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	**Enhancing both soil carbon sequestration and fertility while reducing soil greenhouse gas emissions through designer biochar application**
Acronym	**Designchar4food**
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 emissions in the agriculture sector arising from agricultural soils including crops and grasslands, domestic livestock and waste management systems
Duration	01.12.2014 – 01.12.2016
Total cost (in €)	234 358€
Requested funding (in €)	135 050€

Coordinator

Organisation Name	**United States Department of Agriculture-Agriculture Research Service**
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Partners

Organisation Name	**Institute for Natural Resources and Agrobiology (IRNAS-CSIC)**
Country	Spain

Organisation Name	**Forschungszentrum Juelich GmbH (FZJ)**
Country	Germany

Organisation Name	**Justin-Libig University, University of Giessen**
Country	Germany

Organisation Name	**Rhine-Waal University of Applied Science**
Country	Germany

Organisation Name	**University of the Basque Country UPV/EHU**
Country	Spain

Summary

For the Designchar4food (D4F) proposal:
In the near future, agricultural production will need to be intensified to provide the world's burgeoning population with sustainable food and fiber supplies utilizing the same or smaller land base. Intensification of agricultural production is known to increase soil erosion, loss of soil organic carbon (SOC), and heightened uses of fertilizer resulting in a strong potential of soil and atmospheric degradation. As a countermeasure to these agronomic and environmental issues, the application of biochar to soils is widely discussed as a potential mitigation tool. **Biochar** is hypothesized to be capable of rebuilding soil quality, binding with organic amendments, and reducing greenhouse gas (e.g., CO_2, CH_4, N_2O) emissions, however, universal guidelines for its use as a soil amendment and climate mitigation tool are lacking. Biochars' performance as a soil amendment has so far been evaluated under regional-specific land uses, crop management, and soils possessing heterogeneous characteristics. This approach has lead to the development of fragmented biochar policy and management platforms relevant to these regions, but lacking a holistic vision. Due to the immense complexity in soils and biochar types, our ability to predict these beneficial effects in different soils and land uses across the globe is currently limited. A preferred pathway is to design biochars that have properties tailored to improve specific soil conditions. The **designer biochar concept** has been often discussed among researchers, but guidelines for its creation and use are still in its infancy. The approach of designing biochars for specific soil purposes requires the scientific exchange of biochar performance results and information between scientists, stakeholders, and collaborators. Creating a worldwide scientific biochar exchange network through this designchar4food (D4F) proposal, will allow the development of suitable biochar management strategies at regional levels to be evaluated and integrated into a coherent global policy platform that sustains agricultural productivity and food security.
The aim of this DF4 proposal is to create a biochar guidance plan for the production of well defined biochars with suitable properties. In this plan, forums will be proposed whereby scientists, stakeholders, and potential users from across the globe can share their scientific results, discuss new approaches, and develop plans to commercially produce, and evaluate designer biochars. These forums will be facilitated by annual biochar workshops, monthly teleconferences (webinars), specialized web-based databases, email list servers, brochures, and newsletters to insure that results are shared among scientists, biochar users, commercial manufacturers, and policy makers. Integral to this effort is the development of a computer based model capable of predicting environmental and agricultural responses of biochar use in soils across the globe. Synthesis of this global biochar data will provide numerous synergistic relationships to be developed, such as with the Global Research Alliance (GRA) to include designer biochar as one possible mitigation management tool as we strive for sustainable environmental stewardship.