

Environmental Economics

Building with Nature Guideline

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Environmental Economics

Environmental Economics tools are addressing different financial aspects of a project. They can deal with the valuation of nature and ecosystem services or assist with the process of taking risks, opportunities and uncertainties of BwN projects into account.

Contingent Valuation Method for Nature Valuation

Contingent Valuation is a [survey-based](#), economic technique for the valuation of non-market resources, such as environmental preservation or the impact of contamination. In this methodology people's willingness to pay is determined via a hypothetical market mechanism. With the contingent valuation method for nature validation, non-financial values in BwN-projects can be expressed in monetary terms in order to include them in a Socio-economic Cost Benefit analysis (SCBA). This is important as a SCBA gives a strong argument to start a project when the benefits for society exceed the costs.



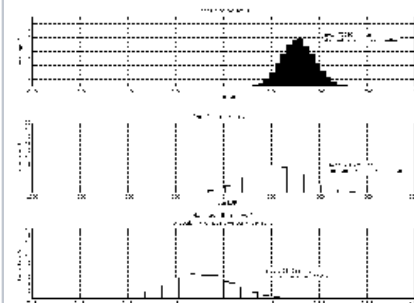
Including natural value in decision-making - Nature Index

The Nature Index tool provides a method to quantify the change in nature value within a project area that results from proposed interventions. The tool translates a nature value into nature points, to allow for a quantified comparison between alternatives. It requires four steps to determine the effect of a certain intervention on the number of nature points. The tool can be used when the feasibility of an intervention or project has to be demonstrated or when an (i.e. cost effective) alternative has to be chosen.



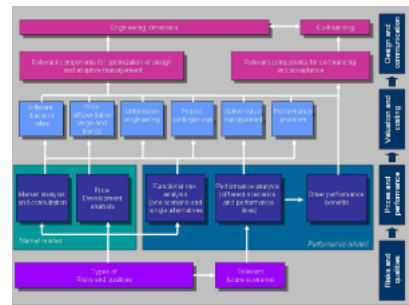
Monte Carlo simulation and Social Cost Benefit Analysis

[Monte Carlo simulation](#) is a method based on repeated random sampling of inputs to a deterministic model or calculation procedure. With Monte Carlo simulation, cumulative uncertainties of nature values can be integrated in a socio-economic cost benefit analysis. In the Netherlands, an uncertainty analysis is mandatory in every socio-economic cost-benefit analysis (SCBA), according to the EMVI-guideline. This also applies to other countries that have SCBA guidelines. The purpose of such an analysis is to determine the influence of uncertain assumptions on the balance (net present value) and ranking of the alternatives. In many SCBA's, the uncertainty analysis is executed in a rather informal way. With the tool presented here, a more formal probabilistic sensitivity analysis can be carried out, based on the Monte Carlo simulation. The advantage of this method is that it provides insight in the cumulative effect of multiple uncertainties, including possible interactions between them. The cumulative effect is especially important for valuation of nature, because these values tend to have rather large uncertainty margins in the balance sheet. The formal sensitivity analysis yields information on which effects contribute most to total uncertainty. This insight can help decision makers in focusing efforts on issues producing the highest uncertainty.



Valuation of risks and opportunities in BwN

This tool is a framework that helps to identify important risks and opportunities (e.g. for co-financing) and ways to integrate them in the cost-estimates of a project. Cost-effectiveness and cost-efficiency are important criteria that often govern decision-making. Usually the costs are calculated after the design alternatives have become available. However, costs are also an important design criterion, so interaction between designing and costing is important. Yet, this interaction is often not included in the design-process. This tool contributes to the assessment of the financial implications of different design alternatives, by taking different possible scenarios and related risks into account. This framework requires only limited background knowledge in costing and designing. Essential is that different disciplines (especially finance and design) work together in order to make more integrated assessments.



Visualising and managing uncertainties

This framework tool gives guidance on how to manage uncertainties in (BwN) projects. In projects using BwN design principles, uncertainty can play a bigger role than in traditional projects, as unpredictable natural dynamics are proactively used in the projects' design. Uncertainties can be managed with an appropriate strategy after identification and classification of the uncertainties. A classification for uncertainties and strategies for dealing with specific types of uncertainties are provided in this tool. The tool is meant especially for teams and managers developing BwN-type projects. No special skills are required.



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