Six steps to estimate the economic benefits and costs of action, and one to take action

The approaches, frameworks, and methods detailed in previous sections have been summed up into a 6-step methodology conzeptualised by the Global Mechanism of the UNCCD[52] and further developed by Noel and Soussan (2010)[49] for the OSLO Consortium, with each step further disaggregated as required in order to meet the specific objectives of individual studies:

1. **Inception:** Identification of the scope, location, spatial scale, and strategic focus of the study, based on stakeholder consultation and the preparation of background materials on the socio-economic and environmental context of the assessment.

2. **Geographical characteristics:** Assessment of the quantity, spatial distribution, and ecological characteristics of land cover types, categorised into agro-ecological zones and analysed through the use of a Geographical Information System (GIS).

3. **Types of ecosystem services:** Analysis of ecosystems services stocks and flows for each land cover category, based on the ecosystem service framework.

4. **Role of ecosystem services and economic valuation:** The role of the assessed ecosystems services in the livelihoods of communities living in each land cover area, and also the role of overall economic development in the study zone. This implies estimating the total economic value of these services to estimate the benefits of action or the cost of inaction.

5. **Patterns and pressures:** Identification of land degradation patterns, drivers and pressures on the sustainable management of land resources, including their spatial distribution and the assessment of the factors causing the degradation. This is to inform the development of scenarios for cost-benefit analysis. The following sub-steps can be taken to choose the appropriate valuation method under available data, resources, local capacity, and specific objective to be achieved: (a) deciding the type of environmental problem to be analysed; (b) reviewing which valuation method is appropriate for that problem and the type of environmental value to be captured (use value or total economic value); (c) considering what information is required for the identified environmental problem and chosen valuation method, and; (d) assessing what information is readily available, how long it would take to access it, and at what monetary cost.

6. **Cost-benefit analysis and decision-making:** The assessment of sustainable land management options that have the potential to reduce or remove degradation pressures, including the analysis of their economic viability and the identification of the locations for which they are suitable.

7. **Take action:** Implement the most economically desirable option(s). This may require adapting the legal, political, and economic contexts to enable the adoption of most economically desirable option(s), and removing existing barriers to adoption.

A range of tools have been released for mapping ecosystem services, such as the Natural Capital Project's Integrated Valuation of Environmental Services and Tradeoffs (InVEST) tool or the ARtificial Intelligence for Ecosystem Services (ARIES) modelling platform. These tools aim to help map ecosystem service provision and model their evolution with time, associate them to an economic value, identify scenarios, and help decision-makers assess trade-offs between these scenarios for informed decision-making. GLUES (Global Assessment of Land Use Dynamics, Greenhouse Gas Emissions and Ecosystem Services) is a project led by the German Ministry of Education and Research that publicly shares datasets and data related to sustainable land management and optimal use of land and land services. The Australian INFFER (Investment Framework for Environmental Resources) is a privately operated system that aims to develop and prioritise projects addressing environmental issues such as reduced water quality, biodiversity, environmental pests, and land degradation. MIMES (Multiscale Integrated Models of Ecosystem Services)[72] is an initiative lead by the University of Vermont which also aims to evaluate ecosystem services. All of these tools can in theory produce results for various levels of available data but with a level of uncertainty that decreases with the level of available data.