1. Publishable summary

The CC-TAME project assesses the impacts of agricultural, climate, energy, forestry and other associated land-use policies, considering the resulting feed-backs on the climate system in the European Union. Geographically explicit biophysical models together with an integrated cluster of economic land-use models are coupled with regional climate models to assess and identify mitigation and adaptation strategies in European agriculture and forestry. The results from the integrated CC-TAME model cluster are used to provide: quantitative assessments in terms of cost- efficiency and environmental effectiveness of individual land-use practices; competitive LULUCF mitigation potentials taking into account ancillary benefits, trade-offs and welfare impacts, and policy implications in terms of instrument design and international negotiations.

Project Scope

The land-use sector is both a contributor to and a potential victim of climate change. Global historical emissions from land-use are estimated to exceed those from fossil fuels by some 25 % and are currently considered to be the second largest sources of GHG emissions. In Europe, the agricultural sector is the third largest sector of greenhouse gas emissions, accounting for 9 % of EU-25 emissions. At the same time recent drought periods and other weather extremes are responsible for a significant share of crop outages in Europe and it is predicted that climate change will increase the share of agricultural losses due to weather or climate related extreme events.

The main idea that led to the CC-TAME Project is the vision of implementing a "policy-model-data fusion" concept which shall guarantee efficient and effective mitigation and adaptation in the land-use sector and maximize benefits from policy coordination with other EU policies.

Challenge

Policy-model-data fusion results are regularly used for strategy building of future international climate policies of the European Union and are used to inform European policy makers for negotiations to implement European policies such as the European Emission Trading System and international negotiations at UNFCCC - COPs.

These models share the common feature of being data and technology rich bottom-up models. The land use sector is still poorly represented in these models and also lacks the "policy" component in the fusion concept. The CC-TAME project is designed to fill this gap by aligning and linking the currently leading and most suitable land-use models with other climate policy tools to quantify benefits from policy coordination and finally provide consistent policy analysis across sectors including the entire land-use sector.

Objectives

CC-TAME's prime objective is to live up to the criterion of "policy relevance". Its aim is to build a strong Science-Policy interface by delivering timely, relevant and understandable information from state-of-the-art policy impact assessments to the policy community. On the scientific-technical side, the project's expected impact is an assessment of the efficiency of current and future land use adaptation and mitigation processes and identification and quantification of the adaptation induced by policies. Thus, a scientific tool box needs to be built

to quantify (scenario analysis), understand (attribute through modeling), predict and assess the impact of policies on the evolution of land use processes.

Concept

The concept of CC-TAME is to model explicit land use on farm/forest management practice level taking into account the emerging technological changes in the land-use sector and its associated industries. CC-TAME will combine regional climate models with biophysical ecosystem models, which are rich in technology representation, with state of the art bottom-up type economic sector models embedded in the theory of modern welfare economics.

Integrated Policy Scenario Assessment

The data and analysis tools of CC-TAME are employed to assess a wide range of environmental, agricultural, forest, and energy policy scenarios. Particular policies to be analysed include those aimed at enhancing or preserving carbon stocks (national implementation of incentives provided by the Kyoto Protocol, for example), enhancing the use of bioenergy (Renewable Electricity Directive, Liquid Biofuels Directive, in the future a Renewable Heating and Cooling Directive), as well as policies aimed at reducing non-CO2 GHG emissions (CH4, N20) from agriculture.

Main Results Achieved and Work Performed by T18

Some of the first activities within CC-TAME have been to conduct and put in place the **Project Plan** and the **Publication Plan** in order to properly support management and coordination. For the envisaged dissemination of knowledge and for promoting and better manage the project, the **CCTAME Web Page** has been set up, containing various **Dissemination Material** such as **CC-TAME Presentations, CC-TAME Flyers and Posters**.

With respect to the project's scientific substantive, the following reports have been conducted:
All biophysical models (agri and for) have been operationalized at European or Regional levels and linkage to the respective economic models has been implemented. We have calculated base-line scenarios for the entire LULUCF Sector which we are currently sharing with the member states for review and validation. Analysis of the economics of mitigation in the LULUCF sector is currently underway and is also going to be reviewed by member states. Finally we have succeeded to establish a close working relationship with all member states in Europe and the UNFCC policy process at large. After building and constantly implementing the regional climate scenarios we will move to a fully fledged mitigation and adaptation analysis where we will focus on the co-benefits of mitigation and adaptation and identify thresholds. We anticipate to single out vulnerability hotspots in terms of geography and ecosystem type. Furthermore we will deepen the assessment on the efficiency and effectiveness of economic and regulatory instruments in the LULUCF sector.