

Conference  
**Pathfinding through  
Climate Change**

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Experiences presented by  
 **BalticClimate**

## **Agriculture Session – Keynote**

### **“Sustainable Climate Smart Agriculture“**

by

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Climate Change is perhaps the most pressing environmental issue in the world today. The effects of climate change are already being seen – in the Baltic Sea Region and the world. Science defines nine planetary boundaries that “humans need to respect in order to avoid catastrophic environmental change at global scale”.<sup>1</sup> But there are some ‘planetary boundaries’ we already crossed that have a tremendous impact on the livelihood of our societies and planet in the future. These three planetary boundaries are Climate change, Rate of biodiversity loss and the Nitrogen-phosphorus cycles. All three are directly linked to agricultural activities.<sup>2</sup> The agricultural system today is facing three main challenges:

1. Increase of world population
2. Limited access to food supply for majority of world population
3. Increased importance of food supply and food security but at the same time agricultural activities biggest threat to the environment

<sup>1</sup> J. Rockström et.al. 2009: A safe operating space for humanity, Nature 461, 472-475

<sup>2</sup> The agriculture sector is the sector that adds most emission of greenhouse gases to the atmosphere, 1/3 of emission are directly linked to conventional agricultural activities, due to the conversions of forest, wetlands and meadows into agricultural land, monoculture approaches as well as extensive animal husbandry.

Conventional agriculture came with certain advantages but it also brought us into the situation we are in now:

- monocultures means loss in biodiversity and ecosystem services
- dependency on fossils is challenging us in the light of peak oil and peak phosphorous
- produce loss in traditional plants and seeds caused by diseases and pests due to climate change

New improved agricultural technologies or genetically changed seeds can only ease some of the damages made and do not secure food supply, neither sustainably nor long term.

### **How can we adapt our agricultural production in the light of the challenges above?**

We need to apply an integrated system perspective to agriculture and better planning for better food which can mean many different things:

- a healthier and more sustainable common agricultural policy that is fitting modern consumer behaviour and at the same time is well prepared for the challenges outline earlier
- Better integrated sustainable food systems that take into account the impacts of climate change, increasing food prices and the need for balancing food and energy security.
- Consumers that are able to make informed decisions on what and how to eat and have clear demands on how and where food should be produced.

Some more specific measures would be:

- Decrease of the overuse of water world wide
- Decrease over-fertilisation of soil with artificial nitrogen and phosphor and their leakages in the biosphere
- Decrease the loss of biological diversity
- Add to the development of carbon sinks

Some of this can be achieved by applying sustainable agricultural measure such as crop rotation, green manure, composting and biological pest control to maintain soil productivity.

However, there is a concept that goes even beyond sustainable agriculture – and this is **permaculture**<sup>3</sup>. It is a concept easily applicable as well for small as for large scale farming, in the country side and in the city.

Permaculture draws from several other disciplines including organic farming, agroforestry, sustainable development, and applied ecology.

Its main advantage lies in the use of (local) perennial crops as stressed in the permaculture concept in contrast to the current use of annual crops. The use of perennial crops in agriculture would bring us closer to an integrated system perspective to agriculture and better

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<sup>3</sup> B. Mollison, D. Holmgren, 1978: *Permaculture One: A Perennial Agriculture for Human Settlements*, Trasworld Publishers

planning for better food as well as actively contribute to the specific measures as outlined above.

## 6. Summing up

Agriculture is part of the solutions to climate change. Good practices collections on climate smart agriculture will help the sector to tackle climate change challenges. The co-operation and exchange of knowledge between sectors and regions is crucial for the verification and further development of good practices. Sectoral and regional networking with other regions is seen as a great chance to exchange experiences and finally to improve, implement and complete good practices.

Many regions have made cutting greenhouse gas emissions their main environmental priority. CBSS Baltic 21 battles climate change by modernizing outdated practices that cause needless emissions, promoting climate smart agriculture as well as adapting the Baltic Sea Region to climate change. We have made it our mission to find the most innovative and positive practices within climate smart agriculture and forestry and to spread these ideas so that both emission and costs can be saved.