European Evaluation Helpdesk for Rural Development

FINNISH CASE STUDY- EVALUATION OF CLIMATE STABILITY IN FINLAND

FACTSHEET OF THE EUROPEAN EVALUATION HELPDESK FOR RURALDEVELOPMENT - December 2016

CLIMATE STABILITY - A PLEDGE FOR THE FUTURE

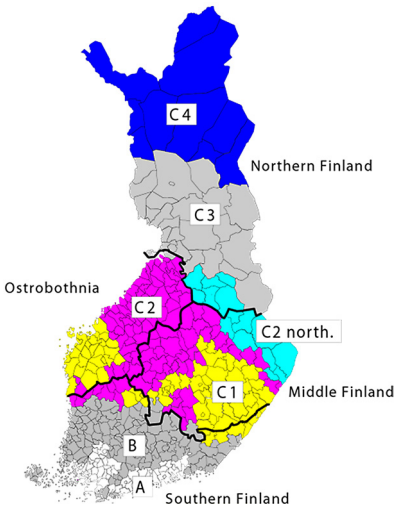
Climate change is one of the biggest environmental challenges faced by society, and climate stability is one of the main environmental objectives of the reformed CAP. EU Member States have pledged to reduce greenhouse gas (GHG) emissions by 20% of their 1990 levels by 2020. Agricultural emissions play an important role in achieving this goal, considering that methane and nitrous dioxide account for 10% of Europe's GHG emissions and carbon sequestration changes in Land Use, Land Use Changes and Forestry (LULUCF) are important contributors to the net emissions balance. Thererfore, climate stability is a very important public good and making the evaluation of the performance of rural development programs all the more vital.

Agriculture produces roughly 9 % of Finnish greenhouse gas (GHG) emissions. The effects on climate change of a single, small emitter, such as a farm can only be assessed through its indirect impacts. This case study from Finland focuses on the evaluation of the impacts of EU rural development measures and programmes on climate stability at the macro level using a multi-regional dynamic partial equilibrium modelling approach. The main evaluation challenge in assessing a counterfactual for rural development measures on climate stability in Finland is the lack of a non-participant control group.

FURTHER INFORMATION

- Finnish RDP 2007-2013
- Model allows for pre and post assessment
- Measures covered: AEM 214 and LFA 211, 212
- Luke Natural Resources Institute Finland, Professor Heikki Lehtonen, as part of the FP7 ENVIEVAL project

Main areas and support regions



THE DREMFIA MODEL: A MACRO LEVEL APPROACH

The DREMFIA (Dynamic multi-regional sector Model for FInnish Agriculture) was developed to simulate long-term agricultural production and markets in Finland on a regional scale. This macro-level model uses the mechanism of spatial price equilibrium, assuming competitive markets with basic profit and utility maximising conditions for producers and consumers. The model includes four main areas: Southern Finland, Central Finland, Ostrobothnia and Northern Finland. Agricultural production in the main areas is further divided into sub-regions on the basis of agricultural support payment levels - the same payment levels within each support region. In total, there are 17 different production regions. This enables a regionally disaggregated, exact description of the policy measures and production technologies.

As the majority of Finnish rural development measures do not specifically target GHG emissions, the case study tested the approach of evaluation with consideration to AEMs (214) and LFA payments (211, 212). These two schemes affect the overall land use and production intensity, which are represented in the model. The indicators used in the case study employ CO_2 equivalent measurements both with and without land-cover changes (LULUCF). GHG emissions take into account: input use, livestock number and type, and land use (and change).

Most farmers in Finland are long-term participants in AEMs, making the construction of direct comparison groups impossible. The DREMFIA accomodates the lack of data driven comparison groups by modelling multiple counterfactuals. It is, however, crucial to define a relevant and realistic counterfactual. For example, the removal of AEMs and LFA payments without any compensation to farmers

through other measures would have had a drastic effect on the level of agricultural production rather than production choices. The case study used an income neutral subsidy without the restrictions involved in actual payment schemes to describe realistic counterfactuals (i.e. no LFA payment, no agri-Environmental Payments (AEP), and no pillar II payments).

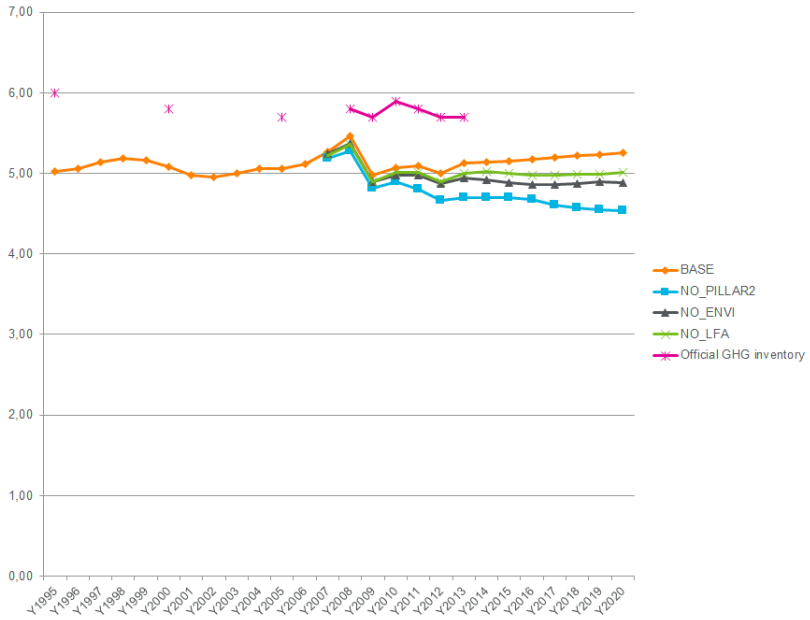
Exemplary Results from Modelling

•An increase in GHG emissions by 7% due to Pillar II contributions to maintaining livestock production and land in agricultural use has been observed when accounting for land use effects in the model.

•Specific measures for mitigating agricultural GHG emissions (e.g. no-till of grasslands on organic soils) had little effect.

•Higher GHG emissions are found if livestock production is maintained and land is in cultivation.

IMPACTS OF ASSESSED RDP MEASURES:



MAJOR FINDINGS AND RECOMMENDATIONS

STRENGTHS:

- Results are not dependent on data of non-participants.
- A number of counterfactuals can be estimated.
- Macro level results enable estimates of other environmental impacts.
- The modelling approach can also be used to evaluate simultaneous impacts on e.g. water quality and thus multiple environmental aspects.

WEAKNESSES:

- Assumption of profit maximization (at regional level).
- A high level of expertise is required and continuous updating.

FOR MANAGING AUTHORITIES:

- Running a model requires both experienced personnel and data collection suitable for the model (may include env. monitoring).
- Building a model requires time and effort.
- A good model provides results which are only as good as the quality of the input data and counterfactual established.

FOR EVALUATORS:

- Building a model requires significant time and effort, the model should be able to manage changing policies.
- Using a suitable model may require cooperation with other parties.
- Consider the type of counterfactual, which you propose, making sure it is realistic and considers the measures.

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The Evaluation Helpdesk works under the supervision of Unit E.4 (Evaluation and studies) of the European Commission's Directorate-General for Agriculture and Rural Development.