

Posters

Natural Capital Valuation in a National Industry Sector

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The basic ecological economics position of man-made capital and natural capital as complements lacks an empirical application in industry environmental policy. The ongoing debate of the issue culminates around the value of natural capital. The origin of today's problems lies in old-established habits of using abundantly available goods as "free" inputs. A major point in natural capital valuation is to take into account all three conflictual values of economics: efficiency, equity and sustainability. This paper reflects on the theory of natural capital valuation with an application to Finnish forest industry.

Cost benefit analysis (CBA) is one of the most used tools available to policy makers. The most widely used valuation method in CBA is the contingent valuation method (CVM). CVM ascertains value by asking people their willingness to pay (WTP) or their willingness to accept (WTA) in compensation for a change in environmental quality. However there are inherent difficulties and uncertainties in determining values and there is no consensus on which valuation approach is right or wrong. Ecological goods and services are long-term by nature, are generally not traded in markets, and information about their contribution to individual's well-being is poor.

Corporate environmental management valuation methods used in industry environmental issues include for instance Environmental Life Cycle Assessment (LCA). LCA values the industry generated environmental impacts according to internationally defined standards of weighting and prioritizing provided by SETAC and ISO. The ecological economics position with the definition of natural capital and the effort to value the actual ecosystem services is however practically non-existent in corporate environmental management. Although impact assessment may potentially lead to a better recognition of associations between a product system and the environmental consequences, LCA can not quantify actual environmental effects or easily incorporate the multiplicity of other relevant factors necessary to determine actual impacts.

The Finnish forest industry is examined here an input-output matrix. The matrix takes the ecological economics position of capital complementarity as a starting point and includes environmental, economic and social input-output variables in the formulation. The inventory identifies the physical quantities of the variables. Life cycle impact assessment identifies associations between economic and environmental variables of the input-output matrix. Economic approaches (CBA and similar methods) attempt to obtain

environmental prices in order to determine environmental quantities. WTP or WTA are transitory and circumstance-driven and they make poor measures of value where values need to be robust and durable. This paper suggests that it is better to determine environmental quantities politically and let these quantities (targets) impact on prices as they will by the operation of artificial environmental markets. Thus the valuation or shadow pricing of environmental functions may require some collectively set quantitative standard. Naturally, political assessment is also likely to suffer from being transitory and circumstance-driven. Criteria for environmental quantities revolve around sustainability, future generations, ecological well-being and human health. This will allow shifting the focus away from our imperfect short-term perceptions and derive more accurate values for long-term ecosystem services. Sustainable development can be conceived as a preference voiced by society which opens up the possibility of basing a calculation on standards for material flows, instead of on individual preferences.