

Science for Environment Policy

Land users are positive about long-term benefits of sustainable practices

The costs and benefits of sustainable land management have been collated in a new review. Data from a global archive was analysed for the costs of sustainable practices and technologies and for land users' perceptions of cost-benefit ratios. Most respondents had a positive view of the short-term cost-benefit ratio, and a strongly positive view of the long term. Low upfront costs, long-term planning and security of land tenure were identified as important factors to facilitate these practices.

Economic factors are key to the adoption of [sustainable farming practices](#). Upfront costs can be barriers even if there are accepted long-term economic benefits. There is a pressing global need for the adoption of improved techniques, as land degradation — which includes effects such as losses in soil fertility, soil erosion, and lowering of the water table — leads to losses in productivity and disruption to ecosystem services.

Sustainable land management refers to a wide range of practices and technologies that prevent, mitigate or rehabilitate damage to land, therefore protecting or enhancing the natural resources of that land and its surroundings. There are structural measures, such as terraces, banks and dams; agronomic measures, such as mulching and increasing organic matter in soil; vegetative measures, such as tree planting and hedging; and management measures, such as grazing timing and change of species compositions.

The authors assessed data from 363 case studies conducted internationally between 1990 and 2012 which are held by the [World Overview of Conservation Approaches and Technologies](#) (WOCAT). 46% of studies were from Africa, 41% from Asia, 7% from Europe, and a small portion from South America and Australia.

Costs were separated into those relating to establishment and maintenance, and adjusted for inflation and currency conversion to constant 2010 US dollars. 'Short-term' was defined as three years or less, and 'long-term' as 10 years or more.

The authors identified data on 258 different sustainable [land management](#) technologies. They had median establishment costs of 500 US\$/hectare. Values ranged from less than 20 to over 5000, with half of all cases between 193 and 1918 US\$/ha. The median annual maintenance costs were 100 US\$/ha, with half of all cases between 27 and 324 US\$/ha.

The results show a large discrepancy in establishment and maintenance costs, due to the wide range of sustainable land management interventions. Technologies which involve significant infrastructure, such as the management of water flows or afforestation, are high-cost, whereas certain management adjustments, such as land-use change or changes in timing of activities, would incur very few costs.

In terms of perceptions of the cost-benefit ratio of sustainable land management, 73% of case study participants had a positive or neutral perception in the short term, whilst 97% had a positive or very positive view of the long term.

The main motivations for adopting the technologies or practices were found to be potential production increases (24%), profit increases (20%), improvement of well-being and livelihood (20%) and reduced workload (5%).

One limitation to the study is that land users in the WOCAT database are not likely to represent typical land users. Many of the case studies in the database are already involved in sustainable land management projects — particularly projects recognised as 'promising or good' — so may have an above-average chance of having a positive cost-benefit ratio.

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Furthermore, 57% of the cases studied received financial support from development projects or government programmes, which could skew cost-benefit perceptions. Nevertheless, the authors emphasise the finding that in the remaining cases (43%), the establishment costs were fully covered by land users

The recommendations from the authors are relevant for encouraging more sustainable agriculture; short-term support can help overcome the barriers of sustainable land management set-up costs, and secure tenure rights can help land-users plan for the long-term, resulting in benefits for producers, consumers and the environment.

