Publishable Summary

BONUS MIRACLE

Mediating integrated actions for sustainable ecosystems services in a changing climate

Covering the period 2015.04.01 to 2016.03.31

Scientific Coordinator: Karin Tonderski, Assoc. Prof., IFM Biology, Linköping University
Tel: + 46 13 28 44 67
E-mail: karsu@ifm.liu.se

Project website address: www.bonus-miracle.eu

BONUS MIRACLE goals and expected final results

The BONUS MIRACLE project approaches ecosystem services by policy instruments that acknowledge interlinkages between eutrophication, flood management, biodiversity, coastal water quality & human health. The hypothesis is that more effective approaches to 'nutrient governance' cannot focus solely on the nutrient issue itself. Real changes will require bringing on board new constellations of stakeholders having issues that are interconnected with nutrient enrichment. The objective is to identify, measure and recommend cost-efficient solutions in the Baltic Sea region, through modelling, visualization, stakeholder dialogues and social learning.

BONUS MIRACLE also identifies how institutional settings have shaped governance structures and policy instrument choices and provide road maps on opportunities for improved integration of agricultural, environmental and risk management policies adapted to a changing climate. By creating a forum for dialogue and social learning between researchers and stakeholders in case study areas in Latvia, Poland, Sweden and Germany, consensus building and priority settings are used to develop roadmaps and new models of governance from trade-offs between different objectives. Cost-effectiveness and cost-benefit analyses of priority measures are linked to interactive modelling of sources and the magnitude of eutrophication and floods in a changing climate. Impact scenarios of measures suggested by stakeholders to reduce floods and eutrophication are modelled, and the impact on e.g. biodiversity, human health and biosecurity assessed. Finally, recommendations for innovative governance structures and instruments are formulated, including payment for ecosystem services, in order to improve incentives for provision of sustainable ecosystem services.

Work performed in year 1 and main results achieved

BONUS MIRACLE is an interdisciplinary project with many internal and external communication challenges. Therefore, a comprehensive Communication plan and Dissemination Strategy has been agreed upon to facilitate the exchange of data and results between Partners and with Stakeholders. A fundamental part of the project is interactions with stakeholders, and a forum for social learning and dialogues between project researchers and stakeholders has been created in four case study areas. Berze (Latvia), Reda (Poland), Helge å (Sweden), and Selke (Germany). The stakeholders´ different problem definitions have been mapped and a systemic issued defined for each area. Emerging results show that a platform (e.g. Water boards) that allows for inclusive learning dialogues is lacking in all case areas, and that the stakeholders have quite diverse problem definitions. Therefore the original approach, i.e. three joint workshops with all stakeholders in each area, has been revised to allow for a series of learning events between discrete stakeholder groups and researchers before bringing all stakeholders together. In this process, the aim is that stakeholders and researchers will reconstruct new governance scenarios (Fig. 1).

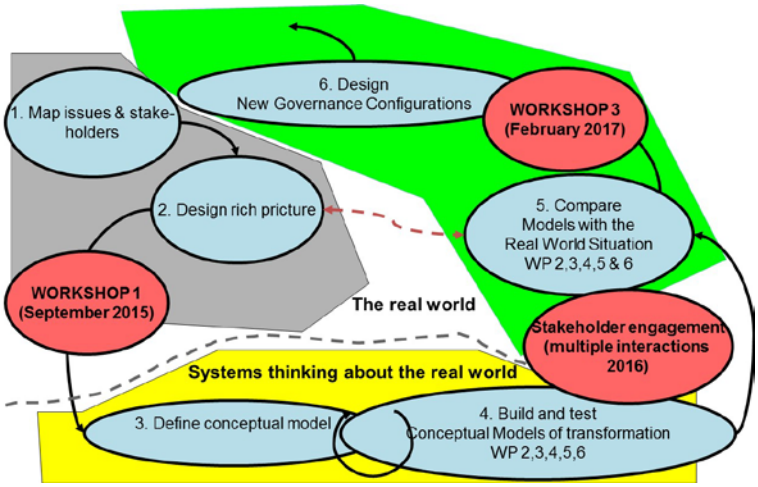

Figure1. The social learning cycle in the BONUS MIRACLE project, using the soft systems methodology (SSM). Adapted from Jackson (2003).

To provide input to this learning process, a knowledge data base of existing eutrophication and flooding conditions has been created, incorporating existing reports and already published results from the respective areas. For each case area, the HYPE model has been set up and a first round of calibrations completed, preparing for modelling of the scenarios suggested by stakeholders. Also, a compilation of the cost efficiency of common measures in the BSR was provided as an input to the stakeholder consultations after the systems boundaries for the socio-economic analyses were defined. A review process has also started to collect more extensive data on cost-effectiveness and impacts from previous studies about environmental mitigation measures in the region, parallel to data collection in the specific case areas.

In BONUS MIRACLE, the interaction with stakeholders is facilitated by visualization of research results from the environmental modelling, socio-economic and governance analyses, and during year 1 a prototype of a web-based visualization platform has been developed (Fig. 2). The first results from HYPE modelling have been integrated in the tool and a first successful test made in interaction with stakeholders. Part of the visualization material is also shown on the project homepage (http://www.bonus-miracle.eu/).

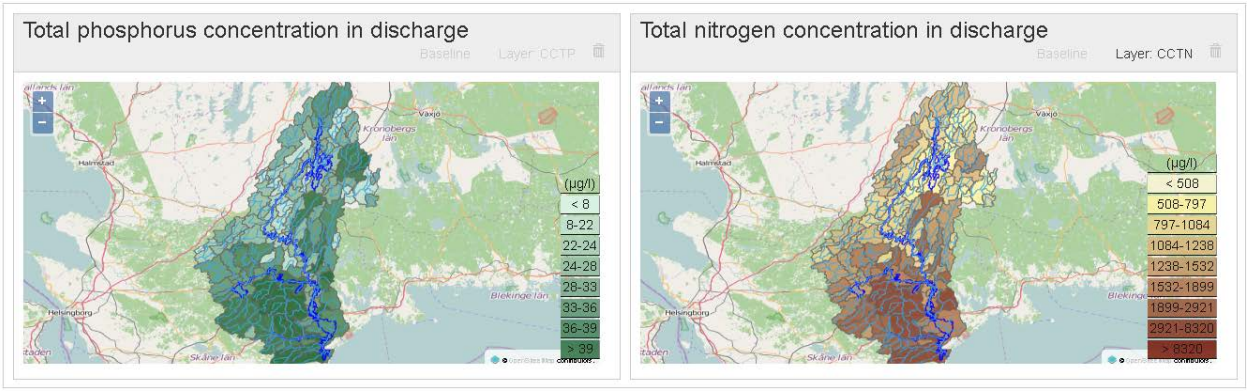

Figure 2. Phosphorus and Nitrogen concentrations in sub-basins of Helge å, Sweden, modelled with the HYPE model.

As part of the policy analysis, an analysis has been produced that assessed to what extent the ecosystem services framework is already applied in agricultural and environmental policies in the EU and the BSR. This report is published on the project homepage (http://bonus-miracle.eu/results) and is an essential basis for the forthcoming analysis of the institutional settings, governance arrangements, and policy instruments for key policy documents in each case area. In addition, a first Policy Brief has been written about the existing experiences with innovative governance approaches and policy instruments to deliver multiple ecosystem benefits in the EU and further afield.

The BONUS MIRACLE project are also organizing PhD courses**.** Those are open also to students from other BONUS projects and to PhD students outside the BONUS sphere. In the first year, a course on HYPE modelling was implemented and a second course has been announced to be given in August 2016 on "Baltic Innovative Governance Approaches to Catchment Water Quality in a Changing Climate".

Keywords:

Baltic Sea, case study areas, catchment governance, cost efficiency, ecosystem services, eutrophication, flooding, forum for social learning, HYPE model, PhD courses, policy brief, web-based visualization platform

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