END-OF-PROJECT REPORT

Centre: *Rural Economy Research Centre*

Project No.	Project Title	Author
5523	The potential role of environmental economics in Teagasc - A scoping exercise	Stephen Hynes

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Environmental economics is a new area within the Teagasc vision programme. It is a distinct branch of economics that acknowledges the value of both the environment and economic activity and makes choices based on those values. The goal is to balance the economic activity and the environmental impacts by taking into account all the costs and benefits. The theories are designed to take into account pollution and natural resource depletion, which the current model of market systems fails to do. This (failure) needs to be addressed by correcting prices so they take into account "external" costs. The aim of this project was to look broadly at theses issues in relation to agriculture and natural resource usage in Ireland. In particular it focused on the role that this branch of economics may play in the research agenda of Teagasc in the future. The project was very short in duration (7 months) and was completed on-time (30th November 2006).

The main objectives of this project were:

(i) the production of a document outlining what environmental economics involves and the potential role of environmental economics within Teagasc

(ii) the organisation of a meeting with leading environmental economists and representatives from environmental institutions in Ireland such as the EPA, SEI, MI and the DoE in order to discuss the potential role of Teagasc within the environmental economic research community in Ireland.

Ultimately, this short project was designed to give line management and fellow staff members an overview of what is meant by the term Environmental Economics and what type of research agenda may develop within Teagasc under this heading. It was also intended that fellow staff members would have a chance to suggest and participate in new environmental economic projects in the future.

There were 2 tasks to be completed under this project:

1. An internal Teagasc meeting of all interested individuals and centre heads to discuss the role of environmental economics in Teagasc

2. A second meeting of all interested parties from external environmental research organisations in Ireland and overseas to discuss the potential role of Teagasc in the research area of environmental economics. The deliverables for the project were a review of the internal and external discussions.

The internal Teagasc meeting was held on the 17th of October 2006 in Johnstown Castle, Wexford. All individuals within the organisation interested in the broad area of environmental research were invited to attend. The object of the meeting was to discuss what projects are taking place at present in the area of environmental economics in the Rural Economy Research Centre and also to look at areas where environmental economics might fit in with the research agendas of other Teagasc centers, in particular Johnstown Castle. It was also intended to discuss any environmental legislation coming down the line that we should be thinking about analyzing now or in the near future. Other potential areas for future work between RERC and Johnstown and available environmental datasets was also on the agenda.

Stephen Hynes, Cathal O'Donoghue, John Cullinane and Reamonn Fealy presented the Rural Economy Research Centre at the meeting while Johnstown Castle was represented by Noel Culleton, Rogier

Schulte, Ger Shortle, John Finn, Stan Lalor, Karl Richards, Daire O'hUallachain, David Bourke, Hubert Tunney and Owen Fenton. Sean Regan, the Teagasc Programme Manager for the Environment also attended.

As already mentioned one of the key aims of this project was to evaluate mechanisms to increase/intensify active collaboration between RERC and Johnstown Castle. To this end Stephen Hynes presented Environmental Economics Programme at RERC and Rogier Schulte presented the Environmental Research Programme at Johnstown Castle. A discussion followed on areas of research overlap and areas of potential future joint work. 3 broad research areas were identified with significant potential for collaboration:

1. Spatial analysis: active and intensive collaboration already existing:
    a. Soil Information Scoping Study (Karen Daly & Ray Fealy), to be followed by proposal for full-scale SIS-proposal (2007).
    b. Slurry Efficiency (Rogier Schulte & Ray Fealy)
    c. Grassland Vegetation Information System (David Bourke & Ray Fealy): pending funding

2. Cost-Benefit Analysis of Environmental Commodities: What are the financial benefits of clean water, air, soil, and biodiversity. Two approaches were discussed: 1) Willingness to pay by public; 2) actual costs of non-compliance, e.g. drinking water treatment, national Kyoto fines, etc.Results would show how do such costs compare to the costs associated with prevention (e.g. on farm measures to reduce risks of nutrient loss to water). It was agreed that it would be of great interest to Johnstown Castle if we could "sell" the benefits of a cleaner environment with financial values. It was also agreed that it would be of great interest to RERC if they could plug into the "real" data and expertise on environmental variables, available in Johnstown Castle, rather than using "average" parameter values from the literature. Stephen Hynes / Thia Hennessy and Rogier Schulte have an initial collaborative RSF project in this area.

3. Developing joint scenarios for Irish Agriculture beyond 2013: it was agreed that this should follow from the initial Teagasc Vision of Agriculture as requested by the Director. Discussed the potential of combining environmental and socio-economic scenario analyses in order to evaluate options for a sustainable rural countryside post 2013, in response to socio-economical drivers, economical policy drivers, environmental policies and climate change.
   Approachto be adopted:
   1. Health Check ("where are we now"?): What is the current state of the rural environment? From an environmental point of view, most issues have been reported on by the EPA (copy-paste)
   2. Targets ("where should environment go?"): Environmental Targets largely enshrined in law, some quantifiable, others with fuzzier targets.
   Examples: water (Nitrates, WFD), air (Kyoto, Emissions Ceiling Directive), soils (SFD), biodiversity, smells, noises
   3. Road Map ("from here to there"): evaluate our own scenario's, foresight scenarios and scenarios from other centres. Potential considerations:
   - with/without derogation post 2010
   - 40% v 100% REPS

- intensification v leasing of land
- commodity v tourism potential, recreation
- external costs of production systems (water treatment, Kyoto)
- energy consumption / GHG emissions
- Impact of climate change
- large farm sizes: impacts on transport, leys v pastures
- farm facilities required

All those present at the meeting agreed that it was a very useful exercise for both RERC and Johnstown Castle to meet up in this manner to discuss the environmental research agenda within the organisation. It was agreed to carry out a follow on meeting early in 2007.

The external meeting was organised as an Environmental Economics workshop. This one day symposium was held on the 10th of November 2006 and focused on the use of valuation approaches such as the Travel Cost Method, Choice Modelling and the Contingent Valuation Method to measure public goods in managed landscapes (agriculture and forestry). The title of the symposium was "Valuing Public Goods in Managed Landscapes". The symposium had presentations on stated and revealed preference techniques to value the non-market benefits/costs of these managed landscapes and also included methods which focused on ecosystem services (such as valuing biodiversity). Representatives from 9 different organizations were present at this meeting. The organizations presented included the Planning and Environment Policy, University College Dublin, the Department of Economics, NUI, Galway, the Gibson Institute of Land, Food and Environment, Queen's University Belfast, the Finish Forest Research Institute, Finland, the Imperial College, Wye, U.K, the Università di Padova, Italy and the Rural Economy Research Centre (RERC), Teagasc.

The list of presentations and speakers were as follows:

SOME APPLICATIONS OF ENVIRONMENTAL VALUATION TO LANDSCAPE AND BIODIVERSITY
Presenter(s): Craig Bullock, School of Geography, Planning & Environment Policy, University College Dublin

WALKING ACROSS COMMONAGE LANDSCAPES - A CONTINGENT VALUATION ASSESSMENT.
Presenter(s): Cathal Buckley, Department of Economics, NUI, Galway
Co-Author(s): Tom van Rensburg, NUI Galway, Stephen Hynes, RERC, Teagasc.

BENEFIT ESTIMATES FOR RURAL LANDSCAPE IMPROVEMENTS: IMPLICATIONS OF LEXICOGRAPHIC PREFERENCES IN A DISCRETE CHOICE EXPERIMENT STUDY
Presenter(s): Danny Campbell, Gibson Institute of Land, Food and Environment, Queen's University Belfast, N. Ireland
Co-Author(s): W. George Hutchinson, Gibson Institute of Land, Food and Environment, Queen's University Belfast, N. Ireland, Riccardo Scarpa, Waikato Management School, University of Waikato, New Zealand.

A CHOICE EXPERIMENT APPROACH IN ASSESSING THE USE OF INCENTIVE BASED INSTRUMENTS FOR BIODIVERSITY CONSERVATION IN PRIVATE FORESTS
Presenter(s): Paula Horne, Finish Forest Research Institute, Finland.

RAINFALL SHOCKS, RESILIENCE AND THE EFFECTS OF CROP BIODIVERSITY ON AGROECOSYSTEM PRODUCTIVITY
Presenter(s): Salvatore di Falco, Imperial College, Wye, U.K
Co-Author(s): Jean-Paul Chavas, University of Wisconsin, Madison, USA

SITE CHOICE MODELS IN WTP SPACE: AN APPLICATION TO DAY TRIPS TO THE NORTHEASTERN ALPS
Presenter(s): Mara Thiene, Università di Padova, Italy
Co-Author(s): Riccardo Scarpa, Department of Economics, Waikato Management School, University of Waikato,

USING SPATIAL MICROSIMULATION AND GIS IN BENEFIT TRANSFER: A NEW APPROACH TO RECREATION DEMAND MODELLING
Presenter(s): John Cullinan, Rural Economy Research Centre (RERC), Teagasc, Ireland and Department of Economics, National University of Ireland, Galway, Ireland.
Co-Author(s): Stephen Hynes, RERC, Teagasc. Cathal O'Donoghue, RERC, Teagasc

RECREATIONAL PURSUITS ON MARGINAL FARM LAND: A DISCRETE-CHOICE MODEL OF IRISH FARM COMMONAGE RECREATION
Presenter(s): Stephen Hynes, Rural Economy Research Centre (RERC), Teagasc, Ireland
Co-Author(s): Cathal Buckley, NUI Galway, Tom van Rensburg, NUI Galway.

A 2 hour round discussion was held at the end of the meeting where those present discussed potential future collaboration between the different institutions mentioned above. In particular future joint work under FP7 European funding and Department of Agriculture Stimulus funding was discussed. Tom van Rensburg of the Department of Economics, National University of Ireland, Galway also presented an overview of potential environmental legislation coming down the road that was worthy of research. The abstracts from the papers presented at the symposium and the minutes of the subsequent round table discussion have been written up as a review of the external meeting and are available upon request.

The completion of the project has resulted in the development of a framework that will allow participation of individuals across centres in the environmental economics program. The meetings held as a result of the project will also foster linkages with other environmental organisations in Ireland. It is clear from the meetings organized under this project that environmental economics is being used more often for discussing environmental issues by both Teagasc and other national agencies. Whether utilized as a tool to determine which agri-environmental projects have the greatest benefits or to determine natural resource benefits or damages, those individuals and agencies that have an understanding of some of the concepts, will have a distinct advantage. The Rural Economy Research Centre is now one such an organization with considerable expertise in this area of economic research

and as such is in a good position going forward to carry out research on the interaction between the economics of farming and the natural environment.