 4. The outcome of stakeholder interactions will feed into the design of new assessments and analysis conducted in the different WPs.

8 Stakeholder interaction

The project has identified specific problem definitions linked to different stakeholders. The rich picture that depicts the local complexity of conflicting stakeholder perceptions in each case area is an illustration of the need to include actors as beneficiaries and victims in order to move towards the identification of appropriate actions to effectively address nutrient and floods. The stakeholder interaction was originally planned as a second stakeholder workshop in the project document, but the need to facilitate targeted stakeholder deliberations using information and materials from the project made the project revisit the plan and change the second set of workshops to targeted stakeholder interactions.

The stakeholder interactions will be facilitated as focus group discussions, small workshops and/or informal stakeholder meetings based on the context and the needs of the participants. The outcome of the interactions will lead to identification of actions and measures, i.e.

contribute to the design and development of scenarios, to test and assess for the respective case areas. This will generate materials and information to present, and feed into the design of the agenda, at the third workshop. The third workshop is a core feature in the social learning process and will provide the space and opportunity for co-learning between stakeholders in the case areas. The continuous stakeholder interaction is seen as an important and essential part of the project in terms of creating space to redefine interests and agency through the development of new plans and design of new actions.

9 Concluding reflections

In sum, this report has presented the process of issue framing and identification of systemic issues in the four case areas that will guide and inform to next phase of the project (see e.g. D 5.2). The results from stakeholder consultations and workshops show that different stakeholders view the problems differently depending on the specific institutional and biophysical context they operate in.The initial stakeholder identification that departed from a broader geographical and institutional scope (public, private and civil society actors) has been of great importance to pave the way for a constructive social learning process. In Sweden for instance, the project had to organize two initial stakeholder workshops to accommodate the different stakeholders in upstream and downstream areas. Through this iterative process new actors were also identified that complemented and provided additional perspectives on the various issues that had been discussed. The systemic issue has thereby enabled multifold of specific problem definitions to be addressed and problematized. For instance, the hydropower sector has emerged as an important sector in both Sweden and Latvia. We also see that the process so far has indicated an openness by stakeholders to rethink their initial problem definitions, which indicates the importance of having an iterative and flexible methodological approach.

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11 ANNEXES