CC-TAME Project Summary

Climate Change – Terrestrial Adaptation & Mitigation in Europe

The CC-TAME project concentrates on assessing 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.

CC-TAME's international consortium is composed of 17 highly recognized multi-disciplinary science partners who will carry out the project during 2008 — 2011.

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.

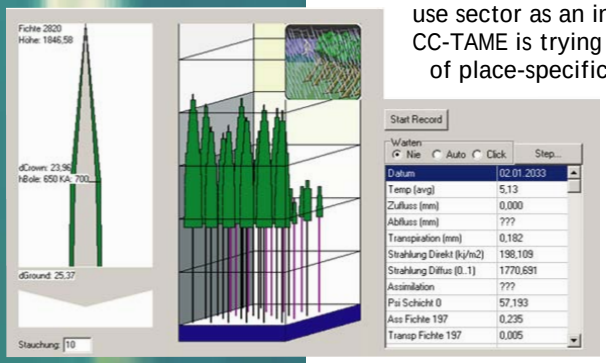
Policy induced changes in land management carry a large potential to both increase the adaptive capacity of ecosystems as well as reduce the emission burden from the land-use sector. Policy coordination of EU climate mitigation and adaptation policies with the Common Agricultural Policy (CAP), Rural Development Strategy, EU Forestry Strategy, and Clean Air and Water Policies could potentially lead to a number of ancillary benefits and thereby reduce costs of compliance of any individual policy. 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. All policy models in CC-TAME are data and technology rich bottom-up models, which are fed by information from plot level simulation "experiments" which guarantees robustness of results and will illustrate the impacts and efficiency of policies on various levels of aggregation both in terms of economic impacts and on the concrete place specific concrete management practice.

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. This requires new scientific approaches and synthesis that bridge disciplinary boundaries and geographic scale, and place particular emphasis on the land-use sector as an integral part of the coupled biophysical-climate-human system. CC-TAME is trying to overcome this challenge by maximizing the use of the richness of place-specific information and knowledge in aggregate policy analysis.

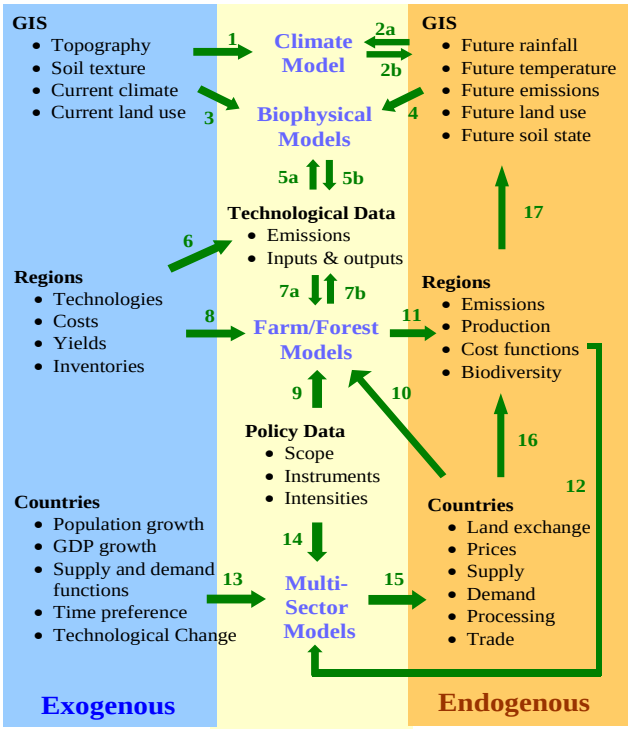


Concept

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. A technologically explicit bottom-up approach on the farm/forest management practice level to full fledged sector analysis allows the CC-TAME consortium to assess "The efficiency of current and future land-use adaptation and mitigation processes" on various levels:

- Land-use practice (fertilization, tillage, thinning etc…)
- Land-use change (e.g. bioenergy potential)
- Economic efficiency (cost minimization) – economic potential and competitive economic potential
- Efficiency of policy instruments (e.g. subsidies, auctioning of environmental services, taxes)
- Effectiveness with respect to political implementability and acceptability

GHG emissions are calculated in 3 steps as indicated in the figure for the data flow:
Step 1) Compute geographical explicit baseline emissions from current land use
Step 2) Re-compute climate
Step 3) Re-compute emissions



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.

More Information on CC-TAME
www.cctame.eu

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CC-TAME is a follow-up project of INSEA which focused on integrated sink enhancement assessment and related policies (www.insea-eu.info)

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SEVENTH FRAMEWORK PROGRAMME