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Integrated Modelling and Assessment of Agricultural Sustainability - Scoping How to Support Policy Relevant Assessments

The scoping study aimed to develop a sustainability assessment framework, implemented through an integrated modelling approach, to facilitate the assessment of agricultural systems and agricultural, environmental and land-use policies. The research team initially developed a framework that used computer-based simulation models to provide indicator values for assessments of sustainability. The assessment was intended to allow as many perspectives on sustainability as possible to be supported. A framework within which it would be possible to compare sustainability perspectives was seen as a useful means by which groups with differing views could debate issues and learn from each other as part of the policy formulation or assessment process. The study undertook the following activities:

- A stakeholder survey – looking at the perspectives on sustainability, current approaches and information requirements.
- The development of indicator selection and model testing protocols.
- A review of peer reviewed articles where modelling contributed to sustainability assessment.

The stakeholder survey indicated that the initial framework and the model-based approach to sustainability assessment were seen as too rigidly engineered and had failed to convince stakeholders of the usefulness of the proposed approach. The lack of freedom, ability or willingness of stakeholders to define perspectives and priorities also meant that the emphasis on multi-perspective comparisons was misplaced. The process of engagement with stakeholders had also failed to identify the policy niche for which the tools were relevant. This led to a revision of research priorities and a subsequent further phase of stakeholder engagement which focused on finding stakeholder-led initiatives that could be effectively supported.

The review of the use of modelling within sustainability assessment found that despite the inherently multi-objective nature of sustainability many studies treat this informally and with ad hoc sets of indicators. This limits the effectiveness of the studies since it is not possible to make direct connections between changes in individual indicators and driving forces such as policy and management changes. There was little evidence of effective stakeholder engagement despite the importance of stakeholder values in defining the standards against which progress (or its lack) can be judged.

The assessment of the sustainability of farming systems in the UK has important implications since it seeks to understand the decisions being made by land managers that result in changes to local economies, communities and the wider rural environment. The project has looked at farming systems in a joined up way, seeing managers and their farms as being at the heart of a complex web of influences and pressures. Sustainability assessment raises difficult issues for government and the public relating to spending priorities, minimum standards, trade-offs between desirable benefits and how best to identify opportunities for win-win outcomes. This scoping study has looked at ways in which tools and approaches to sustainability assessment that are being developed in academia may be used in support of initiatives by government departments, agencies and NGOs.