

## INTRODUCING ECONOMIC MARKET MODELS IN WATERSHED PROTECTION AND POLLUTION CONTROL

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### INTRODUCTION.

Human activity produces a vast amount of wastewater that would pollute aquatic systems and water courses if not adequately treated. Current legislative regimes typically require environmental discharges to comply with environmental standards, and commonly, investments in pollution reduction are paid for in accordance with the polluter pays principle as part of water consumption charges. These charges or water rates constitute the funds that are allocated by an investment decision maker to best achieve regulatory compliance for environmental protection.

Considering the public interest in sustainability and environmental management, this project investigated an alternative participation of stakeholders in the allocation of pollution control funds. It was addressed using an economic valuation model that is based on “willingness to pay” as a guiding principle for allocating funds aimed at clean water resource protection and pollution control [1].

### METHODS.

A model was developed using qualitative research methods that uses market mechanisms to evaluate willingness to pay for evaluating the benefit of pollution control in an environmental management dilemma affecting multiple stakeholders. The model describes an environmental decision making situation that internalizes environmental externalities using “willingness to pay” as a proxy measure for social and environmental costs of pollution to stakeholders. In the model, two scenarios were developed, firstly, the ownership transfer of the common resource to a polluter and secondly, the ownership transfer of the common resource to any other riparian water user who depend on a clean water resource.

### RESULTS AND DISCUSSION.

It was found that the full internalization of externalities results in an optimal allocation of resources for environmental protection. Irrespective of who assumes ownership over the common resource, the public trading of pollution certificates based on “willingness to pay” and cost benefit analysis will always result in the same optimal price and rate of pollution.

### CONCLUSIONS.

The full internalization of externalities results in an optimal allocation of environmental protection resources if a trading model was introduced for pollution trading.

### ACKNOWLEDGMENTS.

We thank Yorkshire Water (UK) for supporting this project.

### REFERENCES.

1. Bateman I. J., Carson R. T., Day B., Hanemann M., Hanley N., Hett T., Jones-Lee M., Loomes G., Mourato S., Oedemiroglu E., Pearce D. W., Sugden R., Swanson J. (2002). *Economic Valuation with Stated Preference Techniques; A Manual*, Edward Elgar, London.