INSEA - Introduction and general description

The INSEA approach is designed to strengthen the European Research Area (ERA), by integration within the project, but also creating a platform for further integration with researchers outside the INSEA consortium. The project's objective is to develop an analytical tool to assess economic and environmental effects for enhancing carbon sinks and greenhouse gas abatement measures on agricultural and forest lands. Figure 1 illustrates the interaction between the participating partners operating on different scales of analysis and their respective models. In the discussion of Figure 1. we start from the box at the bottom. The creation of a common database (WP 3000) be made available to all the partners and partial outside sharing will be facilitated. Common GHG accounting and cost accounting standards for GHG mitigation measures due to technological or sinks adoption will be developed in various WPs in particular WPs 3300, 4100, 5100-5300, 5700, and 7200. Emphasis will be given to the modelling of IPCC GPG (WP 2100, 3300). It is hoped that modelling of IPCC GPG will help to feed back into the formulation of accounting standards as a number of participants hold leading positions is the IPCC (WP 4100, 8100). Likewise system boundaries, baselines (WP 4000) all the way to scenarios (WP 5700, 7000) will be harmonized. WP 5100 will provide information for priority setting on which mitigation measures – sink enhancement and GHG emission reduction - the analysis will be concentrating. Finally, common standards on validation and assessment of the results will provide a harmonized control tool to evaluate project progress and subsequent revision of agenda setting. The entire array of tasks aiming at developing a common database and standards for the assessment of GHG mitigation measures is a joint effort where effectively all participants will contribute.

The next two blocks (see Figure 1) are about micro-level modelling with an individual farm model on GHG management on the agricultural side (EFEM-DNDC) by UHOH and forest-plot models on the forestry side (PICUS) from BOKU mainly focusing on sink enhancement. The results from the farm models will be checked for consistency with the regional results from the model AROPAj developed by INRA. In addition, the interplay between these two models, both of which are based on data from the European Farm Accountancy Data Network, will also help to quantify the GHG mitigation implications of Common Agricultural Policy. Results from the EURO-FOR model—a forest-management model operating on a regional scale—will be downscaled to a number of halfdegree grids in order to validate results from the stand-level PICUS model. Results from the regional (meso-scale) models from both sectors will then feed into the FASOM and AGRIPOL models, which will be used for aggregate analysis augmented by market effects. The agronomics and GHG implications of management change to enhance sinks or reduce GHG emissions in the agricultural sector will be quantified with the latest version of EPIC and DNDC.

A set of a first-cut modular structure for the European Union is due by September 2004. This structure will then form the basis for incremental improvement to tailor the approach to the requirements of the stakeholders in an iterative process and to increase geographic coverage.

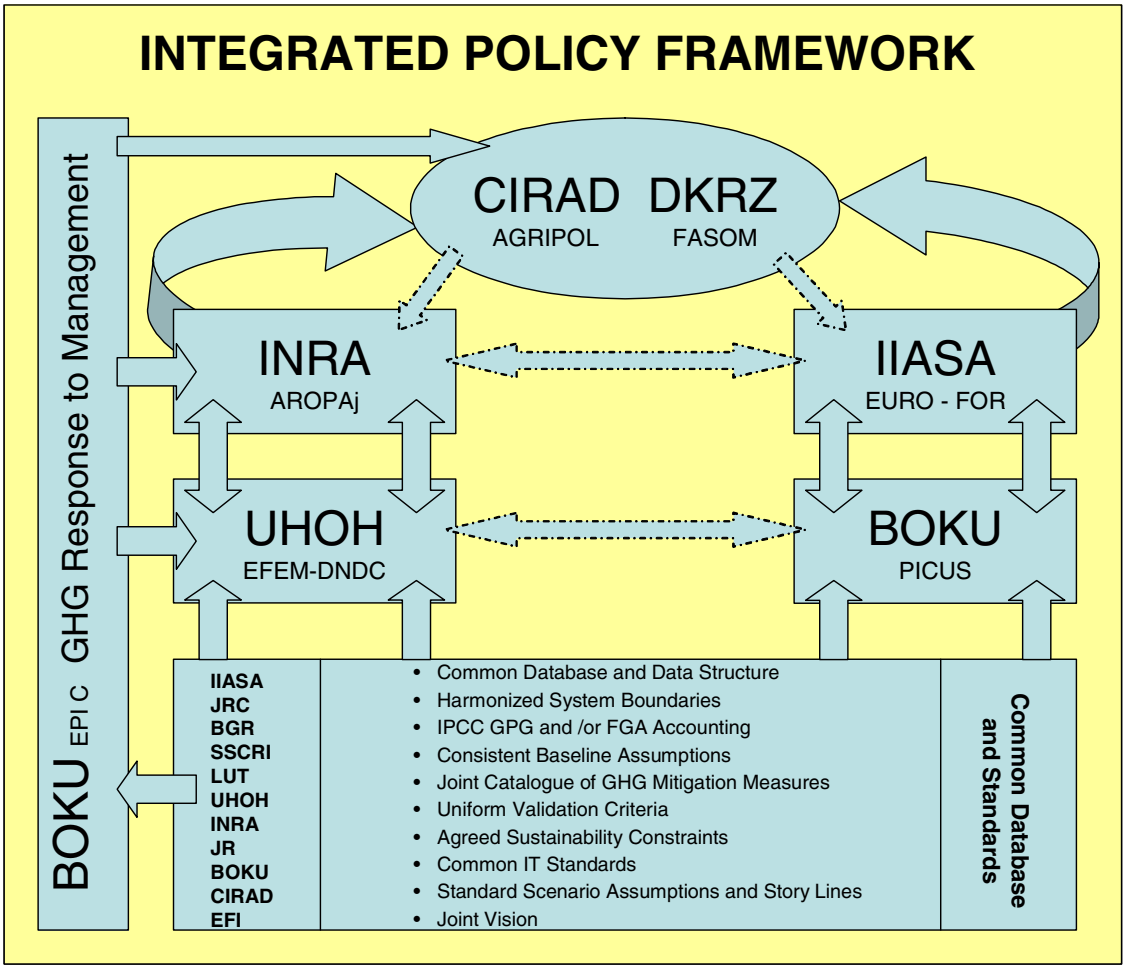

Figure 1 Overview of project integration of participating partners along different levels of aggregation and sectors.

INSEA - Overall Project Logic

The overall objective of INSEA is to develop a scientifically sound assessment tool for the economic and environmental effects of C-sink enhancement measures in agriculture and forestry. INSEA has to be seen as the first phase of a long-term activity with the explicit goal to implement LULUCF activities under the Kyoto Protocol and beyond. A major **part of the project is devoted to bio-economic engineering work:** to develop a **scientific costing concept** keeping in view political, scientific, data and technological developments. This is necessary in order to balance between the long-term perspective of maintaining the flexibility to adapt to changing requirements, and to provide accurate supply estimates in the short term. INSEA **will develop scenarios which are then softly linked to a variety of ancillary integrated assessment models** in order to demonstrate the skills of the tools as well as the effects of LULUCF activities on a variety of economic and ecological sectors. The scenario part of the project shall demonstrate the validity of the concept and point out potential problems ("deliver and learn").

The issues surrounding the Kyoto Protocol (international policy, new scientific findings, technological progress, linkage to other programmes and Conventions) are extremely complex, thus requiring for significant attention and resources within the project. It is not without reason that

LULUCF activities have been a controversial issue and are evolving from year to year and from COP to COP meeting. Therefore it is necessary to develop a solid and comprehensive bio-economic assessment concept as the basis for a practical comparison, in a soft-linked or fully integrated manner, with climate mitigation measures in other sectors. This will allow for adaptation in case political requirements change, and with the arrival of new data and scientific knowledge. We have split the total task of integrated sink enhancement assessment into eight individual work packages.

WP	Description
1000	Coordination
2000	Monitoring the Negotiations on LULUCF
3000	Data and Database Strategy
4000	Baseline Module
5000	Cost Landscapes of C-Sinks and Negative Emission Technologies
6000	Validation and Assessment
7000	Scenario Package
8000	Policy Implications

Table 1. Work package structure

The main work packages are listed in *Table 1.* At the heart of the prognostic part of the project are WP 5000, where the framework for cost accounting and summarizing the biological and economic models will be established, and WP 7000, where the scenario analysis will be carried out. WP 2000 will follow the evolving information requirements, constraints and links to other international programmes representing quantifiable, in terms of direct or indirect costs and benefits, of other ecosystem and economic functions. Together with inputs from the INSEA Advisory Board, WP 2000 will affect almost all subsequent WPs. WP 3000 is concerned with data harmonization issues, data flows, and the establishment of the database for WPs 4000, 5000 and 7000. A critical issue for the quantification of additional C-sink enhancement is the establishment of credible baselines. In WP 4000 we will go through very detailed and geographically explicit quantifications of baselines. The results generated in WP 5000 will be validated and assessed in WP 6000. Lessons learned and future trends will be addressed in WP 7000 (to the extent of how this can be done) will lead to the final deliverable of the project – the Policy Implications (WP 8000).

The INSEA work plan is written is such a manner that a comprehensive portfolio of modelling options is presented. In light of the urgency to deliver results – our aim on delivery of a first cut cost function at the end of 2004 - we consider the flexibility to choose and assign priorities to various components from the entire portfolio as a valuable asset of the modular structure of the work plan. It is envisaged that in close cooperation with the Commission and the Advisory Board, adjustments to the work plan can be provided and incorporated, which will help to achieve rapid implementation of the required actions. Adjustments and extensions shall also consider possibilities of additional co-financing from other sources. The current version of the work plan already contains adjustments from the original plan and a number of funding activities have already started.

With respect to the breakdown according to type of activity, WP 1000 entails the coordination activities for the whole project, WP 2000 to 8000 contain the major components for sink enhancement policies and also involve various dissemination activities. However, their main activities are based on straightforward RTD activities aimed at creating new data and scientific knowledge.

List of participating Partners

Partic.Role*	Partic. no.	Participant name	Participant short name	Country	Date enter project**	Date exit project**
CO	1	International Institute for Applied Systems Analysis	IIASA	Austria	T1	T30
CR	2	Joint Research Center (Ispra)	JRC	Italy	T1	T30
CR	3	Federal Institute for Geosciences and Natural Resources	BGR	Germany	T1	T30
CR	4	Soil Science and Conservation Research Institute	SSCRI	Slovakia	T1	T30
CR	5	Lulea University of Technology	LUT	Sweden	T1	T30
CR	6	University of Hohenheim	UHOH	Germany	T1	T30
CR	7	Institut National de la Recherche Agronomique	INRA	France	T1	T30
CR	8	Joanneum Research	JR	Austria	T1	T30
CR	9	University of Bodenkultur	BOKU	Austria	T1	T30
CR	10	Centre de Coopération Internationale en Recherche Agronomique pour le Développement	CIRAD	France	T1	T30
CR	11	European Forest Institute	EFI	Finland	T1	T30
AM	12	Departments of Geosciences and Economics, Hamburg University	DKRZ	Germany	T1	T30
AM	13	University of Bodenkultur / Institute of Economics, Policy and Law	BOKU_WPR	Austria	T1	T30

*CO = Coordinator
CR = Contractor
AM = Associated Member

** Normally insert “month 1 (start of project)” and “month n (end of project)”
These columns are needed for possible later contract revisions caused by joining/leaving participants