



Newsletter

April 2009

BONUS Baltic Organisations Network
for Funding Science EEIG

BONUS+ KICK-OFF CONFERENCE LAUNCHED THE PROGRAMME



On 13-15 January 2009, about 130 Baltic Sea scientists convened in DIPOLI, Espoo, Finland, in the BONUS+ Kick-Off Conference. The event was a real culmination point, shifting BONUS into a new era. After five years' of preparation within the BONUS ERA-NET project, which involved mainly RTD administrators in the Baltic Sea funding agencies, the real players, the researchers, entered into the scene. This group of scientists has gone through an extremely tough competition in the BONUS+ Call, where the success rate – the number of funded projects in relation to the original letters of intent – was only 11%.

The event was the first convening of the programme, and therefore the aim was to introduce the projects and their participants to each other, with the intention of promoting a new kind of collaboration and synergism between the projects. During the two first days, presentations of the 16 projects were heard under five sessions: 1) Governance and Management, 2) Physical Conditions and Climate Forcing, 3) Biological Effects of Pollution, 4) Functioning of Biogeochemical and Biological Systems, and 5) Biodiversity from Genes to Habitats. The last BONUS Newsletter (November 2008) introduced all the projects briefly, and this Newsletter presents two projects, IBAM and RECOCA, in more detail (pages 4-5). The coming BONUS Newsletters will continue presenting two projects each.

When working within a large programme, one cannot avoid a certain extra administrative load. Coherent

and coordinated project reporting is crucial in BONUS+. In order to secure the programme's funding also in the future, the programme management has to be able to demonstrate the added value created by the programme to the nine funders, including the European Commission. This means that the Secretariat has to collect quantitative information about various topics using questions that may sometimes seem strange. Therefore, on the afternoon of the second day, a dedicated session was arranged for administrative issues such as financial and scientific reporting, contracting procedures, data policy issues and dissemination.

New ideas for collaboration

The conference ended on the third day with a brainstorming session of

the project coordinators. The topic of the discussion was how to create the added value of the programme. It was encouraging to hear how many ideas for collaboration between the projects had already been born during the two days' introductory sessions.

The production of the BONUS-169 Science Plan and Implementation Strategy was seen as a clear added value. However, it was emphasized that in order to get the best out of the scientific community, the events organized by the management need to be scientifically interesting. They should be based on active participation (e.g. in the form of a panel), not only listening. Good topics would be e.g. climate model skills (what are skills and how to use them), the value of ecosystem models, predictability of ecosystem models, and the dynamic approach. The participants emphasized collaboration with stakeholders. The idea should be not only to contact but to participate in the work of stakeholders, such as HELCOM's working groups.

Kaisa Kononen

BONUS YOUNG SCIENTIST CLUB CONVENED FOR THE FIRST TIME

One of the ambitions of BONUS is to look into the future in terms of creating networks between tomorrow's leading Baltic Sea scientists already in the early stage of their careers. To this end, a dedicated forum, BONUS Young Scientist Club (YSC), was established during the Kick-Off Conference. Its first meeting was organised by Finnish PhD students and post-docs. The idea is that following meetings, always to be held in connection with major BONUS events, will be organised by local young BONUS scientists.

The first meeting discussed thoroughly the expectations that young scientists have regarding the programme. A general concern was the availability of travel funds for young scientists to attend pro-

gramme events. It was noted that it is important that everyone has the chance to participate in at least the annual BONUS meetings. Also, the possibility to visit other laboratories was considered important. The participants hoped for a common pot of travel money to be applied as grants.

Regarding postgraduate training, participants hoped for interdisciplinary courses that would be of interest to everyone. Also, workshops with more specific topics could be organised. The proposed course subjects were economics/socio-economics (related to environmental issues), European and national environmental policy and management, and an introduction to modelling.

CONTENTS

BONUS+ Kick-off conference launched the programme 1

BONUS Young Scientist Club convened for the first time..... 1

Editorial: New avenue 2

BONUS in a nutshell..... 2

BONUS seminar highlighted the role of science in regional seas strategies 3

IBAM Integrated Bayesian risk analysis of ecosystem management in the Gulf of Finland 4

RECOCA Reduction of Baltic Sea Nutrient Inputs and Cost Allocation within the Baltic Sea Catchment 5

BONUS Cook Book: Building administrative framework for the joint Baltic Sea research programme 6

One of the co-chairman of EUROCOML comes from the Baltic Sea 7

Sectoral research reform integrates Baltic Sea research in Finland..... 7

7th Baltic Sea Science Congress: "Towards better understanding and improved technology for serving the society", Tallinn, 17-21 August 2009.... 8

BONUS+ CALL for joint training proposals open..... 8

Training events should be intensive one- or two-week courses, but they should not be arranged in summertime, when almost everyone is busy with their field samplings. "Hands on" courses are preferred.

The meeting expressed a wish for workshops to be organised during the annual BONUS meetings, serving as frameworks for dissemination and networking among young scientists. Also, topic specific workshops could be organised if regarded useful.

The most efficient way of communication would be to establish a young scientists' mailing list, with instructions on how to join the list on the BONUS portal. All participants found the Young Scientists Club to provide good surroundings for networking and sharing experience and expertise.

Helena Jääntti,
University of Helsinki
and **Kaisa Kononen**

EDITORIAL: NEW AVENUE

Marine and maritime issues cut across a multitude of themes and sectors of economy involving a huge range of actors, whose interests often counteract with each other. This multitude was evident in the HELCOM's 4th stakeholder conference, which convened in Helsinki on March 3rd, 2009. Looking at the list of participants of the stakeholder conferences now and before, it is pleasant to see that key Baltic Sea scientists, research institutes and universities have always formed an important part of the speakers and the audience.

Participation of research policy representatives of the Baltic Sea countries has not been so frequent. Ministries of Science and Education or major public research funding agencies have not per se been regarded as key stakeholders participating in such conferences.

The situation is changing, however, through the development of the BONUS-169 Programme. The novelty of the BONUS-169 Programme is that key actors within the research and development sector, both national and EU, have created and institutionalised joint fund-

ing cooperation in support of the environmental protection of the Baltic Sea and sustainable use of its good and services. By this, the research funders have taken a big step towards the actual knowledge users by offering their financial resources and funding mechanisms to support better and more sustainable policy making. BONUS-169 is not only coordinating and integrating Baltic Sea science policy across national borders but also breaking through sectoral borders.

The research policy sector, which inherently considers scientific excellence among its highest values, is increasingly acknowledging the societal impact of science as an equally important value. It has the potential to provide the key to reconcile the need to protect the marine environment while exploiting its resources in a sustainable way. This can, however, take place only if the research policy sector actively

adopts an integrative cross-cutting approach in terms of the scientific disciplines and regarding communication with both environmental, social and economic sectors. Ideally, research should not stand as a pillar of its own but become a supporting foundation for better national and EU policy, governance and decision making. Research policy should take an active role of absorbing ideas and research needs from other policy sectors and use its funding instruments in a cost effective way to promote targeted research according to the needs of users. Also, it should ensure that the knowledge generated by scientists is used for better policy making and simultaneously guarantee that the marine and maritime research is of high scientific excellence.

The Baltic Sea is an ideal test case for developing this new avenue.

Kaisa Kononen



Rodeo.fi / Tero Sivula

BONUS IN A NUTSHELL

The word BONUS is used several times in this Newsletter. The term was first used only in the context of the BONUS ERA-NET project, which finished in the end of 2008. During the course of the project, new activities were developed, which have got their own BONUS inspired abbreviations. Today, BONUS is used as a general term referring to all of these activities.

BONUS EEIG is a legal entity with a full name of BONUS Baltic Organisations Network for Funding Science EEIG. It is an independent

organisation under the legal entity of a European Economic Interest Grouping, which was established in order to be a contractor with the European Commission and other possible parties. Its members are either funding agencies directly or organisations managing national funding allocations for the joint calls under the Joint Baltic Sea Research Programme. BONUS EEIG is funded by the member fees and the Finnish Ministry of Education. As regards the BONUS+ Call, BONUS EEIG is the contractor concerning the EC funds, it manages the call and the evaluation process

and distributes the EC funds to the national funding agencies after the selection of the projects to be funded. The aim is that in the future all members contributing to a call would transfer their funds to a common pot which would be fully managed by the EEIG.

BONUS+ is a call that was launched 2007. It includes both national and EC funds. The latter are from the so-called ERA-NET Plus funding scheme of the EU Seventh Framework Programme on the basis of a specific contract

with the EC, and therefore the call abbreviation is BONUS+. BONUS+ is also a term used for the 16 research projects funded through the call. The implementation of the BONUS+ funded projects is to take place during 2009-2011.

BONUS-169 is the abbreviation given to the Joint Baltic Sea Research Programme. The aim is to implement this programme under Article 169 of the EC Treaty, and thus its abbreviation is BONUS-169. The start of the Article 169 stage has been postponed until 2009. The programme has, however, started already in 2007 with BONUS+ call as a bridging measure.

BONUS EEIG Members

Danish Agency for Science, Technology and Innovation

Estonian Science Foundation

FiRD Coop, Finland

Forschungszentrum Jülich Beteiligungsgesellschaft mbH, Germany

Latvian Academy of Sciences

Agency for International Science and Technology Development Programmes, Lithuania

Foundation for the Development of Gdansk University, Poland

Swedish Environmental Protection Agency SEPA

Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning FORMAS

BONUS SEMINAR HIGHLIGHTED THE ROLE OF SCIENCE IN REGIONAL SEAS STRATEGIES

The European Commission has started to adopt a holistic approach for tackling the economic, environmental, social and governance challenges of its seas and oceans. The objective is to create integrated transnational strategies that will make economies and societies surrounding the regional seas prosper, while simultaneously taking better care of the common marine resources and environment. The first regional strategy is being developed for the Baltic Sea area.

In order to influence decision makers to support marine research and environmental management activities in the enclosed regional seas, BONUS EEIG organised together with European Commission's DG Research, DG Environment and DG Maritime Affairs and Fisheries a seminar titled "Marine Science Contribution to the Regional Seas Strategies". The seminar took place in Hotel Silken Berlaymont in Brussels on 9 December 2008. It finalised the series of dialogue meetings under BONUS ERA-NET Work Package 6.

The main idea of the seminar was to demonstrate how science can help to achieve targets set in regional strategy documents and to show concrete examples of successful linkages between science and policy. It was addressed to people dealing with marine, maritime, regional and research issues in European Union institutions and other stakeholder organisations. The number of participants was 71, representing research institutes, councils, regional and liaison offices, the European Parliament and Commission, and member states' permanent representations and ministries. The seminar had altogether 12 invited speakers.

Manuela Soares, Director in DG Research, spoke about the status and vision of the Commission research policy. Soares outlined recent developments in EU research policy: the establishment of the European Research Area; the possibilities of the 6th and 7th Framework Programmes, including ERA-NETs, which strengthen research programmes at the national or regional level; and the ERA-NET Plus instrument, of which BONUS is an example. In addition, the legislative proposal on Article 169 Joint Baltic Sea Programme was discussed.

Christopher Beazley, MEP and Chair of the Baltic Intergroup, held an inspiring speech about the role of regional cooperation in the EU. His message was that regions are drivers in European development. If the Parliament and Commission are to

encourage their initiatives and be serious about the strategies that are being prepared, starting with the Baltic Sea region, they should also allocate a budget line for the Baltic Sea Region Strategy. At the moment there is no funding, whereas the union for the Mediterranean has a budget of over €300M.

Miguel Avila Albez, Programme Manager in DG Regional Policy, presented the process of the strategy for the Baltic Sea. He pointed out the existing financing possibilities, for example territorial cooperation, convergence, competitiveness and ENPI programmes. The figures presented of allocations received by member states in the Baltic Sea region evoked the question of why there are so big differences between the countries. The answer was that some countries receive more because of their larger population and relatively weaker economic and welfare situation.

Dr **Johnny Reker** from the Danish Agency for Spatial and Environmental Planning together with Dr Jan Ekeboom from the Finnish Natural Heritage Services of Metsähallitus talked about Baltic marine spatial planning with examples from the Interreg IIIB BALANCE project. Mapping the marine environment can be applied to planning and choosing sites for different uses of the sea. One of the outcomes of the project was a maritime spatial planning template that guides the process for similar projects. The data of the project is available at www.balance-eu.org.

Jorge Rodriguez Romero's, Policy Officer in DG Environment, speech about the implementation of EU's water legislation highlighted the fact that the Framework Programmes are very relevant for water policy as they address the needs for both basic and applied research. Also, they involve a part of social sciences in the implementation of water legislation in member states. To develop a common approach for the marine strategic framework directive, contacts across regions are important. Romero also emphasised the important role of stakeholders in developing science.

Anne-Christine Brusendorff, Executive Secretary of Helsinki Commission, claimed that the HELCOM Action Plan should be accepted by the Commission for implementation of the marine environment strategy directive and reminded that HELCOM is ratified by all the Baltic Sea countries, whether or not they are EU member states. She was asked what method is used for such a comprehensive programme and

if they are concerned in searching for causal effect links. HELCOM's work focuses on the whole catchment area, and the process has ecological and socio-economic objectives. By compiling data from various sources, the aim is to indicate the current status of the sea, its causes and sources of land-based pollution.

Fredrik Wulff, Senior Adviser in Baltic Nest Institute, presented an example of a tool developed by Nest, which can be used in science-based decision-making, notably in reducing the nutrient loads and in allocation of these reductions between the Baltic Sea countries. Wulff pointed out that science can help to reach environmental targets, but it is policy-makers' job to define what a desirable status of the environment is and which measures are socially acceptable in trying to achieve that status. The Nest model is available at www.balticnest.org.

Hein Rune Skjoldal, Research Director in the Norwegian Marine Research Institute, presented a pilot project on ecosystem management in the North Sea called NORSEPP. During 20 years it has collected data on different biological variables, indicating the human pressure on the ecosystem. There was a question on whether the reference years and species were chosen on an environmental or economical basis. According to Skjoldal, the choice was based on what was considered as sustainability of the marine system at the time when the collection of the data was started.

Snejana Moncheva, Deputy Director of the Institute of Oceanology of the Bulgarian Academy of Sciences, brought a perspective from the Black Sea marine research. Her presentation demonstrated how the invasion of exogenous species in the Black Sea led to a decline of plank-

ton and collapse of fishery, which then brought up the initiatives for improving the environmental condition. Achieving environmental sustainability requires an ecosystem management approach, which in turn requires a system-wide scientific understanding and international cooperation.

Haitze Siemers, Policy Officer in DG Maritime Affairs and Fisheries, talked about the implementation of the EU maritime policies in the regional seas. The implementation is split into regions because the Commission considers the regions to be the main players and best informed of the regional differences. The reasons for choosing the Baltic Sea as a model region are the history of cooperation and groundwork done. In this regard the Baltic Sea region is more advanced.

Dr **Nikos Streftaris** from the Hellenic Centre for Marine Research represented the SESAME project, which aims to assess recent changes and the status of the sea ecosystems, and to predict changes due to external factors and consequences of human activities. When asked if and how SESAME and the Mediterranean benefit from research carried out in the Baltic Sea and vice versa, Streftaris answered that interaction and information exchange is ensured both ways. For example, the Executive Director of BONUS EEIG is part of the SESAME Advisory Board.

The PowerPoint presentations of the speakers, the programme, participant list, press release and a statement on BONUS-169 and the Baltic Sea Strategy are available on the website www.bonusportal.org/events.

Heidi Rosqvist and Tiina Tembe



IBAM

INTEGRATED BAYESIAN RISK ANALYSIS OF ECOSYSTEM MANAGEMENT IN THE GULF OF FINLAND



Laura Uusitalo
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The Baltic Sea is like a patient with many ailments. And just like doctors, scientists have to evaluate the integrated risks and find remedies strong enough to decrease the overall threats. To this end, the IBAM project aims to develop appropriate methodology, using the Gulf of Finland, the most stressed part of the Baltic Sea, as a case study area.

The Baltic Sea is under severe strain from various sources: eutrophication and climate change are altering the environmental conditions under which species have to survive, and oil spills and exploitation such as fishing and hunting add further stress on populations. Only a part of the stress factors are under human control, and some of these only partially. If society wants to safeguard the current elements of the ecosystem, it must develop effective management systems that take into account the integrated risks and the rare and poorly known threatened species.

Our knowledge about the current state and functioning of the ecosystem, let alone future developments, is far from perfect. However, ecosystem management cannot be postponed until better knowledge is available; managers need to work under uncertainty by necessity. To support management, there is a high need to develop models that can integrate evidence under uncertainty and make probabilistic predictions for all decision alternatives at the same time. Obviously, predictions concerning the impact of management actions are also bound to be uncertain: we cannot say exactly how the ecosystem will respond to changes.

Management needs are often stated as the main reason for the need for further research. Decision analysis can be a valuable tool in analysing which uncertainties are the most relevant for the management. If better knowledge about an ecosystem component changed the preferred order of management actions, the value of that information would potentially be high. However, it is also possible that even perfect knowledge about another part of the ecosystem wouldn't change management decisions. Value-of-information analysis can be used to direct research to areas of biological or socio-economic information where new information will most likely lead to a new policy.

IBAM will produce an interactive and understandable model tool for decision making

IBAM applies Bayesian statistics in the modelling. The possibility to use informative priors, i.e. results of earlier studies, is the most important benefit of this methodology. In classical statistics it is explicitly stated that the only relevant information for the stakeholder is in this particular data set, and that published studies made by others are not relevant. This is a very strong statement, and in most cases not true.

The final product of the project will be a Bayesian network model. These models can handle large systems but still be interactive and understandable to stakeholders, the general public and other scientists. The final model is based on the algorithms of artificial intelligence, and it will incorporate various sources of information: new data analyses and meta-analyses, literature, and expert assessment.

The final probabilistic decision model will be a relatively complicated model (see Figure for a conceptual model), but it will have a web-based user interface, making it easy to use and pedagogic with explanatory comments. The model will have high pedagogical value both inside and outside academic communities. As Bayesian models calculate also from effects to causes, the model can be used to set up aims and calculate what is needed to achieve them. Similar questions are difficult to handle using more traditional models.

The project will choose a group of species to be used as a demonstration of integrated risk analysis. The selected species will represent various groups: Baltic herring as an economically important, exploited species that also plays a role in the pelagic ecosystem; bladder-wrack algae as a keystone species for the coastal ecosystem; common reed as both an integral part of and a threat to the coastal ecosystem; common eider as a typical species of the outer archipelago; and an endangered species. Each of these species is threatened by more than one of the pressures faced by the Baltic Sea, and all of the pressures threaten more than one of the species.

The results will be presented, when applicable, as compatible with widely agreed reference levels such as those set by ICES, HELCOM, and the Water Framework Directive. By this the consortium aims at straightforward applicability of the results.

Available financial resources do not allow similar analysis of the whole Baltic Sea. However, this project will develop the required methodology and demonstrate the usefulness of the approach. After this project, the same methodology can be applied in other, less heavily impacted Baltic Sea regions.

Fisheries management is a good example of how to manage threatened species

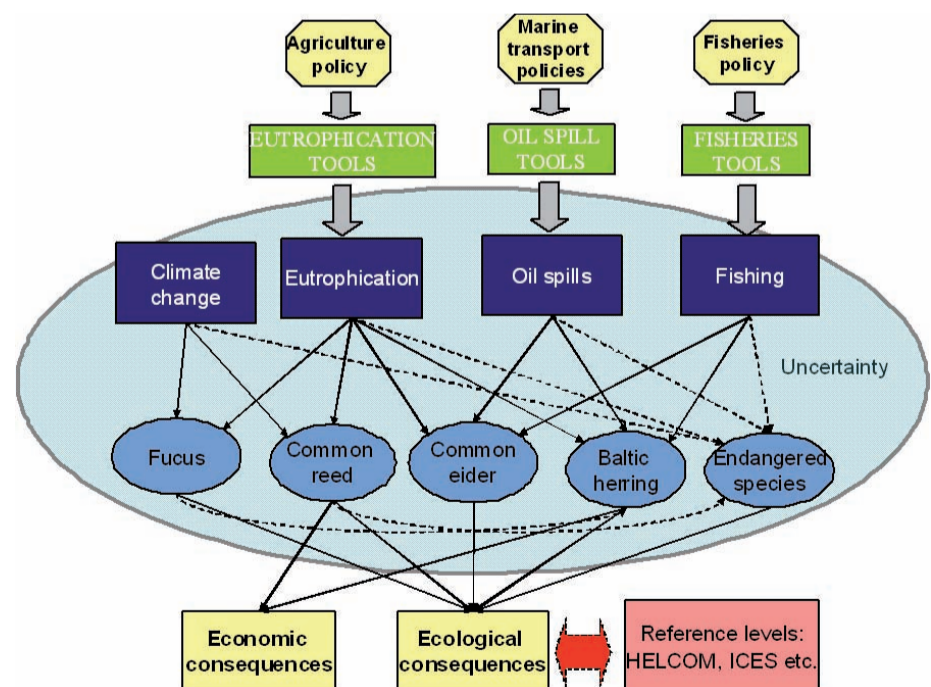
Fisheries management has made the use of biological knowledge very operational, because Total Allowable Catch (TAC) decisions must be made every year. Therefore, lessons learned in fisheries should be used in other fields of biological applied sciences. This includes decisions on how to use historical data, estimate uncertainties, and describe management options and risks. In particular, the use of probabilistic information in the management of threatened species should follow the examples of fisheries science.

The project will also evaluate the need for a joint management authority by viewing the impacts of combined management measures in contrast to separate actions in each area of administration. The latter approach may lead to arguments like "this risk is not our responsibility" and ineffective communication of risks. Findings will be relevant for policy discussions on how responsibilities should be arranged.

The project team includes the following partners: University of Helsinki (UH)/FEM group, Helsinki University of Technology (TKK), The Estonian Marine Institute, University of Tartu (UTARTU), The Finnish Environment Institute (SYKE) and Blekinge Institute of Technology (BIT).

It is obvious that this type of analysis is possible only with the help of large databases and existing publications. Therefore, the IBAM consortium welcomes the more open data policy implemented by e.g. ICES. The Baltic Sea is our sea, and we need to do all we can to help it.

Sakari Kuikka and Laura Uusitalo
University of Helsinki



The schematic structure of the final decision model. A separate model will be developed for each of the species first, and the findings will be incorporated into the decision model in the final phase.

RECOCA

REDUCTION OF BALTIC SEA NUTRIENT INPUTS AND COST ALLOCATION WITHIN THE BALTIC SEA CATCHMENT

The BONUS project RECOCA has its main roots in the research programme MARE, funded by the Swedish Foundation for Strategic Environmental Research, MISTRA, between 1999 and 2006. The main outcome of MARE was a user-friendly decision support system (Baltic NEST). When MARE ended the Baltic Nest models continued to be maintained and developed within the Baltic Nest Institute (BNI). Thus, one may say that the MARE project has been institutionalized as the new Baltic Nest Institute (www.balticnest.com).

BNI is now an independent research institute located in Stockholm Resilience Center (SRC), Stockholm University, and in Denmark in the National Environmental Research Institute (NERI), Århus University in Roskilde. Today, some 25 researchers are working within BNI. Baltic Nest links information on environmental conditions and costs in the entire Baltic Sea region through a series of models where possible measures be explored. The current models will be further developed to provide sound management options for negotiations between riparian countries within HELCOM and the EU addressing priority environmental issues of the Baltic Sea such as eutrophication, climate change and overfishing.

Tool for ecosystem approach to management

Four natural scientific models to describe the fluxes of matter and energy to and within the Baltic Sea are needed to address eutrophication, climate change and overfishing. These four models concurrently cover the entire Baltic Sea scale and are conceptually and partly inter-

actively linked. This Baltic-wide approach following the ecosystem approach to management (EAM) is unique for the Baltic NEST (nest.su.se/next).

At present, atmospheric, catchment and marine models are directly interlinked in terms of inputs; the marine and the food web model will be increasingly interlinked by closing the gap between primary production and zooplankton that is part of both models. Furthermore, economic models are necessary to confine cost functions for various measures will be interlinked with the catchment model in terms of a consistent database. Here, RECOCA will significantly contribute to improving the NEST decision support system. Besides these five model components, NEST also contains huge environmental databases addressing the marine and catchment part of the Baltic Sea, giving the model results creditability.

Focus is on nutrient load from the catchment

The overall objective of RECOCA is (i) to simulate possible future riverine nutrient loads to the Baltic Sea, (ii) to estimate cost functions for reductions in these loads and for improvements in ecological indicators and (iii) to suggest cost allocation schemes for riparian countries. Thus, RECOCA addresses mainly the catchment model CSIM and the cost minimization model COST in the NEST decision support system.

Riverine nutrient loads will be described by three nested modeling approaches that address various scales (See Figure). In farm scale changes in agriculture, both increasing production and implementation of measures aimed

at reducing nutrient losses will be quantified using a combination of experimental data and a detailed dynamic model (DAISY). Emphasis on this scale is put on agricultural practices such as the use and timing of fertilizer and/or manure and the use of different crop types etcetera, which vary significantly throughout the Baltic catchment region and therefore influence leakage patterns of N and P to the receiving water bodies.

On a meso scale (<100-10000 km²), a number of type river basins will be modelled using the spatially distributed SWAT model taking into account dynamic nutrient loss processes including retention in soils, groundwater and surface waters and also addressing point sources. The knowledge thus gained from the farm level and the meso scale level concerning type concentrations of nutrients, representing combinations of soils, geology, regional climate, land use, and management practices, will be used to improve the CSIM model that simultaneously simulates riverine nutrient fluxes from all 105 major river basins and communicates with the marine model within the decision support system NEST.

Revealing the optimal allocation of measures

The economic part of this project consists of three major issues. First, regional cost-minimization models are developed for type river basins in both new and old EU member states. These models will reflect the decision situation relevant to the regional decision-maker. For certain river basins, regional cost-effectiveness models with a high spatial resolution will be developed, similarly as will be done by the natural scientific models.

Second, the Baltic-wide cost minimization model COST within NEST will be further developed, e.g., through integration of the regional cost models and the drainage basin model developed within this project. The new Baltic-wide model will allow for economic analysis of the allocation of measures and abatement for regions and countries as well as for specific goals such as the Baltic Sea Environmental Action Plan (BSAP) and improvements in environmental indicators such as increased transparency and reductions of primary production.

The updated COST model in NEST will permit users to evaluate the costs per country for national and international common environmental goals and the associated consequences for different economic activities. It will take uncertainty of

predictions into account. Measures included in the model comprise point and non-point sources as and different eco-engineering mitigation and adaptation technologies.

To interlink the natural scientific and economical analyses, RECOCA will establish N and P budgets for all 105 major Baltic Sea river basins by calculating all net anthropogenic nutrients inputs (NANI) as a function of human needs and agricultural practices as derived from detailed FAO food and feed statistics, fertilizer use and atmospheric deposition. The NANI concept was successfully used for the nutrient management of US river basins. NANI will deliver an additional independent estimate from the dynamic models (DAISY, SWAT and CSIM) on nutrient retention within all monitored river basins by means of an input-output budget approach.

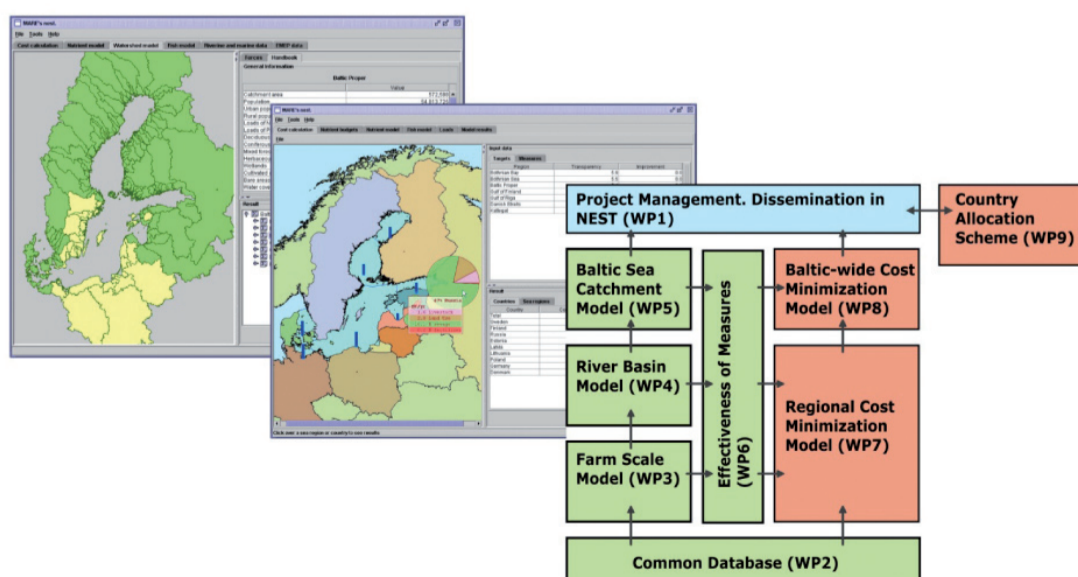
The detailed database holding data on land cover and land use as well as statistics on point sources and detailed agricultural practices will for the first time allow such analyses for the entire Baltic Sea catchment. Thus, the detailed data compiled for estimating NANI will be also used for economic analyses. This means that both river basin models and economic models on regional and Baltic-wide scales will operate using a common baseline.

Nutrient retention in the catchment is the key

From an economic viewpoint it is much more effective to invest into a measure that is directly felt in the Baltic Sea, i.e., a measure addressing a nutrient path with low natural retention. For example, an investment of 1 € per kg P at a coastal point source will give maximum effect since it will reduce P or N direct load into the sea by 1 kg. The same investment upstream or at a diffuse source would lead to a minor effect in the Baltic Sea since a substantial amount of the nutrients would be lost on the way to the sea, i.e., from a 1 € investment one would gain a reduction of much less than 1 kg of N or P.

RECOCA addresses the nutrient reduction effectiveness and the potential of the various measures by constraining the nutrient retention of the various sources and is the main intellectual link between the economic and natural scientific models. Cost estimates will be associated with the emission or impact coefficients, which are unique for each measure and location around the Baltic Sea. These coefficients impact significantly the final cost functions and, thus, the country-wise nutrient reduction allocation to reach a good ecological status of the Baltic Sea.

Fredrik Wulff and Christoph Humborg
Stockholm University



BONUS Cook Book: BUILDING ADMINISTRATIVE FRAMEWORK FOR THE JOINT BALTIC SEA RESEARCH PROGRAMME

It is now four years since the European Commission invited BONUS ERANET representatives to Brussels and introduced the concept of the Article 169 programme to the invited sixteen different programme/initiative representatives. This event launched a lengthy process – longer than one could ever imagine – which included the establishment of a dedicated structure for the implementation of the programme, setting up systems for the financial and scientific management of joint calls, and creating legal frameworks for multinational financing.

The journey from an ERANET to a jointly funded research programme has now been documented in the new BONUS Publication No. 8: BONUS Cook Book: Building Administrative Framework for the Joint Baltic Sea Research Programme. The publication includes a chronological description of establishing the fundamentals, creating the common pot and building the framework. Last but not least, it includes a chapter on 'Lessons learned', which reveals issues which could have been done differently.

Establishment of the legal entity took 18 months

Establishment of a dedicated legal entity for the management of the Joint Programme was one of the requirements set by the European Commission for a programme to be implemented under Article 169 of the Treaty. The BONUS community had to choose the legal form of such a structure and develop the legal documents necessary for its establishment, such as the Statutes, Liability Agreement and Internal Regulations. This required several convenings and intense correspondence between the legal experts in the participating states.

The choice of options for the legal form were European Economic Interest Grouping, supranational company forms as Societas Europaea, European Association, European Cooperative Society, European Mutual Society, and organisations under national law as Associations and Foundations. The choice of the EEIG form was considered optimal, primarily because of its organizational lightness, independence and conformity with the national legislations of all participating EU member states¹. Moreover, EEIG was the only tested example of a structure implementing a joint research programme of EU member states under Article 169 of the EU Treaty². The problematic side of this choice was that the EEIG

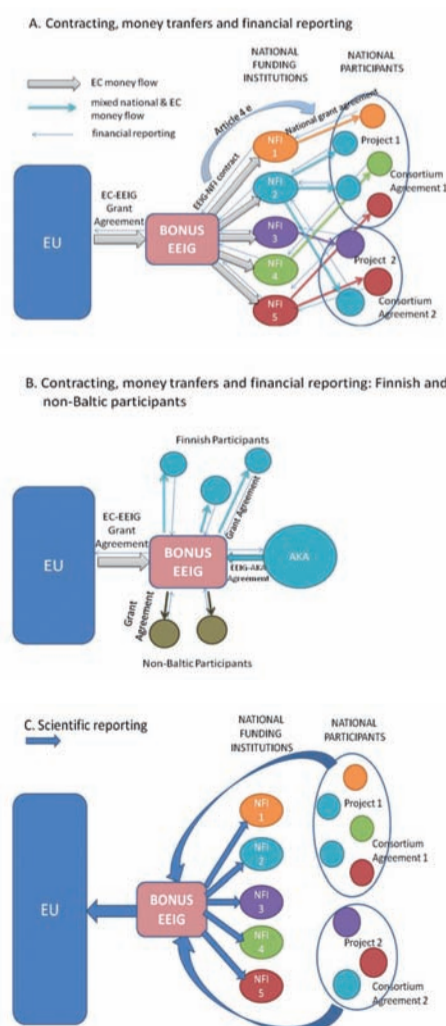
¹ EU Council Regulation 2137/85 is approximated in the legislations of all EU member states.
² European and Developing Countries Clinical Trials Partnership: <http://www.edctp.org/>

Complexity of the BONUS+ network: Contracts, money flows and reporting obligations.

A. The network of contracting, money flows and financial reporting between the European Commission, BONUS EEIG, National Funding Institutions, and Participants of the Project Consortia. Although the national grant agreements follow the national rules, the framework contracts between EEIG and NFIs determine the clauses that are to be mandatorily included in the National Grant Agreement. Each of the Project Consortia is supposed to conclude a Consortium Agreement.

B. The network of contracting, money flows and financial reporting between the European Commission, BONUS EEIG, Academy of Finland (AKA), and Finnish and non-Baltic participants of the Project Consortia. All Finnish National funds are transferred from AKA to BONUS EEIG, and from there to the Finnish participants. Non-Baltic participants receive their funding (EU funds) directly from the EEIG.

C. The network of scientific reporting within the BONUS+ Call.



format requires full liability of all participants, who shall be legal persons. This provision prevented several national public institutions (such as ministries) from being directly involved with the EEIG. In these cases, specific affiliated organisations had to be identified or created to represent national interests through the EEIG membership. In the beginning, this kind of 'artificial' arrangement was odd, but after two years of functioning it works well.

Establishment of the legal framework for the joint funding was a big effort, where many things had to be 'learned by doing'. The EEIG had to produce documents like Rules for Conflicts of Interests, Model Consortium Agreement, Framework Contract between BONUS EEIG and National Funding Agency, and BONUS Data Policy.

Complex contractual network regulating the first call

By the time the first call was implemented by the EEIG, some of the funding agencies, e.g. the Academy of Finland and later the Estonian Science Foundation, were able to transfer their funds to be managed by the EEIG, while others had to keep the funds inside their national borders. Therefore, the funding model of the BONUS+ Call is a mixture of a real common pot and a virtual common pot. This led to a complex contractual network regulating the financial and reporting relations (See Figure), the creation of which took more time than should have been appropriate.

The jungle of EU and national rules

One third of the funding of the first BONUS+ Call came from the ERANET Plus funding scheme of the European Commission, while two thirds came from the nine Baltic Sea states. Implementation of the Call revealed certain controversy in the ERA-NET Plus concept: only fresh money allocations by national funding institutions are taken into account. In reality, in order to support the funded projects, the national research institutions mobilized a significant amount of in-kind contributions through providing free access to research infrastructures and work time covered

from other sources. According to a very rough estimation, this support amounts to at least 31% of the real costs of the BONUS+ projects (18% infrastructure, 13% in-kind work time). Still, the amounts of in-kind contribution vary significantly not only in their absolute amount but also in proportion to the amount of fresh money that each of the participating countries contributed to the BONUS+ Call. In future calls, it is necessary to find ways to achieve a more balanced relationship between fresh money allocations and in-kind contributions.

The overheads proved to be one of the most complicated issues within the BONUS+ Call. Different levels of overheads put the participants in somewhat unequal positions within the projects. Application of a levelled percentage of overheads regardless of the national affiliation of participants was excluded however by the ERA-NET Plus rule that funds are distributed in accordance to national rules. The overhead issue would not rise at all if funds to participants were distributed directly from a true common pot established within the BONUS EEIG.

Oversupply of excellent project proposals led to budget cuts

Having an extensive list of good proposals on the table, the EEIG Steering Committee was tempted to overestimate slightly the Programme's funding capacity, hoping to save some funds through re-checking national eligibility rules. This hope, however, did not fully materialize. Even though two participating countries – Denmark and Germany – added substantial funds on top of their previous commitments, serious cuts of the initially approved project budgets had to be carried out. In several cases this led to post-selection revision of the Research Plans, which cannot be regarded as a good practice.

Promotion of the gender balance is a future challenge

An issue that the BONUS EEIG has to take into serious consideration in future calls is more efficient consideration of the gender balance. The analysis of the gender balance in the BONUS+ Call revealed that BONUS collaboration has not, so far, succeeded in promoting gender balance and women's careers in marine science. Only one of the project coordinators is a woman, and the percentage of women in the funded BONUS+ projects is as low as 17%. The issue of gender balance through the process of selection of proposals should be given serious attention in future calls.

Read more at:
www.bonusportal.org/publications/publication_series/

Andris Andrusaitis and Kaisa Kononen

ONE OF THE CO-CHAIRMEN OF EUROCOML COMES FROM THE BALTIC SEA



Since November 2008, Dr Henn Ojaveer (Estonia) has co-chaired the European component of the Census of Marine Life together with Isabel Sousa Pinot (Portugal) of EuroCoML.

The Census of Marine Life is a global network of researchers in more than 80 nations engaged in a 10-year (2000-2010) scientific initiative to assess and explain the diversity, distribution, and abundance of life in the oceans (www.coml.org).

The European Committee of the Census of Marine Life was formed in 2005 with the project office in the Scottish Association for Marine Science, Oban, Scotland, and has the following aims:

- Expand partnerships and coordination with relevant European programmes and organisations also in tandem with the general growth of the CoML;

- increase European participation in several particular CoML projects where untapped potential remains;
- improve marine taxonomy and species data in the European region; and
- improve biodiversity and ecosystem information for applied resource management in waters where European nations hold major influence.

CoML has now entered into the final phase – synthesis. EuroCoML will contribute to the global synthesis by:

- Three regional papers on marine biodiversity in the i) Baltic Sea, ii) Mediterranean Sea and iii) NE Atlantic, Arctic and North Sea;
- a paper on the current knowledge and status of invasive alien species in European waters;
- a paper on the “global” patterns of deep-water biogeography and biodiversity; and

- production of brochures/flyers with exciting highlights of discoveries from European waters.

A EuroCoML Synthesis Meeting will be held in Amsterdam on 17-18 March 2009. Participation in this

workshop will be by invitation with the overall task of discussing and agreeing upon how EuroCoML will be best able to meet global Census synthesis goals.

Meelis Sirendi
Estonian Science Foundation



Dr Henn Ojaveer

SECTORAL RESEARCH REFORM INTEGRATES BALTIC SEA RESEARCH IN FINLAND



Finland has recently initiated (2007) a reform of the overall steering of state sectoral research. The aim is to improve the coordination of research funded by sectoral ministries and to step up the utilisation of sectoral research across administrative boundaries.

The mandate of the **Advisory Board for Sectoral Research** is to:

- steer and develop sectoral research and its utilisation within government, step up inter-ministerial and cross-sectoral cooperation on sectoral research and take initiative in matters relating to them
- coordinate sectoral research programmes involving several ministries
- put forward proposals for the implementation of sectoral research programmes and monitor their implementation as determined by the ministries and other funding organisations and report on the implementation to the government
- put forward proposals for structural development of sectoral research

The Government appoints the Advisory Board for Sectoral Research for six years at a time, with the membership comprising high level representation of each ministry. In addition, the Advisory Board has members from sectoral research or its utilisation and expert members from research funding organisations. All are nominated by the Government. The Advisory Board has a Secretariat attached to the Ministry of Education.

Research Agendas

The main lines of the sectoral research reform were confirmed in a Government resolution in 2007, in which the domain of state sectoral research was divided into four themes. The matters handled by the Advisory Board are prepared in four subcommittees, each of them representing one of the themes.

1. Regional and community structures and infrastructures
2. Know-how, work and welfare
3. Sustainable development
4. Security

Each theme has a research agenda comprising research themes of interest to several administrative sectors with the aim of supplementing sectoral research administered by the ministries. The agendas are especially informed by the Government Programme and the Government's Policy Programmes. During 2008 the research agendas were elaborated into programmes for the period 2009–2012. The subcommittees arrange researcher and expert meetings and initiate preliminary surveys.

Sustainable Development and Baltic Sea

The subcommittee for Sustainable Development has chosen four research themes in its research agenda for further development. The themes are related to climate change, energy efficiency, natural resources management and the Baltic Sea. On all of these themes a pre-study was conducted to assess the suitability of the research theme in question to fulfill the needs and aims set for the Sectoral Research development. Baltic Sea pre-study produced a report “The economics of the state of the Baltic Sea”. www.minedu.fi/OPM/Tiede/setu/julkaisut/?lang=en

The Advisory Board for Sectoral Research has put forward a proposal for a Baltic Sea research programme (2009-2012), which includes economic valuation of environmental problems of the Baltic Sea (BalticStern review). At the same time it has proposed to the relevant ministries that they allocate funding for this research programme. This research theme

is within the framework of the BONUS-169 Science Plan, and several projects related to the theme are already now funded within the BONUS+ Call.

The Academy of Finland, as the major science funding and policy actor under the Ministry of Education, has been actively developing both the scientific and technical elements of the research in such a way that they ensure and follow the accepted science policy principles adopted in Finland. The Ministry of Education has mandated the Academy of Finland to represent Finland in the BONUS EEIG, which is coordinating the research activities on the Baltic Sea area.

Thus, the Academy will encourage and support the BONUS EEIG in merging the sectoral research activities and initiatives in its work in such a way that they support the overall research policy adopted in Finland. This procedure contributes also to the supplement of several research activities conducted in the Baltic Sea area and, in particular, links effectively together the science and the policy themes in the Baltic Sea area research. This is a benefit for all players and stakeholders in all countries in the Baltic Sea area.

Leila Häkkinen
Senior Science Adviser, Academy of Finland
Expert member of the Sustainable Development Subcommittee for the Advisory Board for Sectoral Research

Source: www.minedu.fi/OPM/Tiede/setu/?lang=en

7th Baltic Sea Science Congress: “TOWARDS BETTER UNDERSTANDING AND IMPROVED TECHNOLOGY FOR SERVING THE SOCIETY”, Tallinn, 17-21 August 2009

Three major marine science communities of the Baltic Sea countries, the Conference of Baltic Oceanographers (CBO), Baltic Marine Biologists (BMB), and Baltic Sea Geologists (BSG), will hold a joint forum, the Baltic Sea Science Congress (BSSC), in Tallinn this summer. With six BSSCs already held, the biannual Congress brings together marine scientists from different disciplines to exchange ideas and knowledge, enhance cooperation, and integrate the marine research community. BSSC-2009 is jointly organised by Tallinn University of Technology and the University of Tartu, in cooperation with research groups from other Estonian organisations. The Congress will feature fifteen thematic sessions:

- 1) Coastal and offshore exchange processes
- 2) Marine acidification
- 3) The carbon/CO₂ cycle in semi-enclosed and shelf seas: present state and anthropogenic impacts
- 4) Impact of changing climate on the Baltic Sea ecosystem
- 5) Baltic Sea water circulation and mixing – observations and modelling
- 6) Benthic-pelagic couplings in the Baltic ecosystem
- 7) Coastal and offshore developments in the Baltic: impacts and assessment
- 8) Changes in marine communities in the Baltic and their external and internal drivers
- 9) Ecological effects of alien species
- 10) Intraspecific stress sensitivity versus salinity gradient
- 11) Ecosystem health
- 12) Interplay of wave dynamics, the marine ecosystem and coastal processes
- 13) Biogeochemical element transformations and fluxes in Holocene Baltic Sea sediments
- 14) Role of groundwater on the Baltic Sea coastal ecosystems
- 15) Binding ecosystem and society

and several connected workshops.

Consortia members of the BONUS+ projects will participate in almost every thematic session of the Congress. While many coordinators and principal investigators act as conveners of these sessions, one session, “Binding Ecosystem and Society”, will be sponsored by the BONUS programme itself.

Although the Baltic Sea is deservedly recognised as one of the best studied areas of the World Ocean,

much remains to be done to translate efficiently the language of natural science into policy-making language – the language of the economy and peoples’ well-being.

BONUS Joint Baltic Sea Research Programme has set “Integrating Ecosystem and Society” as one of its seven main research modules. According to the BONUS-169 Science Plan and Implementation Strategy, this theme includes five key research issues: (1) Explaining the spatial and temporal variations in human uses of Baltic Sea ecosystem resources, (2) Integrated modelling for forecasting the development of the Baltic Sea ecosystem under various scenarios for management policies, environmental variability and human actions, (3) Estimating society’s values for conserving, protecting and restoring Baltic Sea ecosystem resources, (4) Developing the scientific basis for improving governance of the Baltic Sea ecosystem, and (5) Acquiring, archiving and summarizing of human uses and interactions with the ecosystem, perceptions, values and attitudes towards the ecosystem, and local laws and regulations that govern the use of land, water, fishery and other ecosystem resources.

In the course of preparation of the Baltic Sea Action Plan, HELCOM has commissioned a study on the true costs of Baltic Sea eutrophication. BONUS ERA-NET arranged in September 2007 a Baltic-US seminar to collect a broader global experience on the socio-economic matters related to the marine environment. Several research projects funded by the BONUS+ Programme are supporting socio-economic investigations, and several research institutions from around the Baltic recently announced a major joint initiative called the “Baltic Stern Project”, named after the world-famous review (2006) lead by Prof. Nicholas Stern. Thus, knowledge generated on the border between natural and social science is in high demand, and these studies have the potential to become one of the fastest developing research areas in the region. The session “Binding Ecosystem and Society” is to be coupled with the meeting of the Policy/Governance cluster of the BONUS+ projects.

The BONUS team hopes that the session, convened by BONUS EEIG Executive Director Kaisa Kononen, Coordinator of the BONUS+ project IBAM Sakari Kuikka, and BONUS

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EEIG Programme Manager Andris Andrusaitis, will start a new tradition in the so far natural science-focused Baltic Sea Science Congresses.

In addition to this session, BONUS is planning to arrange a workshop for young researchers on good scientific practice and mechanisms of marine environment protection during the days of BSSC-2009.

More on BSSC-2009 may be found at www.bssc2009.org.

Andris Andrusaitis



Estonian Science Foundation

BONUS+ CALL FOR JOINT TRAINING PROPOSALS OPEN

The Joint Baltic Sea Research Programme recognises education and training as a vital part of its mission, as new knowledge arising from research must be fed back into training and development of human resources. The opportunity to receive support to run project-based PhD level courses was announced already in the BONUS+ Call for Proposals (September 2007).

In January 2009, all sixteen BONUS+ projects were invited to compete for five € 10 000 grants in support of training courses that are initiated and arranged by the consortia and correspond with the research topics of the projects.

Similarly to the Joint Baltic Sea Research Programme itself, the focus of the Joint Training Proposals shall be on supporting an ecosystem approach to management of human activities. Training proposals crossing traditional borders of research disciplines will be appreciated. The target audience of a course should not be limited to young researchers representing institutions participating in the particular BONUS+ project, but rather be open to students from the whole Baltic Sea region. Moreover, courses that would potentially attract audience from beyond the Baltic Sea region, thus building European added value of the BONUS Joint Research Training initiative, are highly welcome.

The Call for training proposals is open between 26 January 2009

and 24 April 2009. Training course proposals will be reviewed by independent evaluators, and the final selection will be approved by the BONUS EEIG Steering Committee. The results of the evaluation will be announced by BONUS EEIG no later than on 30 June 2009.

The criteria employed in the evaluation of proposals are: (i) the scientific and didactic value of the proposed course (50% of impact), the capacity of the course organizers and tutors (25% of impact), and the appropriateness of the course budget (25% of impact).

A course proposed by a project consortium may be held at any time between summer 2009 and winter 2011, allowing each team of proposers to decide on the optimal timing. The possibility to run a training course during the early stages of the project might be beneficial to the project. However, it is also possible that the knowledge needed to run a course accumulates during the research work, and an already established and concerted consortium might possess a better capacity to prepare and run a high quality course.

Full text of the BONUS+ Call for Joint Training Proposals may be found at: www.bonusportal.org/files/198/2009_01_21_1st_Training_call.pdf.

Andris Andrusaitis

Important! Joint Training Proposals must be sent as PDF files to bonus@bonuseeig.fi with the message subject “BONUS TRAINING CALL” before 17:00 CET 24 April 2009.