

**Project number:** 5509  
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A choice experiment approach to estimate the economic value of improvements in the ecology of Irish rivers

**Key external stakeholders:**

Policymakers, river basin managers, river basin users, local authorities, farmers

**Practical implications for stakeholders:**

A methodology is developed to facilitate valuation of non-market benefits accruing from Water Framework Directive (WFD) implementation in river basins in Ireland

## The outcome

- Provides river basin managers with values of non-marketed benefits (e.g. healthy ecosystems) that are expected to accrue from Water Framework Directive implementation.
- Allows integration of these valuations into River Basin Management Plans in order to justify spending on environmental protection where applicable.
- Assists in identifying derogations if the cost of reaching Good Ecological Status is disproportionate.
- Informs decision-makers on the challenges of using an environmental valuation methodology to derive values for different water bodies.

**Main results:**

- Improvements in the river's environment are valued differently by households in the two catchments studied.
- Households do not just have preferences for quality improvements to acceptable levels, they also prioritise these improvements.
- Estimates of benefits are sensitive to the valuation approach used and to the model specifications.
- A mechanism is provided to inform the cost estimates required for derogations under the Water Framework Directive (WFD) and for the implementation of 'polluter pays' and cost recovery principles
- A Benefit Transfer method should be used cautiously.

**Opportunity / Benefit:**

The results provide evidence of the magnitude of benefits derived by catchment households that could inform decisions related to the implementation of 'polluter pays' and cost recovery principles. Furthermore, these values could inform a Cost-Benefit context in order to identify potential derogations. With regard to this concept, Article 4 of WFD states that exemptions from the requirement to attain good ecological status are possible if the costs of reaching that status are disproportionate.

**Collaborating Institutions:**

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### 1. Project background:

Following the implementation of the Water Framework Directive (WFD), integrated catchment management plans must be prepared by local authorities for all river basins, in order to achieve 'good ecological status' (GES) in all EU waters. This concept is a broader measure of water quality than just chemical and biological measures, which were previously dominant in EU water policy. The Directive also calls for a consideration of the economic costs and benefits of improvements to ecological status in catchment management plans, along with the introduction of full social cost pricing for water use. In this project, the primary focus is on the use of the Choice Experiment (CE) method. The CE method is reviewed and then used to estimate the value of improvements in a number of components of ecological status on two Irish waterways (Boyne and Suir). Another stated preference approach to environmental valuation is also considered; the Contingent Valuation (CV) method. Finally, the performance of Benefit Transfer (BT) is also explored in the context of the WFD.

### 2. Questions addressed by the project:

- What value do sampled populations of two major catchments place on the non-market economic benefits of moves towards WFD Good Ecological Status?
- What are the implications of employing two valuation approaches (CE and CV) with various model specifications?
- What is the potential of applying the Benefit Transfer (BT) method for the purposes of the Water Framework Directive?

### 3. The experimental studies:

Primary data were collected through questionnaires. The survey mode was personal interviews administered by TNS/MRBI research company. Sampling took place during summer/autumn of 2010 and 252 households in each catchment were surveyed. Prior to the main survey, focus group discussions and a pilot survey were held with samples of the Boyne and Suir catchments' population in order to inform and refine the main survey instrument.

### 4. Main results:

Data analysis showed that respondents from the two catchments reacted differently to the survey and hence although the river attributes were considerably valued by local residents of one catchment (the Boyne), residents of the other catchment (the Suir) demonstrated a strong preference for the *status quo* scenario. From a policy perspective, results indicate the sensitivity of the value of benefits to the method employed (CV/CE); therefore decision-makers should be aware of the type of elicitation method that was employed to estimate the value of relevant benefits. Finally, although it is regarded that the role of BT for the valuation of benefits in the context of the WFD application is important, since original site-specific data require both money and time, these study findings indicate that BT is a tool that should be used with caution by policy-makers.

### 5. Opportunity/Benefit:

The results provide evidence of the magnitude of benefits derived by catchment households that could inform decisions related to the implementation of 'polluter pays' and cost recovery principles. These values could inform a Cost-Benefit context in order to identify potential derogations. With regard to this concept, Article 4 of WFD states that exemptions from the requirement to attain good ecological status are possible if the costs of reaching that status are disproportionate.

### 6. Dissemination:

Stithou, M., Hynes, S., Hanley, N. and D. Campbell, 2012. Estimating the Value of Achieving 'Good Ecological Status' in the Boyne River Catchment Using Choice Experiments. *Economic and Social Review*, Vol. 43, No. 3, Autumn issue.

Stithou, M., Hynes, S., Hanley, N. and and Campbell, D. (2011). Estimating the Value of Achieving 'Good

Ecological Status' under the Water Framework Directive in the Boyne River Catchment: A Mixed Multinomial Logit Approach, SEMRU Working Paper 11-WP-SEMURU-06  
Stithou, M., Hynes, S., Hanley, N. and D. Campbell, 2011. Estimating the Value of Achieving 'Good Ecological Status' in the Boyne River Catchment Using Choice Experiments. Working paper, National University of Ireland, Galway, Department of Economics.  
Stithou, M., Hynes, S., Hanley, N. (2008). The Economic Value of Improvements in the Ecology of Irish Rivers due to the Water Framework Directive, paper presented at the 48th Congress of the European Regional Science Association, Liverpool, England, August 29th.

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