



Modelling the Financial Value of the Maroochy River to Property Values: An Application of Neural Networks

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ABSTRACT

The Maroochy River, which is located on east coast of Australia, provides a variety of uses and values to the community. Changes in structure, function and management of the river will influence the value that the community derives from it. Therefore, critical to the river's continued management is the development of policy relevant tools based on the community's value of the river. This paper focuses on estimating the financial value the local residents derive from living close to the river through investigation of changes in residential property values due to attributes of the Maroochy River. It is a complex analysis since there are several confounding geographical and property variables. Given a large and complete dataset of 28,000 properties for the Maroochy region, Artificial Neural Networks (ANN) was applied to estimate the economic value of the properties. This ANN was then able to simulate scenarios for property values with respect to changes in environmental features. It showed the Maroochy River contributed AU\$900,000,000 to the unimproved capital value of the whole region, a value that could not be estimated previously, and much higher than anticipated. Calculating potential annual payments to the Shire Council through land tax analysis from these property values, provides the council with means to justify expenditure to maintain a standard of water quality and ecosystem health.

KEYWORDS

Natural Asset, Financial Value, Neural Network

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