



A Greener Agriculture for a Bluer Baltic Sea 2011

Report from conference in Sångra-Säby, Stockholm, Sweden 2-3 November 2011

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The conference *A Greener Agriculture for a Bluer Baltic Sea* was arranged by the informal project cluster Baltic Compass, Baltic Deal and Baltic Manure.

This year's conference attracted professionals from twelve countries with various backgrounds. Farmers, scientists, governments, the academic community, advisors and entrepreneurs were all represented and made vital contributions to the conference, enabling a wide-ranging program with the mutual aim to find sustainable solutions to reduce the nutrient leakage from agriculture to the Baltic Sea.

In addition to parallel seminars, plenary presentations and a discussion on the CAP reform the conference participants were offered to join a trip to last year's winner of the WWF Baltic Sea Farmer of the Year Award – Wiggeby farm.

This report is written/ edited by the organisers based on the presentations and the content is solely the responsibility of the editors from Baltic Compass, Baltic Deal and Baltic Manure.

All presentations can be found at the websites of the projects.

http://www.balticmanure.eu/en/20110705_02.htm

http://www.balticcompass.org/CONFERENCE_2011.html

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CONFERENCE STATEMENT

Representatives from different agri-environmental sectors in the Baltic Sea region were invited to the conference “A greener Agriculture for a bluer Baltic Sea” conference held in Sånge-Säby 2-3 November to discuss the challenges on the way to more sustainable agriculture. Together 187 guests representing policy makers, researchers, farmers and farmer advisories, environmental organizations and the business sector were gathered.

The conference was arranged and hosted by three EU-financed projects. The projects approach agri-environmental challenges and solutions from several angles. **Baltic Compass** is the focal point for policy issues and the pre-conditions for implementing better agro-environmental measures, **Baltic Manure** addresses the potential benefits of manure nutrients and energy and **Baltic Deal** focuses on advisories and advice to farmers. Together the projects have received over 14 million euro for their work from the European Union Baltic Sea Region Programme 2007-2013. All projects have partners from around the Baltic Sea. This enables knowledge transfer and truly Pan-Baltic cooperation.

- *Our joint work has already shown the strong need for governments to strengthen exchange of experiences and enhance cross-border cooperation. The emphasis is on region-wide policy instruments and support mechanisms, innovation systems and the agricultural advisory services, the coordinator of Baltic Compass, Staffan Lund from the Swedish University of Agricultural Sciences, points out.*

WWF held a ceremony during the conference, to announce the winner of the Baltic Sea Farmer of the Year Award. This year’s winner – Marian Rak from Poland – was announced during a ceremony at the conference where farmers from eight countries participated. Unfortunately the winner was unable to attend the ceremony in person, due to an airport mishap.

The results of the projects will benefit all who work with agri-environmental challenges in the Baltic Sea region. The projects will stimulate the development of the best technologies and agricultural practises and give advice to farmers on how to implement them. The projects promote synergies between policy instruments, local and private sector measures. They improves the application of environmental science and demonstrates systematic innovation mechanisms. The results will provide important decision-making support for policy-makers in the whole Baltic Sea region.

PLENARY

The plenary session was moderated by **Charlotta Samuelson** of the Swedish private Foundation **Baltic Sea 2020**

Helena Jonsson, farmer and chairman of the Federation of Swedish Farmers and chairman of the Steering Board of the EU flagship project Baltic Deal opened the conference, thanked the organisers and welcomed the broad audience for attending the event at Sångå-Säby – the very place where the Federation of Swedish Farmers was founded back in 1929.

Last year's winner of WWF Baltic Farmers Award – the Wiggeby farm – is situated very close to Sångå-Säby and part of the conference was a planned visit to this very interesting and proactive farm.

This event was very timely as the revised version of EU Common Agricultural Policy 2014-2020 has just been published – the Greening of the CAP. Helena Jonsson wrapped up with the words

- *We are convinced that the agricultural sector in all countries around the Baltic Sea will develop their environmental efforts and continue to reduce losses of nutrients. But it must be carried out in ways being economically attractive to the farmer. Then it becomes sustainable agriculture. I wish you all good luck in the continued conference!*

Kadri Uustal, Adviser to the Director General, DG Regional Policy in Bruxelles, gave a presentation on *EU Strategy for the Baltic Sea Region and links to Agriculture*. The strategy was adopted in 2009 with the aims to make the Baltic Sea region

- an environmentally sustainable place
- a prosperous place
- an accessible and attractive place
- a safe and secure place

The agricultural sector contribute to the realisation of the EU Strategy in the Baltic Sea region mainly by turning the region into an environmentally sustainable place and a prosperous place. In the Commission's report of June 2011, several recommendations were highlighted:

- To reinforce the integrated nature of the Strategy through closer alignment with the themes and flagships of Europe 2020
- To assure the European nature of the Strategy through regular discussions of the Strategy at policy Councils
- To prioritise work on establishing targets to make the Strategy more focused and more concrete as regards to its main aims
- To maximise efforts to align Cohesion Policy and other funding sources in the Region with the objectives of the Strategy
- To strengthen implementation structures (especially Priority Area Coordinators and their steering groups) both financially and in terms of staff. Structures need to be thoroughly embedded in ministries and/or other relevant bodies
- To develop a "Communication initiative" to ensure broader participation in the Strategy, as well as understanding of its achievements

After these introductory talks, **Thorkild Q. Frandsen**, from **Agrotech (Institute for Agri Technology and Food Innovation)**, in Denmark gave a talk on the *Environmentally optimal manure based biogas production*.

The potential benefits for the farmers and for the society of manure based biogas production was outlined based on a study carried out for the Swedish Foundation Baltic Sea 2020, published in 2011.

Examples of simple farm scale manure handling/biogas production and highly advanced industrial manure treatments were given, but in most Baltic Sea Region countries manure based biogas is not profitable, although the societal benefits would be very good. Manure should be combined with other agricultural and societal wastes to make biogas production profitable - or a higher manure bonus should be added to national feed-in tariffs for biogas/electricity production.

The use of the biogas was outlined with several options and different national subsidy systems but it was stressed that the treatment, storage and application of the digestate manure for plant cultivation is an essential key to achieve the potential environmental improvements on leaching of nitrates and losses of climate gases to the atmosphere.

Ottilia Thoreson, **WWF Baltic Eco Region Programme**, described the mission of the programme:

- Conserving the world's biological diversity
- Ensuring that the use of renewable natural resources is sustainable; and
- The reduction of pollution and wasteful consumption

This was followed by the challenges for the Baltic Sea Region. WWF aims to ensure that the exploitation of the Baltic Sea is planned and managed through a holistic ecosystem-based approach, protected from excessive eutrophication and that the long-term sustainability of fish stocks is secured.

Agriculture plays an important role, as it is accountable for half of the nutrient inputs leading to the eutrophication of the Baltic Sea.

For these reasons, WWF and Swedbank has initiated the Baltic Sea Farmer of the Year Award to bring forth good examples of innovative farmers who show in practice how these goals can be achieved – Farmers Leading the way. The work is a partnership between several Green NGOs and in collaboration with farmers associations around the Baltic Sea.

Eight national winners have been chosen, representing a diverse range of effective measures to reduce eutrophication.

This year's winner of WWF's international Baltic Sea Farmer of the Year Award - Marian Rak from Poland – was announced during a ceremony at the conference where farmers from eight countries participated. Unfortunately the winner was unable to attend the ceremony in person, due to an airport mishap.

Joachim Lammel, **Head of Product and Application R&D** from **Yara International ASA** presented *new technologies and work for precision farming and other technical tools to support crop production and the environment*.

Basically, agricultural crops need fertilizers to produce food and fodder and Europe has the highest Nitrogen Use Efficiency (NUE) of any region in the world. Precision farming can help to optimise the use and thereby reduce the losses of nutrients to the Baltic Sea. The crop production in Europe has increased and the fertilizer application has been reduced during the last two decades.

Two elements are crucial for these results: efficient fertilizer products and precision farming – many tools for decisions support has been developed to help the farmer decide when and how much fertilizer is needed, e.g. the Yara N-Sensor® detects areas of different N supply and adjusts N fertilizer rates accordingly.

It was concluded that best fertilizer management is supported by tools and precision farming applications that combine innovative technology with agronomic knowledge.

Professor Jan Bengtsson, from Dept of Ecology and the Future Agriculture Research Initiative, SLU – Swedish University of Agricultural Sciences, gave a view of the future agriculture in his presentation entitled *Multifunctional Agriculture? - Baltic agriculture and ecosystem services in an unforeseeable future*.

Food is a basic Human right and not substitutable. But how will future agriculture be in the Baltic Sea Region? Extrapolations from the past are always problematic, and today's goals may be irrelevant in 2050. You can show alternative plausible scenarios to be discussed – how to achieve or to avoid parts of these scenarios.

Climate change (water, temperatures) and resource scarcity (population growth, nutrients, land, energy etc) are fundamental problems, we 'consume the capital rather than the interest' today. Numerous scenarios were presented and discussed:

- An overexploited world
- A world in Balance
- Changes in balance of power
- The world awakens
- A fragmented world

Research challenges were discussed and it was concluded, that multifunctional agricultural systems may prove most robust to the future challenges delivering goods (food, fodder, biomass, timber) and ecosystem services (pollination, soil fertility, carbon sequestration, nutrient retention) and cultural services (biodiversity, recreation, health, rural livelihood etc).

After three parallel seminars (described below) the coming reform of the *Common Agricultural Policy* of the EU was presented and discussed by **Rikke Lundsgaard, Danish Society for Nature Conservation** and **Carl Wachtmeister, Federation of Swedish Farmers**.

The Commission proposal of October 2011 has in Pillar 1 a basic support with a *flat rate per hectare* (single payment) with a maximum support per farmer. In addition, the farmer can achieve 'Greening support' via crop diversification, ecological focus, permanent grass lands etc and some *Special Premiums* for small farmers, young farmers etc as top-up support. The Rural development Programme (Pillar 2 of the CAP) supports organic production, competitiveness, innovation, environmental measures, climate change, animal welfare etc.

This proposal is to be discussed and adapted, so things may change.

The two representatives gave their views on the proposal with a fruitful and constructive dialogue, involving a very active audience. No clear conclusions can be drawn, but the overall purpose of the conference with dialogue between key stakeholders was definitely fulfilled.

PARALLEL SEMINARS

Seminar A – Integration of Agro-environmental work: Challenges and Opportunities

Part 1 – Models, measures and scenarios

Henrik Eckersten from **Swedish University of Agricultural Sciences** held a presentation on *Baltic Compass Scenario assessments – current status of inputs*.

He started of by presenting the two main practical questions the stakeholders need to answer. These are:

1. Which BAP/BAT and policy measures should the Environmental protection money stimulate, and to what degree?
2. Which are the economic consequences for farmers due to regulations and the allocation of subsidies?

There are also questions addressed by the scenarios about the stakeholders potential to reduce nutrient loadings from agriculture, how these potentials differs considering the stakeholders actions and what the costs are to make these actions.

The main objectives in Baltic compass scenario work are to assess future relations between stakeholder actions for environmental care and nutrient load from specific catchments to the Baltic Sea, and to assess the corresponding relations for stakeholders' actions for production care. This provides the opportunity to provide useful information on relations between stakeholder actions and nutrient loads for decision-making.

There are different scenarios used in Baltic Compass, these are:

- a) A reference scenario – for the monitored reference period and compared with observations.
- b) Baseline scenario for ~2020 and ~2050 – with changes in exogenous inputs
- c) Adaptation scenarios ~2020 and ~2050 – with changes in BAP/ BAT, Environmental directives and policy measures as derived by the loops among the BC scenario groups
- d) Implementation scenarios – evaluating the cost effectiveness of the adaptation scenarios.

Examples of how a reference scenario and a future scenario are built were presented. The future scenario will depend on both exogenous parameters, such as ecosystem services and environmental conditions, and endogenous parameters, such as environmental directives and policy measures.

The result from the scenario modelling shows a causal relationship between measures taken and nutrient loads, for both actions taken for environmental and production care.

Karin Blombäck and **Elin Widén Nilsson** from **Swedish University of Agricultural Sciences** held the presentation *Preliminary Results from Scenarios Based on Climate Change – Simulated losses of N and P from arable soils 2005, 2020 and 2050*. The example presented were Svärtaån catchment, which is used as a study site. It has a total area of 372 square kilometres, of which 7700 ha are arable land. The research has been conducted through cooperation between the Svärtaån project and the Baltic Deal project.

The objective is to plan and implement measures to reduce nitrogen and phosphorous leakage from arable land. Both long time series and synoptic surveys have been produced. The simulated results from the method NLeCCS (nutrient leaching coefficient calculation system)

are used for HELCOM reporting of Swedish agricultural loads to the Baltic Sea. ICECREAMDB and SOILNDB are used for simulation of P and N respectively.

Some of the results collected from the first run are earlier start of growth period for perennial crops in spring and later ending of growth period in autumn. There are also estimations in changes in N- and P-losses due to future climate change. The presentation ends with an account of CO2 scenarios.

Sirkka Tattari from **Finnish Environmental Institute** held a presentation about *Best Available Measures Now and in the Future: the Modelling Aspects*

First Sirkka Tattari presented the characteristics of the Aurajoki site and the VIHMA experimental sites. She showed a table of the average loading values with different cultivation practices as estimated with VIHMA model (see annex 4 for link to presentation)

The different parameters in the VIHMA system are classed into:

Slope, soil type, cultivation, P-status and condition of drainage.

In Aurajoki there have been long term field measurements such as cultivation of grass ley, stubble, winter rye/wheat and normal ploughing. The negative impacts on the environment from these measures are estimated under different combinations of parameters. Examples of measures used in Aurajoki are more accurate nitrogen fertilization, plant cover during winter, cultivation of catch crops etc. Some of the effects from these measures can be estimated (follow link in annex 4 to presentation for examples).

Part 2 – the Greening of CAP

Chair in this part of the seminar was **Didzis Neimanis** from **Latvian Farmer’s Parliament**

Neil Powell from **Baltic Compass**, gave a presentation on *the Institutional Challenges in Implementing “Best” Practices in the Baltic Sea Region*. Please see annex 4 for link to presentation.

Ola Palm from **JTI** held a presentation on the *Lessons on the Identification of Best Practices in Baltic Sea Region*.

What is meant by best practices?

- Well known and documented measures
- Used today
- Proven to have an effect
- Of interest and possible to implement for most BSR-farmers
- Including management measures and not only technologies

When it comes to best practices, there are a lot of well known measures that are not fully implemented, and there are large variations in what is used between, and within countries. There is also great variation in agricultural structure between countries in BSR, as well as in farmers’ income. Ola Palm thinks it’s important to catch the differences in the ways we think and practice.

There are some measures that should be prioritized (see link to presentation in annex 4). These 25 measures are implemented in different ways in 7 countries. Country reports of this have been made and there is also a summary available. Some of the measures are more popular to implement, motivated by either legislation or economic subsidies.

Lessons learned:

- There are different approaches in BSR-countries considering legislation (e.g. PL, LV, LT, BY) and subsidy (e.g. FI)
- Not all countries have legislation that require balance between the foreseeable nutrient requirements of the crops and the nutrient supply to the crops from the soil with a view to minimize eutrophication (requirement according to HELCOM Annex III)
- Swedish model for plant nutrient recommendations: based on economical output (low fertilizer price = higher recommendation!) – This model is not following HELCOM and gives no signal to farmer about nutrient leaching from fertilization.
- Decisions taken in e.g. HELCOM is not always followed up in national legislation
- Adapted feeding – used but not regarded as a measure in many countries.
- A measure demanded according to legislation and for cross compliancy – some countries does not regard this as a measure since it has to be done!
- Measures will give more or less effect depending on situation – buffer-zones important when steep slops but less effect in other areas (good for biodiversity).

Ola Palm concluded that it is very important to remember that we have different conditions, have chosen different paths and can thus learn a lot from each other.

Gerald Schwarz from **Johann Heinrich von Thünen-Institut** held the presentation *Outcome-based Approaches in Agri-environmental Payments and their Potential Role in a “New” CAP*. Gerald Schwarz explained that Agri-environmental schemes (AES) are a central element of the Rural Development Regulation in seeking to secure certain environmental public goods. EU*s expenditure on agri-environmental measures amounts to >20 billion EUR, or 23 % of the expenditure for rural development, over the period 2007-2013. He briefly presents an overview of outcome-based AEMs and key elements of the new legal proposals, and explores some of the key issues for an outcome-based approach in a “new” CAP. He arrived at the following conclusions:

- Outcome-based schemes are a useful alternative to standard action-based measures.
- Experience should be expanded through further prototype development and implementation.
- Higher administration costs are likely to prohibit inclusion in the Green payment at this stage.
- Outcome-based approaches for the Green Payment should further examined.

Seminar B - Farmers tools for the environmental work

Part 1

The seminar was moderated by **Kaspars Zurins** from **Latvian Rural Advisory and Training Centre**.

Eija Hagelberg from **Baltic Sea Action Group** and **Nature and Game Management Trust** in Finland held a presentation on *Agricultural Advisors Role*.

Eija presented the challenges you meet as an advisor, both concerning your own limits in terms of knowledge and soft skills, and in the communication with the farmer.

Advisory can be categorized into legal demands, large scale environmental advice and farm-specific agri-environmental advice. One individual advisor cannot be an expert in all three categories, but you can span your weak spots through networking.

The aim in advisory should be to make both advisor and farmer to “cross the fences”, and meet outside their comfort zones, in order to achieve the best result. It is always a challenge to change someone’s habits, since people have different goals and come from different perspectives. It is significant to recognize that “Farmers” is not a homogenous group, and should not be treated as such.

A tip from Eija was that an advisor should participate in hands-on work and not just focus on soft work, because better understanding yields better advice.

The importance of soft skills should not be neglected in advisory work; you should make effort to show respect and understanding towards the farmer, and don’t forget to give and get feed-back and follow up the results.

Line Strand, who is an adviser within the project **Focus on Nutrients** with a speciality of phosphorous, gave an example of how her work is executed through *A Concrete Farm Case*.

Line told the story of Birger Eriksson in Karlebylund and how their relationship advisor-farmer was built over years, as an example of how advisory works in practice. Birger is a typical Swedish farmer but Line points out that every case is unique. The advisory work builds on a relation of mutual trust and communication. Line and Birger’s cooperation started years ago with a dialogue concerning the nutrient balance on Birger’s farm. They discovered that the nitrogen surplus was 140 kg N/ ha on Birger’s farm compared to an equivalent average of 102 kg N/ ha. Could this surplus be reduced?

Together they agreed that Birger would lower the nitrogen input to his farm. This could be done without diminishing output and resulted in lower costs for both Birger and the environment. From this they have moved on to discussions about the use of pesticides and how these can be managed more efficiently.

It is always the farmer who makes the decisions, the advisor’s role is to find and provide relevant and accurate information.

Part 2

Frank Bondgaard, from the **Knowledge Centre for Agriculture** in Denmark, delivered a presentation of the third work package – *WP 3 Joint knowledge, main achievements 2011* – in the Baltic Deal project.

To exemplify the efforts to join experiences in the Baltic Deal project, Frank Bondgaard gave an overview of the achievements in WP3 during the year. After a kick-off meeting in Copenhagen a baseline report have been published, and a webpage is under constant development. The different measures to reduce nutrient leakage that are used in the countries united in the project are presented in these two publications. As examples of measures and how they differ between countries, the method of constructed wetlands and catch crops were presented. The wetland method is well developed in Sweden and Finland, where it is also possible to get a payment for the implementation of wetlands.

In Denmark there is legislation to promote the use of catch crops, which have had a great positive impact on the use of this method. The experiences of these measures and the ways in which they can be encouraged are examples of knowledge that can be shared between countries. This constitutes an important part of the work in the Baltic Deal project.

Christian Danneskiold Lassen is the Danish representative and nominee to the **WWF Baltic Farmer of the Year Award 2011**. He held the presentation *My Farm in a Baltic Sea Context*, where he gave the audience an insight into the efforts and solutions that made his farm, Holmegaard Manor, stand out in the contest. Examples of such solutions are zoning and construction and restoration of wetlands to reduce nutrient leakage into the Baltic Sea and to encourage biodiversity.

The zoning technique builds on the principal that the land should be used as is best suitable. This means that on Holmegaard gods there are three major zones, of which one is heavily cultivated. Then there is one part that is less intensely cultivated e g land close to watersheds where buffer strips are left to soak up nutrients and keep them from leaching out in the water. Yet some areas should simply be left alone; “The best for nature is if you leave it, don’t plough it”.

Christer Nilsson from **Balanced Farming**, shed light on *Demonstration Farms* – which constitutes WP5 in the Baltic Deal project.

The intention with the demonstration farm network is to generate possibilities to gain relevant data, needed to make economical and environmental analyses and to document measures and practices. The farms will also be used for study trips.

In 2011 one main achievement was the recruitment of demo farms. There are now 117 farms in the project. There are common criteria, but the farms have been chosen by different methods in different countries e g by nomination or invitation. In Sweden there are 20 demo farms, and 17 of these are pilot farms in Balanced Farming. No one has quit and Christer Nilsson explains that when you do a good thing people tend to stay on. Poland has the highest level of commitment with 47 farms. Updates about the farms are presented on the Baltic Deal webpage.

Plans for the future in WP 5 are to quantify flows of nutrients within the farms and to plan improvements on the farms.

Seminar C

Part 1 Manure energy

This session was moderated by **Markku Järvenpää**, from **MTT Agrifood Research, Finland**, Project manager of Baltic Manure.

Sari Luostarinen, from **MTT Agrifood Research Finland** (and leader of Baltic Manure WP6) opened the seminar with an *Overview of how manure presently is converted into energy in the Baltic Sea Region*. At present it is almost only biogas that is used, but thermal gasification and incineration can become future technologies to a certain degree. The aims of the Work package 6 in Baltic manure are threefold:

- Calculation of BSR manure energy potential
- Show best practices for energy recovery from manure
- Develop tools for implementing manure energy recovery

After a brief introduction to biogas technologies, the results of a survey on biogasification in the region were presented. Germany has approximately 6000 biogas plants (mainly farm size and based on maize substrate for electricity production), Denmark has approx 100 plants, (many larger, all manure based for CHP), Sweden has some 40 plants (often partly based on organic solid wastes, used for gas for vehicles). A dozen plants are found in Finland (mostly manure based), Estonia has one biogas plant using pig manure (38 000 t/a, CHP), Latvia has eight agricultural biogas plants, several under planning / construction. In Lithuania, the only biogas plant using pig manure closed down in summer 2011. Poland has some seven larger agricultural biogas plants, but Government ambitions are to reach 2000 plants before year 2020. It was concluded, that the interest in agricultural biogas, including manure, is rapidly growing in all BSR countries and that

- Support mechanisms are being developed
- Targets for manure biogas use being set or under consideration
- Much of the energy potential in manure is currently not used, and the capacity available is significant

Lena Rohde and **Andras Baky** from **JTI – Swedish Institute of Agricultural and Environmental Engineering** presented a study on *Environmentally-friendly handling of biogas digestate in agriculture*.

Anaerobic digestion of manure affects manure positively by:

- Higher N-efficiency if handled properly => reduced costs for mineral N
- High viscosity – faster infiltration at spreading => less NH₃-losses, odour
- Less stockage, higher evenness at spreading
- Greenhouse gases
- Make solid manure into liquid

Digestion of manure affects the manure positively by:

- Increased pH and increased part $\text{NH}_4\text{-N}$ => increased risk for NH_3 losses and leaching if not handled properly
- Reduced straw crust=> increased risk for NH_3 losses
- Risk for separation and thereby sedimentation?
- Greenhouse gases?

When handling manure and especially digestate with more readily available nitrogen for plant uptake and leaching, several factors are key issues to ensure the optimal use of the nutrients and less losses to the environment. The two most important factors are the manure management and the applied technology for the environment and farm economy. Other important factors are the properties of the digestate slurry, the timing of field application in relation to – N-utilisation by plants and risk of N-leakage to water. In addition, the ammonia emission and Greenhouse gas emissions should be taken into account.

The project Baltic Manure will work towards new innovative technologies for optimal manure handling.

Lorie Hamelin and **Henrik Wenzel** from **University of Southern Denmark** gave a presentation on *Environmental comparison of alternative strategies for external carbon addition to manure biogas in terms of Life Cycle assessments.*

The challenges for more manure based energy are threefold:

- Animal slurries are too dilute, containing too little easily degradable C for economically attractive CH_4 yields
- Too low C/N ratio, leading to accumulation of NH_3 and potential inhibition
- Residual co-substrates are constrained

Potential carbon co-substrates are industrial waste, energy crops, straw, household bio-waste and manure concentrate and all these are evaluated against alternative usages/opportunity costs, such as incineration, composting or landfilling.

In the framework of Baltic Manure, a few LCAs with a case-study BSR country will be performed to investigate what happens if:

- 40 % of the manure produced in DK is used for biogas (2020)
- ca. 100 % of the manure produced in DK is used for biogas (2050)

This study should highlight what strategy should be prioritized, if we aim to use more manure for biogas. The ‘manure concentrate’ strategy does not allow reduction of GHG as compared to reference manure management, and environmental benefits very much dependent upon efficiency of separation technology.

Conclusions of the presentation were that research is needed in order to adopt a consistent strategy regarding manure-biogas in BSR, the LCA perspective is important to avoid the so-called rebound effects and that there are other alternative ways to boost CH_4 yields, such as running the digesters in parallel, pre-treatment, injecting H_2 and carbon capture and recycling.

Ksawery Kuligowski from **Pomeranian Center for Environmental Research and Technology POMCERT, University of Gdansk, Poland** gave a presentation on *Alternative manure energy solutions such as incineration and thermic gasification.*

Manure energy can be extracted in many ways after separation – and in some cases drying. Incineration is well known, but thermic gasification (Low Temperature Circulated

Fluidized Bed (LT-CFB) gasifier) as known from wood is being developed in Denmark for manure fiber fraction as well. Incineration will give the best energy output, whereas thermic gasification will give numerous other advantages, such as lower temperatures (<750 degrees C), meaning no corrosion and no ash melting and more K and less heavy metals in the ashes. Both technologies give a P-rich ash, with the P bound in crystalline structure of apatites, which can be released for plant uptake by e.g. acidic treatment. It is important to improve fertilizer value of ash by enhancing P availability. This is achieved by reduction of the inhibiting factors (e.g. lime), by maximizing P and minimizing metals extraction, and conducting long-term field tests for P and metals accumulation in soil.

It was concluded that the technologies are still at pilot and research stage, they are relatively expensive niche technologies and there is a need for more research and policy adaptation, such as the EU Waste Incineration Directive, where thermic gases are not allowed on the gas market.

Part 2 Policy recommendations and Baltic Manure Handling Award

After the break, **Lotta Samuelson** from the private foundation **Baltic Sea 2020** gave a talk based on previous work on *Potentials, challenges and policy recommendations for pig manure based biogas production to reduce eutrophication*.

The foundation has developed an Intensive Pig production program with the aim to reduce nutrients leaching from intensive pig production industry in BSR, by identifying and promoting measures and technologies which cost-efficiently enable recirculation of nutrients in livestock manure to plant production. Several studies have been conducted recently with quite a few Baltic Manure actors involved, on best available technologies for manure treatment, on P-management, on biogas technologies etc.

Policy recommendations for efficient nutrient recirculation from intensive pig production could be either the whip or the carrot, such as:

- Promote the use of optimal technological setup and best available digestate management
- Promote that the use of digestate (on farm or transport of excess nutrients to other farms) is based on nutrient balances
- Implement national fertilizer norms and official standards values for livestock manure
- Build infrastructure to connect biogas production with final energy consumers
- Financial incentives for biogas installations which both produce renewable energy and reduce leaching of nutrients could be
 - Investment grants
 - Feed in tariffs
 - Manure bonus
- Regulations for intensive livestock production to treat manure in biogas plants could be
 - IED directive steering document for intensive pig production
 - National environmental permits

Knud Tybirk from **Agro Business Park, Denmark**, gave a few introductory slides on the intentions of a short participatory policy recommendation session. The intention was to initiate the discussions and involving researchers, private companies, NGO's and policy makers in the process and publish these recommendations in the Policy Forum at www.balticmanure.eu.

A very intensive ‘bee-hive’ discussion took place and most of the ideas were presented on cartoon signs on the wall. The ideas were organized according to a ‘circular supply chain model’ where input and output of nutrients, energy and climate gasses were on the agenda.

No organization of the many ideas was carried out due to time limitation, but an article is to follow on the web.

After this interactive session, **Ksawery Kuligowski** from **Pomeranian Center for Environmental Research and Technology POMCERT, University of Gdansk, Poland** gave on behalf of his colleague **Mariusz Wójcik** a short presentation entitled *Virtual Brokerage Platform – tool for bioenergy promotion* with the mission of bringing closer bioenergy actors from different countries and facilitate their communication and trade, thus creating a common and easy to operate regional bioenergy market.

The target groups are bioenergy producers – e.g. small to large scale farmers, biofuel producers etc., Bioenergy consumers – e.g. biogas plants, other plants, installation producers and users etc., Service providers – consultants, training companies as well as experts and brokers.

The functionalities of www.biobrokers.eu was introduced and the challenges now is to achieve a critical mass of users, through promotion on conferences and fairs, cooperation with relevant projects and other platforms etc.

The final part of the session was devoted to the revealing of the 2011Baltic Manure Handling Award. **Anne-Luise Skov Jensen** from **Agro Business Park, Denmark** presented the purpose of the award:

- To recognize and promote companies who develop new technologies
- To expose the new technologies
- To broaden the knowledge of which technologies actually exist

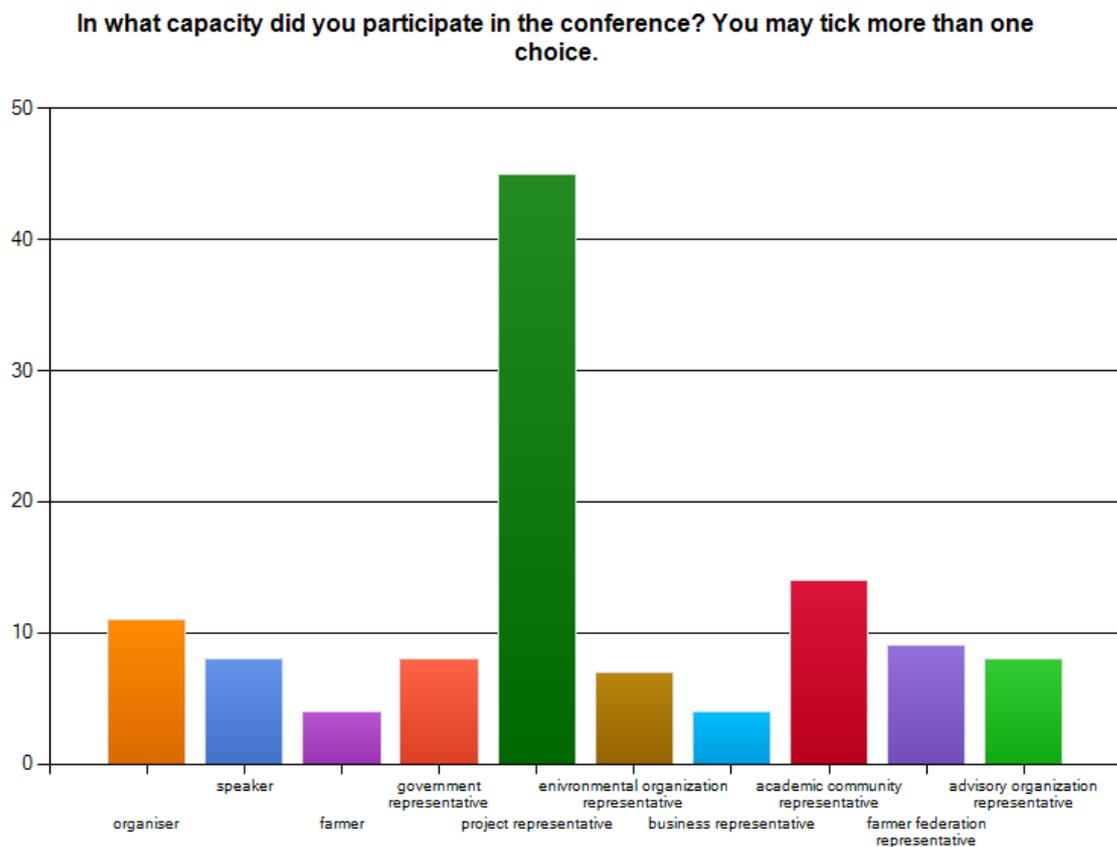
The winner of 2011 is: **Biotain AB** from **Ängelholm, Sweden** with the technology Splitbox – Agri, processing of manure to a dry and a liquid fraction and purified water, see www.splitvision.se

The symbolic award was given and **CEO Per Ewers of Biotain** thanked for the price and gave a short introduction to the new technology, composed of well-known components in a new combination.

RESULTS FROM SURVEY

After the conference in Sånge-Säby 2-3 November 2011 the participants were invited to join a survey. Some of the results will be presented in this chapter.

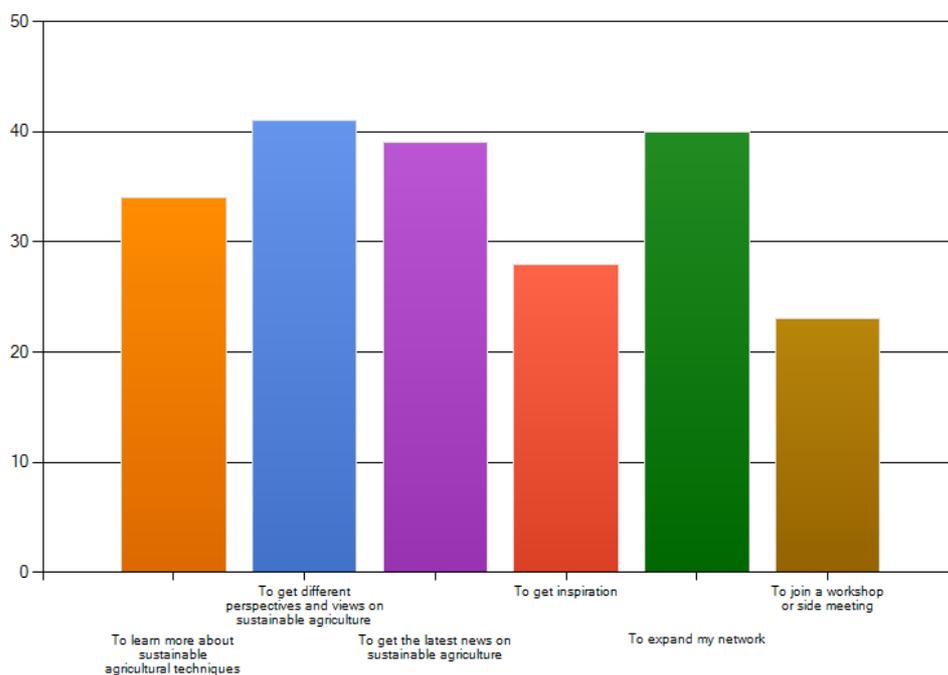
The conference was by most respondents considered to have lived up to their expectations. For the organisers this is of course the main goal. But in order to be able to improve the frame and content of this conference even more till next year's event, efforts were made to gather experiences and opinions from those who attended the conference. Below follow some of the aggregated information extracted from this questionnaire. The response rate was 42 %, which should be considered in interpretation of the data.



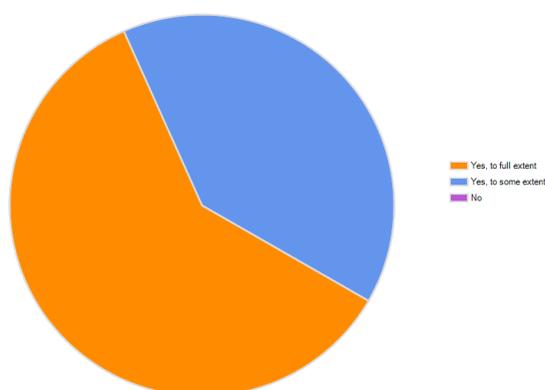
The major part of the participants at the conference were project representatives, But all groups invited to the conference were represented to some extent. There were 187 Participants. The data presented here is constituted from the responses from 79 of these participants.

Expectations

What was your expectations of the conference? You may tick more than one alternative.



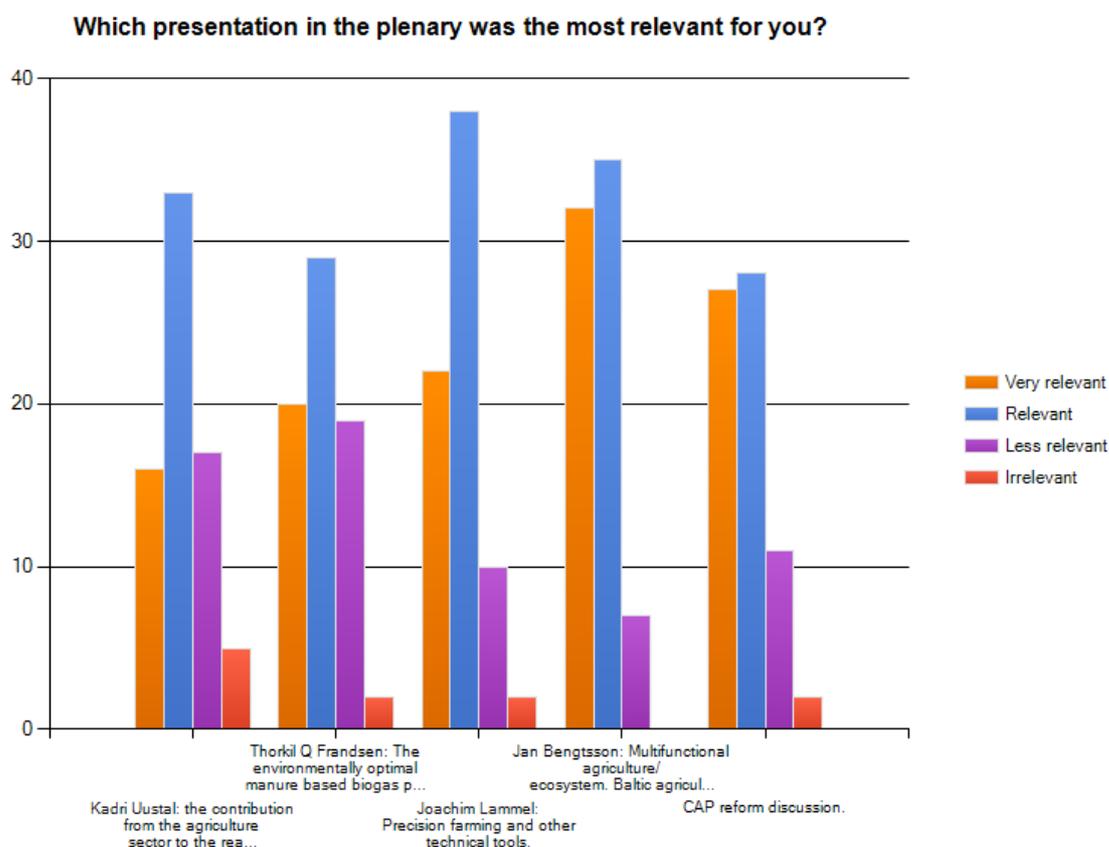
Do you feel that the conference program lived up to your expectations, in terms of contents and aim?



Most participants attended the conference to be able to get different perspectives and views on sustainable agriculture, and to expand their network.

Of those who shared their thoughts in the survey, none felt that the conference did not live up to their expectations at all. 60 % felt the conference lived up to their expectations to full extent and 40 % felt that it matched some of their expectations, but not all.

Presentations



The plenary presentations were all considered relevant or very relevant by a majority of the respondents.

Highest rating average did Jan Bengtsson receive for his presentation on *Multifunctional agriculture/ ecosystem – Baltic agriculture and ecosystem services in an unforeseeable future*.

The seminars

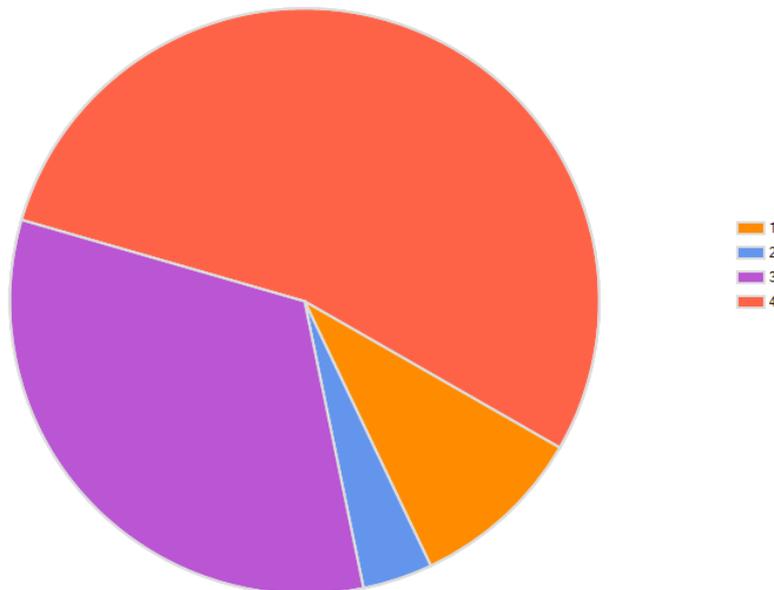
In seminar A, part 1, 75 % of the respondents found the presentations good or very good. In part 2 about 80 % thought the same. 3 and 8 percent thought the presentations were poor in part 1 and part 2.

In seminar B, part 1, 75 % thought the presentations were good or very good. For part 2 the analogue quote is 60 %.

In seminar C, all respondents thought the presentations were good or very good in the first part. In part 2, this quote was 85 %.

Wiggeby farm

What is your experience of the visit to Wiggeby farm? A very good contribution to the conference (4) or mainly time consuming (1)?



Most respondents found the visit to Wiggeby farm yielding and inspirational, and some even thought this was the best part of the entire conference. Also there have been comments on the good combination of theory and practice.

Other comments were that the conference need more space for discussions in order to be able to move forward. There were also points made that the conference should become better at handling the farmers and their interest, to make it more beneficial for these important stakeholders to join the meeting in the future.

ANNEX 1**PROGRAM****A GREENER AGRICULTURE FOR A BLUER BALTIC SEA**

Tuesday 1 November	
	Arrival in Stockholm, transport to conference centre Informal bilateral talks and projects' internal WP meetings
Ca. 21.00	"Ice breaker" event
Wednesday 2 November	
07.00 - 08.55	Breakfast
	PLENARY SESSION Room: Södra <i>Moderator Lotta Samuelsson, Baltic Sea 2020</i>
09.00 - 09.20	Introduction and welcome speech <i>Helena Jonsson, President, Federation of Swedish Farmers</i>
09.20 - 09.50	The Contribution from the agriculture sector to the realisation of the objectives of the EU Strategy for the Baltic Sea region <i>Kadri Uustal, Adviser to the Director General, DG Regional Policy</i>
09.50 - 10.20	The environmentally optimal manure based biogas <i>Thorkil Q. Frandsen, Agrotech (DK)</i>
10.20 - 10.30	Presentation of the WWF Baltic Farmer of the Year Award 2011 <i>Ottilia Thoreson, WWF Baltic Eco Region Programme</i>
10.30 - 11.00	Coffee break
11.00 - 11.30	Precision farming and other technical tools <i>Joachim Lammel, Head of product and application research, Yara International</i>
11.30 - 12.00	Baltic agriculture and ecosystem services in an unforeseeable future <i>Jan Bengtsson, Prof, Dept of Ecology and the Future Agriculture Research Initiative, SLU</i>
12.00 - 13.30	Lunch

PARALLEL PRESENTATIONS AND DISCUSSIONS

13.30 - 15.00	Seminar A: How can stakeholder feedback be introduced to modeling and scenario work? <i>Sirkka Tattari, Finnish Environmental Institute</i>	Seminar B: Farmers tools for the environmental work Several speakers, see seminar program	Seminar C: The environmentally optimal manure based biogas <i>Thorkil Q. Frandsen, Agrotech (DK) and other Baltic Manure representatives</i>
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15.00 - 15.30		Coffee break	
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15.30 - 17.00	Seminar A: Integration of measures and policies <i>Ola Palm, JTI and Neil Powell, SEI</i>	Seminar B: Continued Several speakers	Seminar C: Policy discussion and Manure award Baltic Manure representatives
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PLENARY SESSION

17.15 - 18.15	Discussion: Different views on the CAP reform Participants: <i>Rikke Lundsgaard, The Danish Society for Nature Conservation, Niels Lindberg Madsen, Danish Agriculture and Food Council - CANCELLED. Replaced by Carl Wachtmeister, LRF</i>
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Wrapping up the day

Staffan Lund, SLU & Kaspars Zurins, LRATC & Markku Järvenpää, MTT

18.15 - 19.15	Poster presentations, free time
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19.15 CONFERENCE BANQUET

19.15 - 19.45	WWF Baltic Farmer of the Year Award Prize Ceremony Dinner Pianist Cilla Hector
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Thursday 3 November

07.00 - 09.00	Check out, Breakfast
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09.15	Departure to Wiggeby Farm (bus transportation)
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09.30 - 11.30	Visit at Wiggeby Farm, the Winner of the WWF Baltic Farmer of the Year Award 2010 Coffee with sandwich
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11.30	Departure to Arlanda airport (bus transportation)
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ANNEX 2

SEMINARS

PARALLEL SEMINARS

13.00-17.00

Seminar A Integration of agro-environmental work: challenges and opportunities

Part 1 Models, measures and scenarios

13.30 - 13.50 Short introduction to the BC scenario framework - changes of model inputs, *Henrik Eckersten, Swedish University of Agricultural Sciences*

13.50 - 14.10 Preliminary results from scenarios based on climate change,
Elin Widén and Karin Blombäck, Swedish University of Agricultural Sciences

14.10 - 14.30 Best available measures now and in the future: the modelling aspects
Sirkka Tattari, Finnish Environmental Institute

14.30 - 15.00 Discussion and stakeholders viewpoints

COFFEE BREAK

Part 2 **The greening of CAP:** Methods development in providing multiple streams of payments for eco-system service delivery, for the application measures in agro-environmental schemes, in the Baltic Sea Region. *Chair: Didzis Neimanis, Latvian Farmers' Parliament*

15.30 - 16.05 European perspectives on the Greening of CAP, Institutional challenges in implementing best practice in the BSR, *Neil Powell, Stockholm Environment Institute*

16.05 - 16.20 Lessons on the identification of best practices in the BSR
Ola Palm, JTI - Swedish Institute of Agricultural and Environmental Engineering

16.20 - 16.40 Lessons learned in assessing and paying for measures that provide eco-system delivery in the Baltic Sea Region
Gerald Schwarz, Johann Heinrich von Thünen-Institut

16.40 - 17.00 *Discussion*

Seminar B **Farmers tools for the environmental work**

Part 1 Farmers tools for the environmental work

Moderator: *Kaspars Zurins, Latvian Rural Advisory and Training Centre*

13.30-14.00 Agricultural Advisories' role in the environmental work
Eija Hagelberg, Baltic Sea Action Group, Järki project

14.00-14.30 A concrete farm case
Line Strand, Focus on Nutrient Advisor

14.30-15.00 The Polish agri-environmental advice program
Dorota Urbanowska, Ministry of Agriculture and Rural Development, Department of Direct Payments CANCELLED due to flight problems

COFFEE BREAK

Part 2

15.30-16.00 My farm in a Baltic Sea context
Christian Danneskiold Lassen, Holmegaard Manor

16.00-16.30 Baltic Deal Demonstration farms: Agri-environmental measures on the web.
Christer Nilsson, Andrzej Szymanski, Frank Bondgaard, Baltic Deal project

16.30-17.00 Final discussion

Seminar C	Manure energy
Part 1	Manure energy: Chair Markku Järvenpää The environmentally optimal manure based biogas
13.30-13.45	Manure based biogas in BSR - brief overview, Sari Luostarinen, MTT
13.45-14.10	Environmental-friendly handling of digestate in agriculture <i>Lena Rodhe, JTI</i>
14.10-14.35	Environmental comparison of alternative strategies for external carbon addition to manure biogas. <i>Hamelin, Lorie & Wenzel, Henrik, Univ. S. Denmark</i>
14:35-15:00	Alternative manure energy solutions: Incineration and thermal gasification. <i>Ksawery Kuligowski, Pomcert/Univ. Gdansk</i>
	COFFEE BREAK
Part 2	Alternatives to biogas, policy discussion and manure award
15.30-15.50	Challenges and policy recommendations on manure resources, Lotta Samuelson, Baltic Sea 2020
15.50-16.10	Interactive bee-hive discussion on policy recommendations, Moderated by <i>Knud Tybirk, Agro Business Park</i>
16.10-16.25	<i>Presentation of Bioenergy/ biofuels platform - biobrokers.eu by Ksawery Kuligowski, Pomcert</i>
16.30-16.45	Revealing the Yearly Baltic Manure award winner, <i>Anne Luise Skov Jensen, Agro Business Park, DK</i>
16.45-17.00	The winner of Baltic Manure Award has the word

ANNEX 3

Participant list

Participant List "A Greener" 2-3 November 2011

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ANNEX 4

Power point presentations

All presentations can be found at the websites of the projects.

http://www.balticmanure.eu/en/20110705_02.htm

http://www.balticcompass.org/CONFERENCE_2011.html