

Speaker: Sigrid Stagl

Title: The economics of ecosystem services

As the biodiversity loss and the decline in ecosystem services is more and more rapid in the past 50 years, studying the reasons and consequences of this process has become an important issue also for the social sciences. Finding solutions to this urgent problem requires cooperation between the natural and social scientists and make the two science compatible through intensive communication. This need resulted in the development of a new interdisciplinary science, the *ecological economics*, which studies the relationships between human housekeeping and nature's housekeeping. In other words, it analyses the interactions between economic, ecological and societal systems.

The economy is dependent on a functioning environment, and there are four services what the environment provides to the economy: resource inputs, waste sinks, amenities and life supports. If the economy extracts more resources from the environment, it also inserts more waste in it, which reduces environment's ability to provide the services. Based on this idea, Daly (1977) developed the broader circular flow model, where the circle of the flows of goods and services is embedded in in the biosphere, and cannot operate without it. There are further models describe the economy-environment interdependence and the environmental service interactions (Common and Stagl 2005).

The ecological economics works with environmental valuation methods, which are value articulating institutions (VAI). A VAI defines the basic attributes of the issue we evaluate, like participants, data format and data handling methods, that means a VAI defines the rationality or logic of the choice we make. The main VAIs are:

- cost-benefit analysis (CBA),
- multicriteria appraisal (MCA),
- deliberative institutions (DI) (e.g. citizen juries or consensus conferences).

The *cost-benefit analysis* is based on the neoclassical economic model. The decisions are based on stable individual preferences, and it intends to maximize the individual utility. The values are compared on a monetary basis. Although the ranking of the values is important, the different values often have a weak comparability, they cannot be ordered along a single scale, so the environmental valuation through CBA has to cope with social and technical incommensurabilities.

The *deliberative processes* are aimed to reach `better` decisions through focusing on the decision process. Key quality criteria are fairness (everybody has the right to speak) and iterative social learning.

The *multicriteria appraisal* allows to take into account facts and values together in decisions. It can use multiple criteria measured on different scales. MCA enables us to rank a finite number of alternatives, while considering several, partly conflicting criteria, among which a compromise solution has to be found.

To carry out an MCA, an impact matrix has to be created, containing all the possible options and criteria. As it is not obvious to find all of them, the matrix has to be shown and discussed with the stakeholders. Including participatory processes and discussing the preliminary results in workshops helps to get a better result.

Although MCA is already used in the practice, there are several questions to be cleared in the practical process. In the case of a new investment *consultation* with the stakeholders (e.g. the citizens concerned) is obligatory, but it is not the same as their *participation* in the process,

which can result in the most optimal solution. Another obstacle of using MCA in contrast to CBA is that the latter is already an established method; it has 30 years of tradition and seems to be more understandable for politicians because of the monetary based evaluation. Carry out an MCA requires longer time and more financial resources, but the result enables us to understand better the whole picture and find an acceptable compromise solution.

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