

# LUC4C

**LUC4C - Land use change: assessing the net climate forcing, and options for climate change mitigation and adaptation**

**Instrument: FP7 Collaborative project**

**Duration: 48 months**

**Start Date: 1.11. 2013**

**Consortium: 15 partners from 11 countries**

**Project Coordinator: Prof. Dr. Almut Arneth, Karlsruhe Institute of Technology (Germany)**

**Project office: [info@luc4c.eu](mailto:info@luc4c.eu)**

**Project Web Site: [LUC4C.eu](http://LUC4C.eu)**

**Key Words: Earth system model, climate change, Land use change model, Dynamic global vegetation model, ecosystem services, land-based mitigation policy, Integrated Assessment Model, climate change adaptation**



## **1 The challenge**

In a world that faces continued population growth and changing consumption patterns, whilst striving to achieve an equitable and acceptable level of well-being for all people, climate change and land-use change are two of the foremost environmental challenges. They are also inseparably linked: land-use and land-cover change (LUC) contribute to climate change by affecting ecosystem biogeochemical and biophysical processes, and the climate shapes the way people use land, by affecting the supply of food, water, fibre and – in more general terms – ecosystem functioning.

In view of this LUC-climate change interplay the challenge is to develop land-use policies that foster efficient climate mitigation and adaptation options, and to optimise trade-offs with other ecosystem services, sectors or localities.

## **2 Project Objectives**

*LUC4C* aims to advance fundamental knowledge of the climate change - land use change interactions, and to develop a framework for the synthesis of complex earth system science into guidelines that are of practical use for policy and societal stakeholders. In particular, *LUC4C* will:

- enhance our ability to understand the societal and environmental drivers of LUC relevant to climate change
- assess effects of different mitigation policies and adaptation measures within alternative socio-economic contexts
- quantify how the LUC-climate change interplay affects regional vs. global, and biophysical vs. biogeochemical ecosystem-atmosphere exchange, and how the relative magnitude of these interactions varies through time
- advance our ability to represent LUC in climate models
- assess LUC & climate effects on ecosystem services and analyse these in relation to other societal needs that provide either a synergy or trade-off to climate mitigation and adaptation

