Spatio-economic modelling of agricultural resilience

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The aim of this paper is to investigate the impact of agricultural land diversity on the stability of farm performance. The planned approach will build on previous research in this area (Abson et al., 2013) by combining GIS-based spatial analysis and economic modelling to advance understanding of the relationship between the heterogeneity of agricultural landscapes and the resilience of agricultural returns. Using case studies in Italy and/or the United Kingdom, the project will further test the hypothesis that "…decreasing land-use diversity results in landscapes that provide higher, but more volatile economic returns" (Abson et al., 2013 p. 1).

High-resolution land cover data will be combined with other geospatial environmental datasets (e.g. climate, soils) within a GIS framework to calculate indices of agricultural landscape diversity and agricultural vulnerability at various spatial scales within each study area sub-region. The resulting indices will then be spatially joined to a time-series of economic datasets on agricultural/farm performance (e.g. Farm Business Survey) in order to provide a multi-dimensional analysis (e.g. impact assessment models, geographically weighted regression) of the links between landscape diversity, environmental vulnerability and the resilience of agricultural production. It is hoped that the results of this work will prove useful for informing strategic thinking on land-food nexus issues.

Abson, D.J., Fraser, E.D., Benton, T.G., 2013. Landscape diversity and the resilience of agricultural returns: a portfolio analysis of land-use patterns and economic returns from lowland agriculture. Agriculture & Food Security 2, 2. doi:10.1186/2048-7010-2-2