

**Draft (Nov. 1) -- 3rd Annual Report (2007)**  
**Centre of Advanced Research on Environmental Services**  
**(CAR-ES)**

**People active in the centre (core group in italics)**

*Per Gundersen* (co-ordinator), *Karin Hansen* (secretary), Ingeborg Callesen, Jesper Riis Christiansen, Forest & Landscape Denmark.

*Jan Weslien*, Eva Ring, *Lars Högbom*, Line Boberg, Olof Widenfalk, Skogforsk, Sweden.

*Bjarni D. Sigurdsson*, Hreinn Óskarsson, Brynhildur Bjarnadóttir, Jon August, Icelandic Forest Research.

*Magne Sætersdal*, Dan Aamlid, Skog og Landskab, Norway.

*Leena Finér*, *Ari Laurén*, Hannu Ilvesniemi, *Jukka Laine*, Anna Tolvanen, METLA, Finland.

Iveta Varangiryte, Lithuanian Forest Research Institute, Lithuania

Andis Lazdins, Silava, Latvia

At each meeting more scientists from the host country/institution have participated with presentations.

**Objectives (summary from application)**

In this Nordic centre, Environmental Services (ES) include i) *C-sequestration*, ii) *water protection* and iii) *biodiversity*.

With the general objective to strengthen Nordic collaboration and research innovation the specific objectives of CAR-ES are:

- To strengthen the knowledge base for counting and optimising environmental services in SFM.
- To quantify the environmental impact of different management strategies and practices in operational ways, that can support decision-making.
- To improve the knowledge and visibility of the environmental services provided by forests in the public as well as among forest owners and managers.

The *ambition* is to integrate and synthesise the knowledge base (conceptually, qualitatively and quantitatively) on environmental services to the level needed for developing a decision support system (DSS) for SFM. This knowledge base for a DSS may then be implemented by the partners in their internet based dissemination platforms that may target forest owners, decision-makers as well as the general public.

It is not the aim to perform detailed research with in each of these three vast research topics. The aim is to focus on the interactions and the major gaps in knowledge from a *holistic view* where information can be integrated across the topics.



*Direct operational aims*

- Coordination of Nordic research in the area; eliminate potential overlap and promote effective use of Nordic R&D resources.
- Synergy among the three environmental services in research as well as in practice

**Status and results**

The CAR has led to new contacts between specialists within and between the three respective Environmental Service (ES) disciplines. The importance of this is substantial but hard to quantify. None of the researchers cooperated before the start of the CAR.

Partners strongly acknowledge the benefit in treating the three main ES together, even though the scales used in research may often be different. Our common understanding and priority is to move to the landscape scale in approaches and projects - an idea that has gained momentum from our CAR.

We run a synthesis project on 'Environmental Services provided from Forests by the Water' which include riparian management and buffer zones. A draft paper intended for AMBIO has been developed from discussions over the last two meetings. To be finalised in spring 2008.

A new research project was formulated by the CAR and funded 1-yr by SNS "Environmental impact of shorter forest rotations" (Finland, Sweden, Iceland). This project has involved senior and junior researchers from Nordic Forestry Institutes as well as from Universities. Workshop in Uppsala Nov 2007. Final report 2008.

At each meeting several hours are devoted to discuss current (inter)national research agendas: what are the current hot issues in each country; new projects; new publications etc. This brought e.g. the following benefits

- Modified research strategies or proposals, changed timing, repetition of work minimised.
- Earlier and targeted circulation of useful reports and publication (especially synthesis papers/reports).
- Exchange of proposals for inspiration and national use.
- Involvement of the relevant partners in an ES workpackage of an EU project on stump removal coordinated by the OSCAR.
- Visit from Skogforsk (4 senior researchers) to METLA in 2007 regarding silvicultural and environmental aspects within forest fuel management. A common research agenda is being prepared.
- Potential translation/rework of dissemination to practice papers on ES between the countries (planned activity).

Other specific national benefit from the CAR:

- IS: The centre directly contributed to create the major new research project (ForStreams) and is part of the effort in AFFORNORD and a project on C-sequestration
- DK: The CAR activities improved our contribution to an ES workpackage in the EU EFORWOOD project, which again feed back to the CAR.
- FI, DK, IS: CAR-ES activities contribute to the COST action ForMan on forest hydrology and forest water management in a changing climate.
- NO: New cooperation, access to control sites on IS
- SE: New cooperation on Bioenergy and Environment

**Meetings held during Year 3**

7-9 June 2007, Bergen, Norway.

Seminar on 'Biodiversity' and 4<sup>th</sup> Progress Meeting.

- 14 scientists from 5 countries participated. An excursion to the Hardangerfjord area was included on the Saturday including visit to natural mixed forests and to sites illustrating the regrowth after abandonment of grassing.
- Seminar on biodiversity: 10 presentations were spanning issues from lichens, ants and beetles to inventory methods and 'most protection per Euro'. It was concluded with a discussion where the major issues were: Zonation – is that wise? Restoration what do we gain? Research on biodiv. more integrated in NFI; Last 10 yr of Nordic biodiv. research – what have we achieved?- Currently forestry might have become tired of the issue and think there is no conclusion! Format could be anything from a synthesis talk at a symposium, a synthesis paper, or a discussion paper for a newspaper or magazine.
- National research agendas;
- Other main issues were: i) Open workshop/conf. in yr-5 first ideas; ii) Exchange of staff in the form of short term scientific missions; iii) Reporting to SNS criticised for all CARs; iv) Planning of the work and meetings; v) Update from secretariat, reporting and budget.

8-10 November 2007, Frederiksberg, Denmark (**Postponed to January**)

Seminar on 'Water and Climate Change' and 5<sup>th</sup> Progress Meeting

- Seminar including presentation from METLA projects on climate effects on water. Excursion to CLIMAITE manipulation experiment, to a site with greenhouse gas emission monitoring in wet gradients, and to a tree species trial.
- Scrutinising the draft on Forests by the Water, work on parts, decide plan for finalisation of paper to Ambio.
- Report on Short Rotation project
- National research agendas and research ideas
- Planning of international workshop
- CAR Business meeting

**2007 budget**

Totally 500.000 NOK received. Funds remaining: DK: 0; NO: 0; SE: 10.000 NOK; IS: 5000 NOK; FI: 6000 NOK. Reason for remaining funds is that the Nov. meeting in Copenhagen had to be postponed to Jan. 2008.

Estimate of total Nordic R&D at the forest institutes on projects related to ES:

IS: 2.2 mill NOK; DK: 5 mill NOK; FI: 4.1 mill NOK(only external) so probably 10 mill total; SE: 10 mill?? NO: 5 mill.?? Total: 20 mill NOK (better estimate will be provided at the meeting).

**Main problems encountered**

Environmental Services is a relative new area of research. Trying to bridge the three most important ES's in an integrated and multidisciplinary approach is a challenge because: i) we are not used to work across the three ES's; ii) the Nordic-Baltic region has contrasting geography in terms of natural forest vegetation, land use history, goals in management etc.; iii) management is a very

broad term, thus to discuss effects of forest management on ES's we need to structure and clarify the communication with this term in a operational way. This require an ongoing discussion

The involvement of Baltic colleagues was not optimal.

### **Future activities**

- Spring, 2008: Project meeting in Uppsala, Sweden
  - o Seminar with emphasis on *Bioenergy and its consequences for Environmental Services*.
  - o Finalising and celebration of the *Synthesis on ES and Forests by Water*
  - o Presentation of the pilot project *Environmental effects of shorter forest rotations Final outcome*.
  - o Biodiversity synthesis
  - o National Research Agenda
  - o Common application(s) in our area (EU)
  - o Plan for dissemination fact sheets: 1) 'translation' of national fact sheets; 2) potential Nordic fact sheets to SNS/NMR.
  - o Planning of open international workshops on ES for 2009.
- Autumn, 2008: Topic meeting (content to be planed based on out come spring meeting).
- 2009: Two ordinary project meetings
- 2009: Open international workshops on Environmental Services to conclude our efforts

### **Publications 2007**

Gundersen, Per, Jan Weslien, Bjarni D. Sigurdsson, Magne Sætersdal, Leena Finér & Ingeborg Callesen. 2007. The objectives of the research network "Centre of Advanced Research on Environmental Services" (CAR-ES). In: Halldórsson G., Oddsdóttir E.S., and Eggertsson O. (eds). Effects of afforestation on ecosystems, landscape and rural development. TemaNord 2007, 508, 126-131.

The above is a direct result from the CAR. A list of papers from all the CAR related activities will be provided in the final annual report.