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| Searching for a Coordinator/Partner for | **The Green Deal – Farm to Fork** |
| Topic | **LC-GD-6-1-2020:**  **Testing and demonstrating systemic innovations in support of the Farm-to-Fork Strategy** |
| Subtopic | Achieving climate neutral farms by reducing GHG emissions and by increasing farm-based carbon sequestration and storage |
| Organisation Details | The UCD School of Agriculture and Food Science is the only academic institution in Ireland that delivers education and research on the complete food chain from initial on farm production through processing to final consumption by the consumer. The School supports the agri-food industry in Ireland by educating students to become industry leaders and by conducting world class research.  Dr. James Breen is Lecturer in Agricultural and Food Economics at UCD. He is currently joint Programme Director of the Masters in Food Business Strategy, which is offered jointly by the School of Agriculture and Food Science, UCD and the Michael Smurfit Graduate Business School, UCD.  His research interests are predominantly in the area of farm-level modelling and specifically in the examination of the impact of alternative agricultural and environmental policies on Irish farmers. He has worked extensively with micro data from the Teagasc National Farm Survey to examine those factors which impact on farm performance and profitability.  Dr. Lucie Adenaeuer is Postdoctoral Researcher and Lecturer in Agriculture Economics in the School of Agriculture and Food Science, University College Dublin (since November 2018). Her CAPRI-Green project is on the intricacies between the Irish agriculture and food sector and the Irish Greenhouse Gas emissions. For the quantitative analysis the economic large-scale comparative-static, global, multi-commodity agricultural sector model CAPRI is used.  Previously, Lucie was Policy Analyst (Consultant) for the OECD, evaluating the relevance of border protection for Agriculture in Switzerland. |
| How we can contribute to this topic | Quantitative analysis using CAPRI to model different impact/ policy scenarios of land use change on agriculture sector.  For the quantitative assessment of carbon sequestration policies in the agricultural sector we employ the CAPRI modelling system.  CAPRI stands for ‘Common Agricultural Policy Regional Impact Analysis’. It is an economic large-scale comparative-static, global, multi-commodity agricultural sector model with a focus on the EU (at NUTS 2, Member State and aggregated EU-28 level), but covering global bilateral trade for major agricultural products as well (Fellmann et al., 2018, Britz and Witzke, 2015). CAPRI consists of two interacting modules: the supply module and the market module. The supply module consists of about 280 independent aggregate optimisation models, representing regional agricultural activities (28 crop and 13 animal activities) at Nuts 2 level within the EU-28. Ireland, as EU Member-State, is explicitly modelled in CAPRI where the supply side is represented through the two NUTS 2 regions “Border, Middle and Western” and “Southern and Eastern”. The market module consists of a spatial, non-stochastic global multi-commodity model for 47 primary and processed agricultural products, covering 77 countries in 40 trading blocks (Pérez Dominguez et al., 2009, Britz and Witzke, 2015, Van Doorslaer et al., 2015). Bi-lateral trade flows and attached prices are modelled based on the Armington assumption of quality differentiation (Armington, 1969). The behavioural functions for supply, feed, processing and human consumption in the market module apply flexible functional forms, so that calibration algorithms ensure full compliance with micro-economic theory. The link between the supply and market modules is based on an iterative procedure (Pérez Dominguez et al., 2009, Britz and Witzke, 2015, Van Doorslaer et al., 2015). The CAPRI modelling system has been adapted to calculate activity based agricultural emission inventories as well as land use changes. Further, the CAPRI modelling system has specific endogenous GHG mitigation technologies implementing, capturing the effects on agricultural production and markets (Van Doorslaer et al., 2015). The model is now frequently used for assessing the impact of agricultural, environmental and trade policies on agricultural production, trade, prices and income as well as environmental indicators in a consistent framework (Britz and Witzke, 2015, Fellmann et al., 2018).  The quantitative analysis could incorporate:   * Finalising the definition of carbon sequestration scenarios * Simulation of carbon sequestration scenarios which will show the impact of these measures on the production, trade and prices of agricultural outputs * Derivation of recommendations |
| Other information | The potential applications of the CAPRI model are wide ranging and research conducted using the model would deal with two EU Green Deal work streams, both equal in relevance - Design a fair healthy and environmental-friendly food system and preserve and restore ecosystems and biodiversity. We are particularly interested in looking at two areas of research which are detailed below, but would be interested also in speaking to other research groups in relation to other opportunities for collaboration.   1. Objective:  * provide insights on how policy may be developed to support farmers in adapting their production systems * Aim is to reduce environmental pressures and attain sustainable agricultural products. * Inclusion of lower emission land uses e.g. afforestation into the long-term farmers’ strategy to minimise environmental harm * Build on the existing foundation of the research work on the impact of farmer’s behaviour on the degree of implementation of carbon sequestration measures  1. Objective:  * Aim is to project the impacts of emerging carbon sequestration measures on the European/Irish ecosystems and biodiversity * Identification of likely impacts which will enable us to derive potential (political) implications * Minimize disruption to productivity in the Agriculture sector and at the same time protect the natural capital by minimizing environmental harm to attain ‘green’ agricultural products.   This research would have the potential to fill the gap between the awareness of the necessity to change agricultural production systems in the ruminant sectors and the potential adaptation of existing carbon sequestration measures to reduce GHG emissions by identifying the impact of possible carbon sequestration measures on the agriculture sector. The outcome could be upscaled from Irish agriculture to European agriculture. The outcome could impact productivity in the countries’ agriculture sector and at the same time manage the natural resource base more sustainable and minimize environmental harm on natural capital. |
| Previous Horizon 2020 projects | None. |
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