Agroforestry and Reforestation with the Gold Standard – Decision Analysis of a Voluntary Carbon Offset Label

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Abstract

Projects that sequester carbon can receive an economic reward for mitigating climate change by selling these emission reductions in form of carbon certificates. Voluntary carbon offset standards were developed in order to standardise the quality of projects eligible for carbon offsetting. However, project managers are faced with uncertainty when deciding on investments in certification. The positive social, ecological, and economic benefits of certifying a carbon sequestration project do not always outweigh the costs and risks involved in establishing and maintaining the certification. Decision analysis provides a helpful set of tools that can support such complex decisions by forecasting outcomes under different scenarios. We generated a model for the certification of an additional site of a partially certified reforestation project and a new certification for an agroforestry project in Costa Rica with the voluntary carbon offset label Gold Standard.

The parameters considered important for the certification process were identified in interviews with decision-makers and stakeholders of the projects and translated into a model. After a calibration training, the experts provided probability distributions for the input parameters in form of estimated confidence intervals. The final decision model was run in a Monte Carlo simulation to project a plausible range of decision outcomes, expressed as Net Present Values and annual cash flows. We identified critical uncertainties by using the Expected Value of Perfect Information. Although the annual cash flow of the agroforestry project would most likely be negative in the early years due to high initial investment costs, certification with the Gold Standard would most likely have an overall positive impact on the profitability of the project. The results indicate that certification of the agroforestry area as well as the reforestation project would result in a positive Net Present Value. The partially low return on investment of the certification, however, underlines the importance of a thorough evaluation and the development of customized strategies for projects before applying for participation in a voluntary carbon offset scheme. The Decision Analysis approach we applied can help improve the process of decision making under uncertainty and should be widely adopted for evaluating the potential impacts of certification.

Keywords: Agroforestry, carbon credits, decision analysis, gold standard

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