

## Publishable Summary

### BONUS MIRACLE

## Mediating integrated actions for sustainable ecosystems services in a changing climate

*Covering the second period 2016.04.01 to 2017.03.31*

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## Project 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, cost-benefit estimates, visualization, and stakeholder dialogues in social learning process.

The project will identify 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. Furthermore, results from modeling and cost-benefit estimates of stakeholder suggested development pathways and innovative governance approaches will be scaled up to the Baltic Sea Region level and existing knowledge gaps identified.

## Work performed in year 2 and main results achieved

- ✓ The second consultation round in the social learning process has followed the revised approach, as was agreed in the first year, to allow for an iterative series of learning events between discrete stakeholder groups and researchers before bringing all stakeholder groups together in the respective four case areas. This has led to formulation of development pathways, including measures with the potential to generate multiple benefits. The third round of consultations, aiming at reconciling multiple demands between diverse groups, is on-going and includes results on the scope for implementing governance and policy innovations.
- ✓ An assessment of existing institutional settings and governance structures in the four case areas has led to identification of strengths, weaknesses, and opportunities of existing institutional settings and governance structures with respect to innovative governance approaches and policy instruments to deliver multiple ecosystem benefits. Analyses of the River Basin Management Plans (RBMP) and the Rural Development Program (RDP) in four countries show that the top-down planning approach does not encourage local/regional initiatives or entrepreneurship in policy planning. Furthermore, a systematic approach for the identification, testing, verification of the effectiveness is not established. It is also clear that support payments do not reflect real costs and different levels of ecosystem services provision.
- ✓ The effects of the pathways on water flow, nitrogen and phosphorus transport has been modelled for the catchments Helge å and Selke, and partly for the Berze and Reda catchments, though the modelled effects of all individual measures constituting the pathways still need to be assessed. However, a suggested extensive use of buffer strips was shown to have a clear effect on concentrations of total phosphorus in two case areas. Effects of climate change scenarios and potential land use changes (to 2030) have also been included for the Helge å catchment in South Sweden, indicating a reduction of water flow and nitrogen load to the Baltic Sea. Similar model results will be included also for the other catchments in the cross case workshop. Upscaling of results from the model HYPE (HYdrological Predictions for the Environment) to the Baltic Sea region scale is on-going.
- ✓ A data base on costs, effects and benefits has been created and is continuously updated as new data are gathered in response to the revisions of the development pathways suggested

in the third workshops. Also, a common framework approach for making a cost-benefit analysis with multiple ecosystem services based on stakeholder interactions has been developed.

- ✓ Data and results from the hydro-chemical modeling and cost structure analyses have been integrated in the web-based visualization platform (a link is available on <http://www.bonus-miracle.eu>) and tested in the third round of workshops in the case areas. Further integration of model results and cost-benefits is on-going as more results become available.
- ✓ A one week PhD course on “Innovative Baltic governance approaches to catchment water quality in a changing climate” was run in August 2016 with 9 participating PhD students, mainly from BONUS projects.
- ✓ Project partners have actively contributed suggestions for development and implementation of environmental policies in the Baltic Sea region, and acted as members in stakeholder committees.
- ✓ A plan for the final conference jointly with the BONUS projects SOILS2SEA, BALTICAPP and GO4BALTIC has been defined, international keynote speakers invited, the first call for abstracts sent out and a conference homepage draft version created.