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	**Greenhouse gas emissions from paddy rice soils under alternative irrigation management**
Acronym	**GreenRice**
Theme	Study of mitigation options at the field, animal and manure management scales with quantification of their technical potential for a range of agricultural systems and regions
Topic	Greenhouse gas removals, e.g. through carbon sequestration in agricultural soils
Duration	01.03.2014 – 28.02.2018
Total cost (in €)	605 758€
Requested funding (in €)	605 758€

Coordinator

Organisation Name	**Ghent University (Faculty of Bioscience Engineering)**
Country	**Belgium**
First Name	Steven
Lastname	Sleutel
E-Mail	steven.sleutel@ugent.be
Phone	+32 9 264 60 55

Partners

Organisation Name	**University of Turin (Dept. Agricultural, Forest and Food Sciences)**
Country	Italy

Organisation Name	**Swiss Federal Institute of Technology (ETH-Zurich)**
Country	Switzerland

Organisation Name	**University of New Hampshire Institute for the Study ofEarth, Oceans, and Space**
Country	USA

Summary

Irrigated rice is planted in half the world's rice fields, and produces about 75% of the world's rice supply. **In adaptation** to climate pressures in coming decades this irrigated rice will, however, need to be produced with less water. There is a risk that under alternative irrigation management (AIM) N_2O emission offsets the reduction of CH_4 emission when N fertilizer is applied at a high rate. A particular challenge is to upscale the often detailed field observations of full greenhouse gas (GHG) budgets to regional or national scales. **We are convinced that the only way forward is to fundamentally improve knowledge on key paddy soil biogeochemical processes, which then needs to be synthesized in mechanistic models**. The GreenRice project focuses on young floodplain soils, dominant in major river delta. We attribute the status-quo of knowledge on the balance of methanogenic and methanotrophic activity and sources of N_2O production to the limited account for the spatial differentiation of microbial processes involved in experimental work, though crucial under AIM. With several specific field- and mesocosm experiments we aim:

- to reveal determining factors controlling the rate of change of the soil redox potential in young floodplain paddy soils.
- to further our insight how CH_4 production in paddy soils under CF as compared to AIM results from the net result of CH_4 genesis and oxidation to quantify the release of fixed-NH_{4+}, expected to be substantial in floodplain soils
- to examine the contribution of different N sources to N_2O production under AIM
- to translate new knowledge generated in GreenRice on specific effects of AIM on GHG emissions in floodplain soils into the DNDC biogeochemical model