Valuing Ecosystem Services in the « Vallée de Baux » – Coupling Bottom-UP and TOP-down approaches to decision making

Abstract
A benefit analysis from land use changes in the Vallée de Baux, Provence (2008), is presented. It is argued that individual based economic valuation should be complimented with deliberative approaches, when dealing with complex environmental goods in which many stakeholders are concerned.

Economic valuation of the environment
Biodiversity, landscape amenities, water and air quality, are examples of public goods. They are not traded in markets, and there is thus no basis for establishing their price. Without a private incentive to supply them, they are « under produced or exploited by the market »

For public authorities to decide, if a set of ecosystem goods and services should be protected, one may adhere to non-market valuation, also called Cost Benefit Analysis.

The main objective of cost-benefit analysis, is to indicate the overall economic efficiency of various competing uses of resources. Resources should be allocated to yield pareto optimality - « if the maximum benefits from moving from one state of the economy-intensive agriculture, to another-wetland or hedgerow restoration, is greater than the magnitude of losses, then social welfare is increased, even if no actual compensation is made between those who benefit and those who lose out ». For any given project changing the flow of ecosystem goods and services, the policy recommendation is to go ahead with the project if the sum of the Benefits less the sum of the Costs, discounted to yield a Present Value, is positive.

How are « benefits » valued ?
The theoretical premise underlying cost benefit analysis, is that individuals are the best judges of their own welfare and hold predetermined preferences over alternative bundles of goods

The welfare benefits are an expression of people’s willingness to pay to attain them, or willingness to accept compensation to forego them. To retrieve such information, one may adhere to revealed and stated preferences valuation approaches.

In stated preference approaches, the individual is exposed to a hypothetical market. A questionnaire is constructed such that respondents believe that the provision of environmental goods is contingent on the value they express, and that they will have to pay. In this case, it is a respondent’s best interest to reveal his true willingness to pay.

The Choice Experiment , a stated preference approach

The Choice Experiment is a pioneering valuation tool. It is based on random utility theory and Lancaster theory of value, asserting that the utility derived from a good (landscape) comes from the attributes of the good, not from the consumption of the good itself. The CE permits to measure the implicit value of its attributes and their implied ranking. The value of a landscape is given by the sum of the value of its attributes. The attributes consist of policy relevant questions, described to the respondent in an info-sheet (Figure 1).

Table 1: WTP for the preferred landscape

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The visual experience of the restored wetland is enhanced such as strict water level management and biological control such as fish. Use of chemical control (pH) from the fish basin, a natural occurring bacteria will increase. The population of common and rare species of birds, insects, dragon flies, butterflies and fish will increase. There is access to the wetland, with broad walkways and cycling facilities. Hunting is restricted to certain areas.

Biodiversity

Status quo: Status quo – No control

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Protection and recreation

Status quo: The general public have access to the dyke, from which bird watching and fishing is allowed. There are no facilities

Protection and observation: Observation and protection: There are access to the wetland, with broad walkways and cycling facilities. Hunting is restricted to certain areas.

Status quo:– Low: There is little change in the level of biodiversity in the valley.

Medium: The population of common and rare species of ducks, birds, insects, dragon flies, butterflies and fish will increase. The population of common and rare species of birds, insects, dragon flies, butterflies and fish will increase. Several rare bird species will return to the valley (without guarantee)

Table 1: The questionnaire’s info-sheet of policy relevant attributes

Figure 1: The questionnaire’s info-sheet of policy relevant attributes

After the presentation of the info-sheet, respondents are asked to evaluate 9 choice sets (see figure 2) and choose between two future alternatives or the maintenance of the « current situation » at no extra cost. Each alternative consists of several attributes (policy questions) with different levels. The valuation task hereby provides the researcher with rich information about how the citizens value the policy questions relative to each other.

On the other hand, it is increasingly argued that individual based aggregation is (only) appropriate when the services provided are individually enjoyed. When services are shared or there are externality impacts of one persons use on another persons use, a process of open debate may be necessary to enable decision making.

User conflicts between multiple stakeholder groups leads to inherent conflicts and differences in interests. For any given project changing the flow of ecosystem goods and services, the policy recommendation is to go ahead with the project if the sum of the Benefits less the sum of the Costs, discounted to yield a Present Value, is positive.

For public authorities to decide, if a set of ecosystem goods and services should be protected, one may adhere to non-market valuation, also called Cost Benefit Analysis.

The management scenarios are characterised by five policy questions, each with three levels. In studying the different policies proposed, try to make your decision on the policy questions relative to each other.

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