

FARMING FOR A BETTER CLIMATE BY IMPROVING NITROGEN USE EFFICIENCY AND REDUCE GREENHOUSE GAS EMISSION (FARM-CLIM)

Agricultural activities contribute to emissions of nitrogen (N) and greenhouse gases (GHG) through a variety of processes. There is much interest in understanding effects of agricultural activities on released emissions, providing well-founded knowledge to facilitate the implementation of abatement strategies. Management practices have the scope to influence the magnitude of emissions and therefore the potential to reduce them and their undesired impacts on the environment.

FARM-CLIM assesses N and GHG fluxes of Austria's agricultural sector (crop production and animal husbandry) and proposes measures for improvement. Those measures will undergo an economic assessment as well as they will be evaluated by expert consultancy of corresponding stakeholders concerning their practical suitability.

Within the framework of the project the IPCC default emission factor for soil nitrous oxide (N₂O) emissions will be reviewed and improved including the development of regional concepts to implement mitigation measures. IPCC reporting will be improved and uncertainties be reduced.

ISIS will develop future scenarios for sensitivity assessment of obtained model results (investigating good agricultural practice and under the condition of climate change) and identify intervention points for the overall N budget. Appropriate evaluation of results will be done with respect to other European studies, specifically the NitroEurope project (<http://www.nitroeuropa.eu/>), in interpreting reporting recommendations.

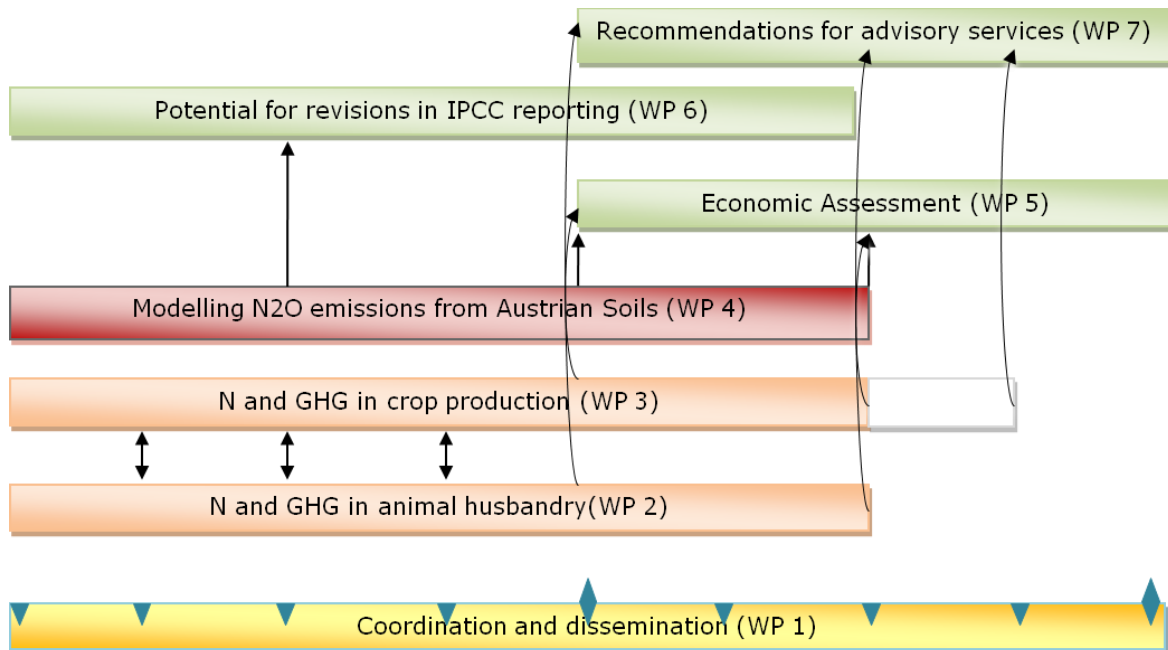
FARM-CLIM covers the topic in a multi- and interdisciplinary approach including nationally and internationally highly recognised experts from science, reporting and commercial farming. The inclusion of the stakeholders' views at a very early project state will contribute significantly to closing the science-policy gap in the field of climate friendly farming.

Specifically, the project aims to

- optimise N use in Austrian agriculture
- minimise N and GHG losses to the environment
- identify intervention points in agriculture which are relevant for a general N and GHG strategy
- develop a basis on which guidelines on recommendations for agricultural advisory services on potential optimization measures and their economic impact can be developed.
- close the science-policy gap on the possibilities to optimise N use and minimise GHG losses

Project layout and interdisciplinary approach

The tasks of FARM-CLIM are divided into seven work packages. The following figure shows the work flow within the project and the interactions between the work packages.



WP 1 facilitates the collaboration between work packages and between project partners. WP 2, 3, 4 and 6 assess fluxes and work on potential measures for the improvement of N use efficiency and the mitigation of GHG emissions from Austrian Agriculture. WP 5 carries out an economic assessment of the most promising options. WP 7 will conclude recommendations for agricultural advisory services on potential optimisation measures and their economic impact.

Project team at ISIS:

Prof. Wilfried Winiwarter, Dipl.-Ing. Andrea Schröck

Project partners:

- University of Natural Resources and Life Sciences Vienna (BOKU):
 - Department of Forest- and Soil Sciences, Institute of Soil Science (IBF, project coordinator)
 - Department of Economics and Social Sciences, Institute of Agricultural and Forestry Economics (AFO)
 - Department of Forest- and Soil Sciences, Institute of Silviculture (Waldbau)

- Federal Research and Training Centre for Forests, Natural Hazards and Landscape (BFW)
- Austrian Agency for Health and Food Safety (AGES):
 - Institute for Soil Health and Plant Nutrition (ISP)
 - Institute for Plant Varieties (IPV)
- Environment Agency Austria (UBA)
- Chamber of Agriculture of Lower Austria (LK)
- Agricultural Research and Education Centre (Raumberg-Gumpenstein):
 - Department of Economics and Resource Management

Duration: May 2012 – April 2014

Funding: Austrian Climate Research Programme