

INSEA - Relevance to the objectives of the specific programme and/or thematic priority

INSEA addresses in particular two issues of high importance for European environmental policies and technological leadership:

1. The need for an **independent LULUCF assessment and validation** model for the **Kyoto Protocol and post-Kyoto negotiations with respect to a holistic view of economic and environmental effects**;
2. To **better exploit** the significant investments in **the provision of spatial data** by establishing integrated multi-source systems to serve the needs of the public and private sectors.

Climate change is probably the single most challenging environmental issue facing the EU in the coming years¹. **The EU has a strong political will to successfully implement the Kyoto Protocol.** This leads European climate negotiators to accept the inclusion of biospheric C-sinks at COP6² and COP7 in order to reach an accord with countries like Japan, Russia and Canada. Despite the agreed individual country quotas for the first commitment period at COP7, there is strong need to develop sound analytical tools for the assessment of economically efficient LULUCF activities. First, the public will legitimately challenge official reports if environmental targets have really been met. Second, there is a need to keep the long-term goal and the next commitment periods in mind. New and improved methods will be all the more important for commitment periods after the first - **negotiations for the second commitment period will commence in two to three years.** There are still a number of open questions on how to implement LULUCF actions. The negotiated text is still too unclear to provide solid economic analysis, which leads us to the conclusion that we have to provide a very flexible tool that allows us on the one hand to single out the most important pieces to be still negotiated and compute possible effects of various negotiation options and on the other hand to still provide estimates of costs and environmental effects in the absence of a detailed negotiation text or IPCC guidelines. Already in the existing Kyoto Protocol it is clearly highlighted³ that there is a need to “*further elaborate guidelines for the implementation of this Article [Article 3], including verification and reporting*”. Particularly verifiability in terms of its physico-biological and economic sense was of special concern to negotiators in Kyoto [5]. This is reflected by the fact that the LULUCF-related articles of the Protocol (Articles 3.3, 3.4, 6, 12) all contain some form of the word “verify”. The combination of uncertainty with respect to the basic biological effects of sink enhancement measures, the uncertainty with respect to Kyoto rules and its induced market effects, and the strict demand to verify measures poses a formidable dilemma for assessment. With respect to costing methodologies the IPCC TAR “Cross Cutting Issues Guidance Papers” summaries the various degrees of freedom in analysing costs on a still rather conceptual level. Therefore, the **advances of the state of the art** that can be expected from the INSEA project are the design of dynamic, multiple output, and uncertainty augmented cost models and application of reduced form models to the geographic area of the enlarged EU and globally. In can be expected, if successful, that this costing approach might contribute to set new standards in the integrated assessment of sink enhancement.

¹ TECS – Futures Programme of the European Commission, Natural Resources and the Environment Panel Report, EUR 18970 EN, June 1999; EU focus on climate change – DG –ENV, 2002; http://europa.eu.int/comm/environment/climat/climate_focus_en.pdf.

² Sixth Conference of the Parties (COP6) which took place in July 2001 in Bonn, Germany.

³ Article 6 paragraph 2

Apart from **the advances** with respect to the assessment of sink enhancement measures INSEA products can be used as planning tools that can in a dynamic adaptive approach be fully integrated in spatial validation and verification measure and thus provide valuable information feedback for the assessment. We are not aware of any similar approach of land resource assessment that allows closing the **assessment-planning-validation-verification cycle** in an integrate manner. This approach is fully in line with the **text for the adoption of the FP6** with respect to “*the creation of new management tools*”, which for the management of land resources specifies “*integrated concepts for the multipurpose utilization of agriculture and forestry resources*” and “*evaluation of solutions offered by carbon sinks*”.

The dedicated call aiming at an analytical tool to assess economic and environmental effects for enhancement of C-sinks in agriculture and forestry is also in line with the **GMES**⁴ text specifying that the aim of GMES is to establish, by 2008, an operational and autonomous European capacity for global monitoring and security. GMES stems from the need to better organize the European space sector, and particularly to address the lack of coherence in monitoring programmes and, finally, to establish truly operational remote sensing applications. As no application will ever depend on remote sensing alone, the thrust must be on the development of integrated systems with clearly identified uses. The Kyoto Protocol is one of the priority themes (if not the most important one) of the GMES programme and therefore our activity on cost and environmental effects accounting will help reap the benefits of the huge costs for the provision of vast amounts of spatial data. In the European Commission’s outline for the GMES action plan⁵ it is stated that in the policy area of Global Climate Change the EU must “have access to independent information on an operational basis, to verify and enforce the treaty and to assess the effects of agreed (environmental) policies”. INSEA addresses the aims of GMES by **building on an established, operational programme to provide spatial data** for the assessment, planning and successive validation and verification of Kyoto measures.

From various EC documents outlining action plans it is specifically asked for **strong links to other programmes**. The INSEA consortium has partners who are active in the following programmes and who will guarantee a close interaction in dedicated WPs:

- IGBP-IHDP-WCRP Global Carbon Program;
- Intergovernmental Panel on Climate Change (IPCC), especially the IPCC National Greenhouse Gas Inventories Programme;
- CarboEurope cluster (in particular CarboInvent);
- Multi-sensor concepts for greenhouse gas accounting for northern Eurasia (SIBERIA II);
- INfrastructure for SPatial InfoRmation in Europe (INSPIRE);
- CORINE Land Cover 2000;
- IGBP-IHDP-LUCC Land use and Cover change: Regional and global assessment
- FAO – Agro-ecological zone assessment
- UNECE timber outlook study;
- Ministerial Conference on the Protection of Forests in Europe (MCPFE);
- LRTAP process;
- IA and Energy modelling groups like the EMF, IMAGE, GECS, POLES, MESSAGE
- Climate Strategies;
- Various IEA task forces.

⁴ In Annex V of the EESD Work Programme: “Research priorities for a dedicated call of the ‘Energy, Environment and Sustainable Development’ programme in support to the GMES Action Plan (Initial Period 2001-2003).

⁵ Global Monitoring for Environment and Security. Outline GMES EC Action Plan (Initial Period: 2001-2003). COM(2001)609 of 23 October 2001.

Following the terminology of the GMES action plan⁶, INSEA is a so-called **Strand 1 activity** (“**Deliver and learn**”). It will

- *deliver an information product* information about the accuracy and usability of LULUCF related data sources;
- *report on the problems met* can or cannot Kyoto measures be sufficiently assessed and finally verified with available data sources?
- *improve the knowledge, methods and tools* migrate aggregate assessment tools to a spatially explicit and integrated **assessment-planning-validation-verification cycle tool**.

Its contributions to the EESD⁷ programme are:

1. **Key Action 2.3.1.**⁸ “The targets are to provide solutions and strategies to reduce greenhouse gas emissions and concentrations taking into account economic feasibility, potential benefits for broader environmental policies, social acceptance and spill-over benefits. **Develop methodologies for monitoring, verification and compliance measures in relation to Kyoto and Montreal protocols**”;
2. **Key Action 2.4.1.**⁹ “The target is to ensure that **existing data sets and technologies are effectively exploited**. This includes: development of tools and techniques for the integration of existing data from different sources for multipurpose use”.
3. **Key Action 2.4.2**¹⁰ “The target is to identify the need, and to **help deploy** where necessary, **new cost-effective systems**”.
4. **Key Action 2.1.**¹¹ “To fully assess the implications of and *distinguish between the natural and anthropogenic change*, it is necessary to better understand and detect those changes as the basis to assess and predict their extent and consequences”.
5. **Generic Activity 7.2.**¹² “The aim of this activity is to *extent the European capacity in Earth observation (EO) technologies*”.

⁶ Global Monitoring for Environment and Security (GMES) Outline GMES EC Action Plan (Initial Period: 2001 – 2003)OM(2001) 609 final

⁷ “Energy, Environment and Sustainable Development” (EESD) is one of the four thematic programmes of the Fifth (EC) RTD Framework Programme (1998-2002).

⁸ Key Action 2 „Global Change, climate and biodiversity“, Key Action 2.3. “Scenarios and strategies for responding to global change issues”, Key Action 2.3.1 „Mitigation of and adaptation of climate change“.

⁹ Key Action 2.4. “European component of the global observing systems”, Key Action 2.4.1 „Better exploitation of existing data and adaptation of existing observing systems “.

¹⁰ Key Action 2.4.2. „Development of now long-term observing capacity“.

¹¹ Key Action 2.1. „To understand, detect, assess and predict global change processes”.

¹² Generic Activity 7.2. „Development of generic Earth observation technologies“.