



FACCE-JPI is the **Joint Programming Initiative on “Agriculture, Food security and Climate change”**. It brings together 21 European and associated countries to coordinate their research capacities to address the vital challenge of ensuring sufficient production of food, as well as feed, fibres and bio-fuels, in the context of demographic growth and a changing climate.

The Multi-partner Call on Agricultural Greenhouse Gas Research, initiated by FACCE-JPI with the American National Institute of Food and Agriculture of the USDA, New Zealand’s Ministry for Primary Industries and Agriculture and Agri-Food, Canada aims to bring together excellent research consortia to enhance international collaboration in the face of the global issue of climate change mitigation.

In the frame of this call, the following project has been recommended for funding:

Basic Data

Title	COMET-Global: Whole-farm GHG estimation and environmental diagnostics platform
Acronym	COMET-Global
Theme	Improved methodologies for quantifying GHG emissions and removals in agricultural systems and in national inventories
Topic	Greenhouse gas emissions in the agriculture sector arising from agricultural soils including crops and grasslands, domestic livestock and waste management systems
Duration	01.01.2014 – 31.12.2016
Total cost (in €)	1 369 522€
Requested funding (in €)	535 726€

Coordinator

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Partners

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Organisation Name	Joint Research Center - European Commission
Country	Italy

Organisation Name	Spanish National Research Council (CSIC)
Country	Spain
Organisation Name	Institut Français de Recherche pour le Développement (IRD)
Country	France
Organisation Name	University Court of the University of Aberdeen
Country	UK
Organisation Name	Queensland University of Technology
Country	Australia

Summary

Access to reliable and readily available estimates of the consequence of different land use and management practices on greenhouse gas (GHG) emissions is a prerequisite for successful implementation of land use-based GHG mitigation strategies. Moreover, this information is needed at the level at which management decisions are actually made – at the field scale – and thus information systems must be: 1) easily and universally available, 2) usable by non-experts, 3) employ state-of-the-art technology and 4) be easily aggregated to larger scales.

Our overall project aim is to develop and deploy a state-of-the-art system for **full greenhouse gas (GHG) accounting**, operational at the scale of an individual entity (e.g., farm, livestock operation). The system will be web-based, free and accessible by anyone having an internet connection. Key attributes of the system will include: 1) use of advance methods, including well-validated process-based models that are run in real-time at high spatial resolution, using site-specific data on soil properties, climate and land use and management practices; 2) flexibility, so that users can select, where appropriate, country-specific methods and emission parameters; 3) user-friendly design, making it possible for land managers and others, without specialized knowledge of GHG emission processes to use the system, in their native language; and 4) information on uncertainty, based on robust statistical methods. An important goal of the consortium will be to disseminate and promote the uptake of the COMET-Global system, including engagement and outreach to farmer organizations, environmental groups, governmental agencies and other stakeholders in each of the partner countries, as well as other researchers working on GHG mitigation in the land use sector.

The proposed project directly addresses Themes and Topics described in the FACCEJPI Call Announcement, specifically Themes 1 (Improved GHG methodologies) and 2 (Study of mitigation options), with the focus being at the individual farm-scale. It also address Topic 1 (GHG emission from agricultural sources) and Topic 2 (GHG removals), by virtue of providing a full GHG analysis at the farm-scale. Further, the consortium objectives align well with objectives in the Global Research Alliance towards harmonized methods for GHG emission estimation and to activities elsewhere within FACCEJPI (e.g. MACSUR), as well as the national priorities relating to GHG mitigation in each of the partner countries.

The system development will leverage an existing comprehensive web-based tool, COMET-Farm, operational in the US. In addition to implementing spatial data (climate, soil, land management) and country-specific emission factors and methods for non-soil GHG emissions, two widely used process-based models, RothC and ECOSSE, will be incorporated along with the DayCent model for estimating soil GHG emissions. The user interface will be provided with multi-lingual capabilities (English, French, Spanish, German and Italian) to provide maximum convenience on the part of a multinational user community.