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Chapter 6 - Enabling action: Conditions for success

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► To cite this version:

Emmanuelle Quill rou, Lindsay C. Stringer, Siv  ystese, Richard J. Thomas, Denis Bailly, et al.. Chapter 6 - Enabling action: Conditions for success. Hannes Etter; Nicola Favretto; Tobias Gerhart-sreiter; Mark Schauer; Richard Thomas. The value of land: Prosperous lands and positive rewards through sustainable land management, The Economics of Land Degradation (ELD), pp.104, 2015, 978-92-808-6061-0. hal-01954799

HAL Id: hal-01954799

<https://hal.science/hal-01954799>

Submitted on 29 Mar 2019

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THE ECONOMICS OF
LAND DEGRADATION

The Value of Land



**Prosperous lands and positive rewards
through sustainable land management**



www.eld-initiative.org

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This ELD report was published with the support of the partner organisations of the ELD Initiative and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ).

Photography:

Clemens Bergmann/GIZ (pg. 93); Hannes Etter (pg. 29, 37, 109); Jiang Gaoming (pg. 46);
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Friederike Mikulcak (pg. 41, 50, 122, 127); Mark Schauer (pg. 67);
Naomi Stewart (pg. 14, 61, 76); Richard Thomas (pg. 32)

Visual concept: MediaCompany, Bonn Office

Layout: kipconcept GmbH, Bonn

ISBN: 978-92-808-6061-0

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Suggested citation:

ELD Initiative (2015). The value of land: Prosperous lands and positive rewards through sustainable land management. Available from www.eld-initiative.org.

The Value of Land:
ELD Main Report

**Prosperous lands and positive rewards
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September 2015

www.eld-initiative.org

06

Enabling action: Conditions for success

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Introduction

If more sustainable land use and land management practices are to be effectively adopted by land use practitioners, an appropriate enabling environment needs to be in place. Supportive and synergistic cultural, economic, environmental, legal, political, social, and technical conditions are needed to ensure an enabling environment that facilitates remedial or preventative actions over current land use or adoption of alternative land uses for long-term economic and environmental. This chapter focuses on points relating to adaptations of the wider environment outlined at the bottom of the ELD Initiative multi-level, multi-scale simple decision-making framework (see *Figure 2.5* in *Chapter 2*; *Box 6.1*), consideration of which is required to enable adoption of one or more options for action.

Economically desirable land management options can be identified through assessment undertaken following the ELD approach (*Chapter 2*) at the global, regional, and national levels (*Chapter 3* and *4*). Such options should be implemented using socially relevant pathways for successful adoption, and which can be identified using stakeholder consultations and engagement processes (*Chapter 5*). Approaches involving stakeholders should ensure that the most economically desirable option is compatible with existing economic mechanisms, and is also technically and legally feasible, and environmentally and socially acceptable. Additionally, physical and monetary resources to achieve the practical implementation of sustainable land management should be accessible and available. Comprehensive (re)design of portfolios of options, including current, revised, and new measures, can help make sure that there is convergence and that action is taken based on assessment results.

This chapter details some of the possible ways action can be enabled using economic instruments, some of the characteristics of the enabling environment

BOX 6.1

Examples of options for action available to land users*(from ELD Initiative, 2013, pg. 40–41¹)***Improved productivity with adoption of more sustainable land management**

Improved productivity assumes the same type of land use is continued, and can refer to the adoption of more sustainable practices to improve agricultural yields and livestock production, afforestation/reforestation to control water flows, etc. Sustainable land management detailed in the literature is advocated as providing greater economic benefits than associated costs. These net benefits often materialise through increased revenues as a result of increased productivity and production, mitigation of impact over productivity of droughts or floods, etc. Increased benefits usually accrue directly to stakeholders and require access to the right information for the implementation of change. Improved productivity can lead to increased land prices for purchase or lease². Certification schemes increasing value-added can be used to mitigate some of the production losses and keep revenues stable (e.g., FairTrade Foundation[®], organic certification, Forest Stewardship Council certification etc.).

Establishment of alternative livelihoods: changing land use for more sustainable land management

Alternative land-dependent livelihoods assume changing land use, either a complete change of current land-based activities or, more usually,

partial changes through diversification of activities. An example is the establishment of value-added medicinal and aromatic herbs (e.g., mint) in a region of Tunisia from 2003–2013. This brought an 200–800 per cent increase in profits to poor families, in addition to improving: the timing of acacia planting, groundwater recharge, and olive oil waste water reuse³. In other examples, ecotourism activities can contribute directly to conservation efforts and practices and complement existing income sources^{4,5,6,7}. This is the case for Mountain Gorillas in Rwanda where some of the money made by tourist operators is redistributed to local communities. Production of arts and crafts (e.g., Kazuri handmade clay beads in Kenya) can be another source of additional income, particularly for women. Certification schemes such as those from the FairTrade Foundation[®] can be used to help promote alternative livelihood activities with added-value for land users (i.e., market premium) and make such activities more visible on the global market, though requires advertising campaigns to promote these alternative livelihood activities. In some cases, land use change is not always ecologically nor economically sustainable in the long term. For instance, oil palm plantations have been criticised for their unsustainability and some are now taking steps to change towards more sustainable practices (ProForest, www.proforest.net/en/areas-of-work/palm-oil).

(i.e., what stakeholders ideally want), possible transitions required to effectively promote action (i.e., how to remove identified barriers to action), and adaptive processes (i.e., how to reach the ideal environment for action from the current situation).

Possible pathways to enable action by land users: changing the incentive structure underlying land management and land use decisions

Some of the processes that can help facilitate the setting up of enabling environment suited to the specific context considered from local to national levels are stakeholder engagement and a multi-sector approach at national and sub-national levels (*Chapter 5*). This section focuses on possible instruments and mechanisms that influence land management options chosen by land users (*Box 6.2*). Identifying current instruments and mechanisms

BOX 6.2

Examples of instruments and mechanisms to enable the adoption of sustainable land management

(expanded from *ELD Initiative, 2013, pg. 40–41*¹; *CATIE & GM, 2012, pg. 9, Table 1*⁸)

The following instruments and mechanisms can be adopted individually or in combination with each other as feasible.

PUBLIC PAYMENT SCHEMES

Implementation of bans or permanent conservation easements: Permanent conservation easements guarantee that a tract of land will not be used or farmed. This usually involves an annotation in the property title or at the land registry office – national parks would be in this category. The negative counterpart of easements – bans – can ensure that products harmful to health or environmental quality such as pesticides are not used. An example is the ban on plastic bags in Rwanda, in order to reduce environmental pollution. Bans and permanent conservation easements require strong action and monitoring and can be costly to enforce.

Contract farmland set-asides: Landowners give up the right to use part or all of their farmland, in exchange for payments. Set-asides are used in the European Union (EU).

Co-financed investments: Government pays part of the investment needed to achieve a certain land use or to promote specific production practices. This is the case in the Environmental Quality Incentives Program offered in the USA.

Payments for proven investments in land conservation: Government provides a payment based on the investments made, per unit of area. This is used for example in the EU for some of the agri-environmental measures (e.g., dry stone wall restoration).

Subsidies: The government provides direct subsidies to those who implement sustainable land management practices or other environmental technologies. These involve government action and can target a range of stakeholders such as farmers or small holders. They can be provided on a one-off basis to lower establishment or switching costs (e.g., the United Nations Development Programme (UNDP)/Global Environment Facility (GEF) Small Grants

Programme, Jayasinghe & Bandara, 2011⁹), or linked to land use or type of production in order to lower costs of operation (e.g., USA and EU agricultural policies). It requires both stakeholder access to information and the targeting of stakeholders by donors. The maintenance of a subsidy scheme in the long term usually requires strong lobbying from interest groups.

Taxes, tax breaks, environmental fees: These constitute environmental or green taxes levied on 'bads' used to correct existing land-use practices. Taxes and environmental fees aim to raise the cost of production or consumption of environmentally damaging goods, thereby reducing or limiting demand, and thus reducing or limiting environmental damage. It involves government action and monitoring and social acceptance of these taxes. An example of this is the eco-tax in Europe on plastic-based products, which are then meant to directly fund their recycling. Tax breaks can be granted for more sustainable practices. Sweden, Denmark, Norway tax fertiliser use. In relation to land, unsustainable practices are often subsidised (production or fuel subsidy) rather than taxed. This situation implies that more sustainable practices often have a financial disadvantage.

Insurance schemes: This is the case in the USA, Canada, and India where the government provide insurance against crop losses. Modalities vary but the principle remains the same. A reference minimum amount (or market price) is decided before the cropping season starts and if actual production (or market prices) at the end of the season are lower than the pre-established reference, farmers receive a pre-established amount as compensation for losses. Such schemes are considered less trade distortive than subsidies, and so far are deemed acceptable under World Trade Organization rules.

OPEN TRADING UNDER REGULATORY CAP OR FLOOR

Conservation banks: Parcels used for conservation purposes are managed by a bank,

BOX 6.2

which sells credits to projects that want to have a positive impact on the environment.

Tradable development rights: These allow development of a certain area of land, on condition that a similar type and quality of land are restored as a compensation measure.

Trading of emission reductions or removals (or other environmental benefits): A pollution goal/allowance is set and pollution permits distributed which can thereafter be traded. The first attempt at using tradable permits was in the early 1990s with the establishment of emissions trading markets for sulphur dioxide (SO₂) and nitrogen oxides (NO_x) in USA and Canada. These were introduced to reduce the national and transboundary air pollution leading to acid rain. Attempts at trading carbon credits were made under the Kyoto Protocol, with little success to date. Trading of fertiliser permits has been considered in academic literature but has not been applied yet. Fixed quotas or standards still tend to be preferred by decision-makers.

SELF ORGANISED PRIVATE DEALS

Purchase of development rights: An interested party buys the development rights for a given piece of land to be dedicated to a particular use.

Conservation concessions: One party provides another with a concession to use a territory for conservation processes.

Direct payment for environmental services (e.g., payment for ecosystem service (PES) schemes): The users of environmental services pay the providers directly. Land managers are rewarded for conserving ecosystem services for those who use them^{10,11,12,13,14,15}. Stakeholders usually reap the benefits directly, but this requires access to information, and national or international redistribution mechanisms to ensure payments. This can include payments to store carbon or to preserve biodiversity. The United Nations Reducing Emissions from Deforestation and Forest Degradation (REDD) is an effort to offer incentives to developing countries to reduce emissions from forested lands and invest in low-carbon pathways to sustainable development through the creation of a financial value for the carbon stored in forests. The REDD+

programme evolved from the original programme to go beyond deforestation and forest degradation to include the role of conservation, sustainable management of forests, and enhancement of forest carbon stocks with a PES component. Additionally, private companies or NGOs have paid land users for provision of ecosystem services (e.g., Vittel, now part of Nestlé Water®, and hydroplants are paying for water quality or minimum flow, World Wildlife Fund in Kenya is paying for biodiversity and wildlife habitat conservation).

Provision of opportunities to make voluntary payments for environmental conservation or offset: An example of this is voluntary payments to offset carbon consumption, or the provision of monetary support to environmental conservation charities and NGOs, which are currently being promoted by some airline and train organisations. Such voluntary payments can be invested in restoring, replacing or even expanding forested land.

Establishment of new markets for ecosystem services: example of carbon storage and sequestration: Within most markets, not all ecosystem services have an economic value assigned to them. A specialised payment for ecosystem service (PES) scheme works within the market system to assign monetary values for services previously not or under-valued¹⁶. Establishment of new markets goes beyond PES, as the price for carbon is determined through an actual market. This can directly benefit some stakeholders, but depends on fluctuations in market price, and could lead to a switch in land management strategies. It also requires monitoring of the market operation and of financial speculation. Examples of new market establishment include the carbon market in Europe and China.

Provision of credit schemes and microfinance: Credit helps reduce peak demands in monetary resources for investment and smooths cash flows requirements over time with known amounts of loan repayments. Microfinance is a specific form of credit scheme that focuses on promoting local and small scale business establishments. Credit facilities are provided at a lower interest rate than those offered by traditional banks, who consider these initiatives as too small or too risky.

BOX 6.2

Microfinancing is seen by economists as a good alternative to subsidies which tend to have adverse consequences on society and behaviours¹⁷. For example, access to microfinance has successfully contributed to poverty reduction in Bangladesh at the individual level (especially for women), as well as at the village level¹⁸. Recent evidence suggests that access to microfinance is insufficient on its own to lead to improvements in health, education, and women's empowerment^{19,20} but is an integral part of the 'action option mix' to promote sustainable land management.

ECO-LABELING OF PRODUCTS AND SERVICES

Marketing labels: Payment for ecosystem services is embedded in a product/service, or a market develops for products produced sustainably. This is the case in the EU for protected designation of origin, protected geographical indication and traditional specialities guaranteed

labels. Allocation of such labels is associated with specific and sustainable production standards.

Certification schemes: A third party provides written assurance that a product, process or service complies with certain standards (e.g., ISO 1996). This is the case for organic products (e.g., Soil Association), fair trade products (e.g., FairTrade Foundation®), Forest Stewardship Council, etc.

The majority of these instruments can provide direct benefits to private stakeholders but often rely on policy-making processes and government facilitation. The provision of funding from external donors or private investors depends on their incentives to do so (which may change over time). Private investors will act if they can be convinced that they will get a return on their investment. Short term funding will be effective in promoting change if it lowers financial barriers to change.

can then help identify the existing incentive structure and thus decisions taken by land users. Instruments and mechanisms can be altered to foster change through new or revised incentive structures. Such mechanisms and instruments can be identified, chosen, designed, adapted, or revised during stakeholder engagement or with a multi-sector approach at national and sub-national levels. Choosing which instrument or mechanism or combination thereof to implement depends on a range of factors: economic efficiency, effectiveness, transaction costs associated with implementation, perceived simplicity or difficulty for implementation, monitoring constraints, equality and fairness, influence from 'winners' and 'losers', etc.

When sustainable land management options are economically desirable to land users and managers, it may not be necessary to revise current instruments and mechanisms. However, sustainable land management practices are often not perceived as economically viable by private land users and smallholders. This is the case when provision of instruments and mechanisms to change the underlying incentive structure around land management may be needed and justified from an economic perspective, or also for

non-economic reasons. For example, investment into the research and development of more sustainable land management practices may be needed for them to be seen as economically viable. Alternatively, there could be a political decision to invest in more sustainable land management practices because this is perceived as 'right' for ethical, moral, social, sociological, or cultural reasons. Such a normative orientation often requires an explicit political choice regarding the desired future.

Selecting an appropriate mix of instruments and mechanisms is fundamental in promoting long-lasting sustainable land management. A given instrument will not work the same everywhere and thus depends on specific national and local conditions. Plastic bags are a source of visual pollution in developing countries, which could reduce the international tourism appeal. Making people pay a small price for plastic bags drastically reduced their usage in France when introduced, whilst an equivalent price in Malawi was not high enough to curb usage. Thus, instruments and mechanisms need to be chosen in specific contexts and in answer to particular problems, to successfully help to achieve more sustainable land management.

B O X 6 . 3

Assessment methodology developed by CATIE and the Global Mechanism of the UNCCD

(from CATIE & GM, 2012, pg.10–11, 47–48⁸)

The assessment methodology comprises four elements to identify which instruments and mechanisms could be suitable in relation to specific national, local and economic contexts:

1. A quantitative **scorecard** tool ranking the applicability of instruments (called incentives in this case) and mechanisms in a given context according to a set of pre-defined success factors which affect their impact such as institutional capacity, governance, environmental awareness and local specificities (see first column of *Table 6.1* for more examples). This scorecard tool has been developed to: (1) help identify instruments and mechanisms that are most appropriate in a country or site-specific context; (2) establish using a simple quantitative approach, the minimum conditions under which each of the instrument or mechanism could achieve its goals; and (3) identify deficiencies that government and cooperation agencies could address in future development efforts. The scorecard can be used together with a checklist of questions to help identify and rank the strength or presence of the success factors and enabling conditions for each instrument and mechanism. The scorecard compares the requirements of each instrument or mechanism with the actual situation. For example, some instruments and mechanisms require better legal systems, others greater institutional capacity. Results identify which mechanisms are better suited to a particular situation as well as weaker areas or capacity to be strengthened.
2. A **qualitative assessment** of which instruments or mechanisms could achieve the set goal, based on variables that cannot be measured in practice and lessons learned from using other mechanisms;
3. A **cost-benefit analysis** of the instruments or mechanisms, considering, for example, transaction costs and who is receiving and paying what price for what ecosystem service (the cost-benefit analysis described in *Chapter 2* of this report could be augmented to assess the



impact of instruments or mechanisms, transaction costs etc.), and;

4. **Additional analyses**, including legal and institutional analysis of the instruments or mechanisms on the short list.

The scorecard provides initial screening to assess the feasibility of implementing different instruments and mechanisms. It helps ask relevant questions and discussing the issues necessary for the feasibility and design phases, and provides a ranking of different options facilitated by the use of numerical scores. However, numerical scores are not enough to provide the final word on feasibility: the last three steps are just as important in choosing appropriate instruments and mechanisms. The overall assessment should consider the outcomes of the screening exercise, transaction costs, price of the ecosystem services in the site, and legal, regulatory, and governance issues. It should also consult closely with complementary processes, studies, or activities (e.g., economic valuation, mapping of sustainable land management, political mainstreaming, stakeholder engagement processes, etc.).

TABLE 6.1

Table 6.1: Example of scorecard for Zambia
(from CATIE & GM, 2012, pg. 49, Table 48⁸)

	Permanent conservation easements	Contract farmland set asides	Co-financed investments	Payments for proven investment in land conservation	Subsidies	Taxes, tax breaks, environmental fees	Conservation banks	Tradable development rights	Trading of emission reductions or removals	Purchase of development rights	Direct payments for environmental services	Conservation concessions	Marketing labels	Certification schemes
NATIONAL/LOCAL CONTEXT														
Institutions (institutional capacity)	-1	-1	1	1	-1	-1	2	-1	-1	1	0	1	0	0
Governance	-1	-1	2	2	0	0	2	-1	-1	0	0	0	1	0
Macroeconomics (economic freedom)	0	0	0	0	1	1	-2	-2	-2	-1	0	-1	-1	-1
Regulatory framework	1	1	1	0	0	-1	0	-1	-1	0	1	1	1	1
Environmental Awareness	1	1	1	-1	-1	1	-1	-2	-2	1	-1	0	-1	-1
SITE SPECIFIC CONTEXT														
Ecosystem type	-1	0	1	1	2	1	-1	1	1	2	0	1	0	0
Environmental know-how	-1	-1	-1	-1	1	1	0	-1	-1	-1	0	0	1	1
Production Units / land economics	2	2	0	0	2	2	1	0	0	1	1	2	0	0
Land Tenure	0	1	2	2	2	3	0	0	0	1	2	0	3	3
ECONOMICS OF SUSTAINABLE LAND USE PRACTICES														
Demand for environmental services	1	1	0	0	-1	-1	0	2	2	1	1	0	2	2
On site benefits	-1	-1	0	-1	0	0	-2	-2	-2	-2	-1	-1	-2	-2
Off site benefits	-1	-1	0	0	1	1	-1	-2	-2	0	-2	0	-2	-2
Awareness/payment culture	-1	-1	0	0	2	2	0	1	1	-1	0	0	2	2
Low Opportunity cost services	-1	-1	2	2	2	2	0	1	1	-1	0	0	2	2
RESULTS	-2	0	9	4	8	9	-2	-8	-8	2	1	3	4	3

CASE STUDY 6.1

Conflict arising from undervaluing land: Sierra Leone

(from ELD Initiative 2013, pg.25¹, original source: Provost & McClanahan, 11 April 2012, *The Guardian*¹⁹)

In Sierra Leone, farmers receive USD 5/ha/yr for leasing land to a foreign plantation investor under a 50 year contract. However, this payment has been perceived as unacceptable to many, as it does not fully compensate farmers for the loss of valuable trees and plants destroyed in the clearing of the land, or more specifically, for the loss of ecosystem services and goods previously provided by these trees and plants. This perceived unfairness led to social unrest and widespread demonstrations in 2012, turning what could have been a win-win situation into a lose-lose one. Such contestation from the local populace can deter foreign investors and limit further opportunities for development.

In this case, the winner from the deal is the foreign investor, and the losers are the Sierra Leone farmers. The problem is that the redistribution mechanism in place is so small that farmers feel they have lost out. Consequently, both farmers and the foreign investor lose out from the deal: farmers because of the reduction in their livelihoods and livelihood options, and the investor because of the costs and negative image associated with social unrest. One action could be to revise the level of compensation provided by the investor to the farmers. A total economic valuation of their land and services derived from it could help assess a 'fair' level of compensation for the farmers (higher than their current USD 5/ha/yr), and thereby reduce social unrest.

The Global Mechanism of the UNCCD has developed a methodology to identify which instruments and mechanisms could be suitable in relation to specific national, local, and economic contexts (Box 6.3). Provision of these instruments and mechanisms can help address the gap between prices faced by smallholders and the economic value to society as whole (e.g., compensation or payments). They can be set through active participation from communities, private sector players, and governments, and contribute to increased income and livelihood improvements for land users. This raises awareness over the aggregate value of land, and tames conflicts arising out of perceived unfair land deals (Case study 6.1).

Enabling environment for successful action

There are several conditions for action to be successful in terms of fostering adoption of more sustainable land management: the cultural, economic, financial, legal, political, social, and technical environment all need to be aligned to ensure that one or several complementary options can be implemented successfully. Access to physical, technical, and monetary resources

has been identified as a limitation to address land degradation problem effectively²¹, and should be made available at the local level as well as higher scales, to ensure action is effectively taken. A lack of access to these resources and information about sustainable land management is particularly acute in Sub-Saharan African countries, preventing adoption at a large-enough scale to make a difference over land degradation processes and livelihoods.

Financial conditions for success: mobilising necessary funding

Any action that requires investment or relies on instruments or mechanisms such as subsidies, grants, and action enablers will be successful only if the necessary funding is mobilised and made accessible. This requires identifying funding sources and a fundraising strategy that mobilises funds effectively. Funding assessments undertaken parallel to cost-benefit analyses can identify whether the current funding environment could promote adoption of more sustainable land management practices or uses, or if it needs to be altered.

Depending on the amount to be raised, necessary funding could be mobilised from several possible sources: rotating saving schemes within a community, savings in a bank, migrant remittances coming into the country, investments by the private sector into community development (e.g., under corporate social responsibility schemes), local up to national government resources, foreign direct investment, grants from charities, foundations, philanthropists, international donors and supra-national organisations such as the World Bank or the GEF, access to credit, equity, loans or microfinance (with the latter associated with relatively small projects with high risk of repayment failure).

There are additional ways of raising funding through writing grant requests, project proposals, crowdsourcing initiatives, auctions, charity donation raising, selling objects or products with a fraction of the profits reinvested or redistributed (e.g., ecotourism in Rwanda), etc. Some banks and supra-national bodies such as the World Bank are also offering 'green bonds'. These bonds are fixed income products offered to investors as a means to raise funds for environmentally-related projects, in particular those that aim to facilitate climate change mitigation or adaptation^{22,23}.

In addition to those providing funding, there are several institutions involved in mobilising

it. Charities typically raise funds to be able to implement their projects. Banking institutions are also part of the picture as they can mobilise funding available from savings accounts and provide necessary resources. Local communities can organise themselves to generate the needed cash for collective or rotating investment. Certification agencies such as the FairTrade Foundation® and organic certification bodies can also help generate the needed cash through consumer payments of market premium prices. Specific to land management, the Global Mechanism of the UNCCD is mandated to improve the effectiveness of financing for UNCCD implementation and the sustainable management of dry and degrading land, and to promote the mobilisation of additional resources (see CATIE & GM, 2012, pg. 14⁸). It does not provide funding as such, but rather acts as a broker (see Hill Clarvis, pg. 7²⁴).

Integrated funding strategies can be designed to identify and harness a mixture of financial sources, instruments and mechanisms to fund efforts to promote more sustainable land management. The Global Mechanism has identified a set of principles and steps to guide the design of an integrated funding strategy that focuses on land management and channels greater investment into sustainable land management (*Box 6.4*). The identification of relevant and feasible funding sources can then inform an analysis of financial flows into land

BOX 6.4

Design and establishment process of an integrated funding strategy

(from GM, 2007²⁶, 2008²⁷, cited in Akhtar-Schuster et al., 2011²⁵)

Principles and steps used to design an integrated funding strategy:

- (1) Identify entry points, stakeholders and partners;
- (2) Collate and disseminate analyses;
- (3) Establish a communication and coordination strategy;
- (4) Design a better policy, legal and institutional environment, and;
- (5) Enhance coordination and partnerships.

These principles guide the steps to be followed to establish an integrated financing strategy process:

- Step 1: Set up an Integrated Financing Strategy process;
- Step 2: National context analysis and identify sources of financing;
- Step 3: Elaborate an Integrated Financing Strategy action plan through identifying priorities and key activities, and;
- Step 4: The integrated investment framework.

(More information can be found at: www.global-mechanism.org)

management and the conditions that can influence mobilisation of financial resources²⁵.

Economic conditions for success: removing perverse incentives and establishing the right mix of economic incentives

Economic conditions for success include removing perverse incentives which deter adoption of sustainable land management; setting up new economic incentives to lower economic barriers to adoption of more sustainable land management practices; and ensuring a stable or predictable macroeconomic environment, so that actions can be planned accordingly and economic returns estimated in a credible way. Specific assessments parallel to the cost-benefit analysis can be undertaken to identify whether the current economic environment could promote the adoption of more sustainable land management practices or uses.

Perverse incentives can take several forms. A commonly cited example is the EU providing agricultural production subsidies to its farmers²⁸. The subsidies were introduced in 1957 under a Common Agricultural Policy framework in an attempt to boost agricultural production to feed the European population. This subsidy system was successful in that it led to ‘butter mountains’ and ‘wine lakes’ (surplus production) by the 1980s. The response was the introduction of payments for storage and transformation of surplus products rather than a decrease in agricultural production subsidies to farmers. Production subsidies led to an intensification of production with pollution side effects (negative externalities, e.g., nitrates), which became very visible by the early 1980s. What was originally a positive incentive to production had become a perverse incentive leading to overproduction and pollution. Instead of decreasing subsidies to agricultural production, the EU chose to pay for environmental quality in addition to paying for the intensive agricultural production that was creating the pollution. Production-related subsidies are currently provided under what constitutes *Pillar I* of the Common Agricultural Policy and are ‘decoupled’ from current production levels. *Pillar II* was created as part of the Agenda 2000 reform of the Common Agricultural Policy with payments provided to farmers in recognition of the environmental and rural development

services they provide to society – the notion of ‘multifunctionality’ of agriculture. For a long time, the Common Agricultural Policy received 50 per cent of the EU budget. Pillar I remains the main beneficiary and Pillar II is dwarfed in comparison²⁹. Several economists have argued that removing production related subsidies would easily address the problems of overproduction and environmental pollution. A slow but progressive removal of perverse production subsidies seems to be the path taken now by the EU, following budgetary pressure as well as pressures from the WTO negotiations.

A second alternative to promoting adoption of more sustainable land management or more sustainable land use is **setting up new economic incentives to lower or remove economic barriers to adoption**. Providing subsidies as positive incentives to more sustainable land use or land management practices is one example. Taxing environmental pollution – after the ‘polluter-pays’ principle – is another possibility. One of the deterrents often put forward by land users to switching to more sustainable land use and management is the high cost of switching to such practices. Switching practices constitutes a very big financial risk for poorer farmers in developing countries: they know what they are getting with current practices but there is no guarantee new ones will pay off in their specific situation. In 2007, the UNDP/GEF Small Grants Programme provided small grants to farmers who were part of a Community Development Centre, Aranayake located in the district of Kegalle in Sri Lanka, to adopt soil conservation methods in their home gardens so as to minimise soil erosion⁹. The grant for switching practices provided a financial safety net so that farmers could try out new practices without compromising their ability to feed their families. Contrary to other forms of subsidies, grants for switching practices do not need to be maintained over time. A survey of 104 beneficiaries of a population of 150 farmers showed that respondents used the following soil conservation methods: sloping agriculture land technology methods (60 per cent), lock and spill drains (56 per cent), and stone hedges (30 per cent). Eighty seven per cent of the respondents reported that their income had increased and 93 per cent improved their soil quality improved under the conservation practices. Over 80 per cent of the respondents reported an increase in harvest of 50 per cent or more, and 82 per cent an increase in

land available for cultivation after the introduction of soil conservation practices. The improved soil quality and yields with the conservation practices convinced 93 per cent of respondents to continue using the soil conservation practices even without subsidy. A majority of neighbouring farmers that did not benefit from the switching grant were convinced enough by the results achieved with the new practices to adopt them even without the subsidy. Small grants were perceived as very good by beneficiaries in that they are easily accessible to the grass root level (74 per cent), personal (63 per cent), with visible results (63 per cent), and directly benefiting the community (62 per cent).

Additionally, a **stable macroeconomic environment** is fundamental for any action to be successful in the long term. It can help plan actions and estimate future economic returns in a credible way. In particular, some relative visibility is needed over new policies that impact inflation, unemployment, or the exchange rate and balance of payment. High inflation contexts are not very conducive to investment or change. Exchange rate fluctuations can impact imports of inputs or exports of outputs, which can reduce domestic producers' visibility of future costs and revenues, thereby also deterring investments. Changes in the balance of payments can impact government funding available for investment into sustainable land management. Unstable macroeconomic environments also typically deter foreign investors from investing into the country. Local action can still be taken in context of relative macroeconomic instability but may not be scaled up easily. Local impacts on livelihoods of macroeconomic instability can be mitigated through diversification of economic activities relying on land. For example, falls in cotton, chocolate, or coffee prices on the international market have had significant impacts on some country's macroeconomic situation as well as local livelihoods (e.g., Ivory Coast), which could have been mitigated through diversification of activities.

High fluctuations in international market prices can limit investment into more sustainable land use or management practices, as well as clearly impact livelihoods of poorer populations. The recent food crises and subsequent political instabilities in Mexico and Northern Africa illustrate this need for a stable economic environment. Investment in food storage facilities is one way to limit market

price variations. Investment into research and development of innovative funding mechanisms, and marketing of more sustainably produced products (organic certification, FairTrade®, etc.) can also help remove some of the economic barriers to adoption. These investments started off in answer to niche demand and are now expanding with the private sector picking them up and helping to up-scale.

Technical conditions for success: identifying appropriate and 'future-proofed' technology and securing access to physical resources

'Standard' techniques can be compiled for reference and use, but their application needs to be customised to local biophysical and socio-economic circumstances so that they actually work for stakeholders. In a sense, agronomic research can establish standard management techniques, which can then be promoted through a form of extension service. However, research and extension services still need to be complemented by sharing experiences between land users so that their application suits local circumstances and delivers expected benefits. Specific assessments undertaken parallel to cost-benefit analyses could identify whether the current technical environment could promote the adoption of more sustainable land management practices or land uses.

Not all technologies to mitigate or adapt to land degradation are appropriate in all biophysical or geographical contexts, but also depend on the nature of the problem being faced. For example, mitigation or remediation measures are different for agricultural land subject to water and wind erosion on slopes or to salt-induced land degradation. Going even further, not all types of salt-induced land degradation are the same, with very different measures to mitigate the impact of such degradation on agricultural yields or to rehabilitate land to some of its former productivity levels³⁰. This means that there is not one blueprint approach to technical measures, but rather techniques need to be thought through and customised to ensure they are appropriate to current and future conditions, and will deliver benefits to land users over both the short and long term. Evidence-based results of specific techniques should be considered carefully before promoting their scaling up and out, especially in places

that are outside of the conditions for which the technology was designed.

Knowledge availability and sharing, and capacity of land users is also key to informing the choice of appropriate technology out of several possible options (see *Chapter 5*). Knowledge sharing can ensure cross-fertilisation of good ideas (see UNDP/GEF small grant example, where farmers adopted the technologies after seeing how much better off their neighbours were⁹). This requires building connections, networks, and platforms. WOCAT has a database that references possible sustainable land management technologies with agronomic, vegetative, structural and management measures that can be adopted. The database also details some conditions surrounding the adoption of such measures for specific case studies and locations (www.wocat.net). In addition, they have a second database on sustainable land management approaches and a third database on sustainable land management mapping. General, instructional, and dialogue-based videos with land users sharing their experiences with specific sustainable land management technologies or approaches are also available.

Not all techniques require a high level of capital investment into machinery, and in fact techniques can be very low cost with successful results. Promotion of specific techniques require that land users have the know-how and skills, but also access to necessary physical resources such as machinery, equipment (including replacement parts), and the labour needed to implement such techniques. Gender often plays a determining role in the uptake of such options and is an important consideration. Adequate market access can also ensure such techniques are implemented. For example, the lack of market for legumes has been identified in the governorate of Béja in Tunisia as limiting farmers' interest to include legumes into their cropping patterns, in spite of the environmental benefits they provide³¹.

Finally, it is important to consider that not only do sustainable land management techniques need to deliver under current conditions but they also need to deliver in the future. Some technologies work in some places at present but may not continue to be appropriate under future climate change. The Climate Change, Agriculture and Food Security of the Consultative Group for International

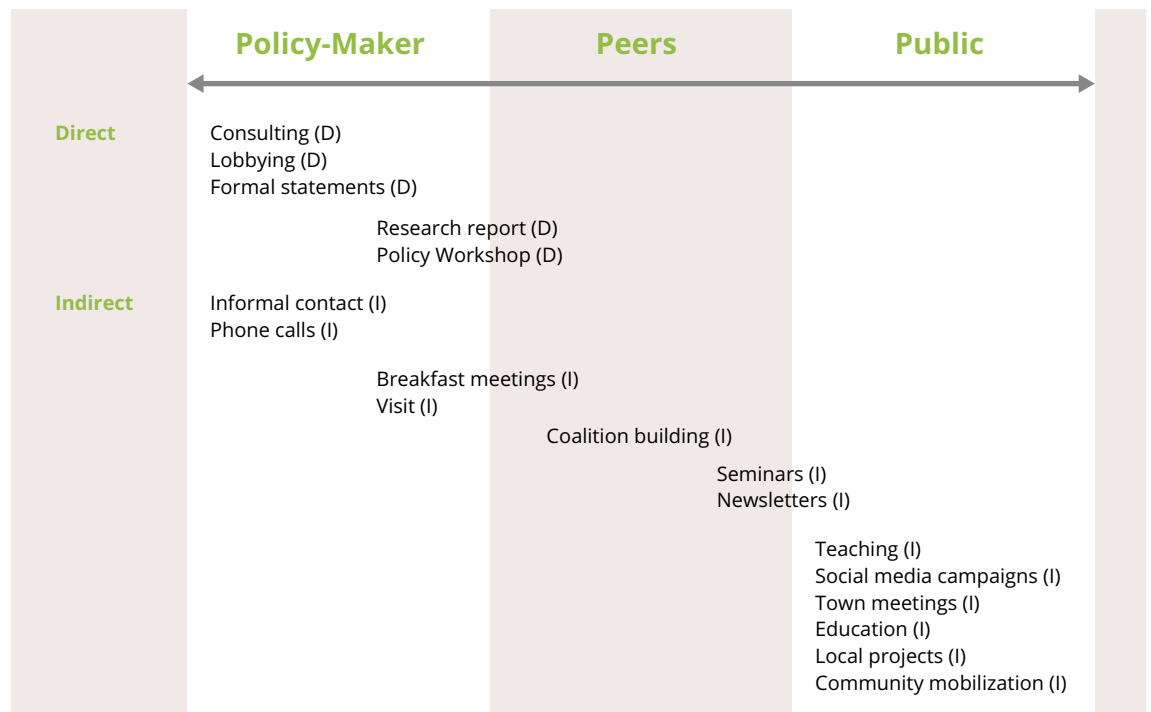
Agricultural Research supported and funded an initiative to help identify climate analogues to specific sites (www.ccafs-analogues.org). The principle of the tool is simple: it uses future climate projections and scenarios for a given location, and identifies locations on the planet where such future conditions are already happening. By pairing 'future climate' sites with their current analogues in other places, this tool helps identify and test technologies that are currently appropriate in terms of whether they are 'future proof'.

Political conditions for success: establishing good governance and enabling policies

Political conditions for success are often seen as overarching any other types of conditions. Without political will for change, setting up of comprehensive incentives to promote adoption of sustainable land management is difficult, if not impossible. Such incentives need to be resilient to political dynamics, in particular those associated with changes in government leadership or international political pressures. Political science and political economy of public policy are some disciplines that can help shed light on the necessary political conditions for success. Assessments undertaken parallel to the economic assessment could identify whether the current political environment could promote adoption of more sustainable land management practices or uses.

Political conditions for success are associated with the realms of **policy-making** and governance. Policy-making can introduce policy instruments such as taxes, subsidies, tradable permits, or norms and standards for a range of economic activities that have a close or more distant relationship with land and the services it provides. Political consultation processes can facilitate provision of targeted and concise scientific information to high-level decision-makers, of more technical information with examples of application to mid-level decision-makers, and of digested and directly applicable information to local authorities and traditional leaders²⁵. Policies can be designed so as to select the 'right' kind of beneficiaries, which is the case for agri-environmental policies implemented in the United Kingdom (UK) which 'auspiciously' select farmers in landscape regions of higher societal value for provision of environmental services³².

FIGURE 6.1

Examples of NGO participation activities targeting a spectrum of policy stakeholders.*(from McCormick, 2014, Figure 1, pg. 13³⁴)**D: Direct mode of participation**I: Indirect mode of participation*

Governance refers to the degree of transparency of a country's institutions such as its ministries, parliament and other government bodies and agencies and processes such as elections and legal procedures³³. Good governance is associated with high accountability and low corruption of government, but also with equity, participation, pluralism, and the rule of law. Governance is sometimes associated with the concept of stewardship, which implies some control over reasoned decisions whilst governance tends to be a more passive assessment of a system. For example, the UNCCD specifies that NGOs should be included in policy-making processes around land management and use as a way to increase accountability of government and thereby the quality of governance³⁴.

Each type of stakeholder tends to have their own more or less explicit political agenda, sometimes defended by particular interest groups. Stakeholders use a range of different strategies to interact with government as part of policy-making processes as well as less formal interaction

processes. For example, NGOs in Uganda use a wide spectrum of strategies for participating in policy-making processes (*Figure 6.1*). These agendas and how they interact to deliver specific policy outcomes can be studied using political economy methods.

Legal conditions for success: rule of law and property rights allocation

Following up on governance issues, economic sustainability of land use and land-based economic activities depends on the rule of law associated with a working legal system.

Legal systems need to **recognise ecosystem services and total economic valuation** as principles for decision-making and action¹ (see CATIE & GM, 2012, pg. 38–39⁸). Unless the total economic value of all ecosystem services is recognised by legal systems as the basis for compensation to those who depend on the land, it will be difficult to avoid social unrest and

BOX 6.5

Legal and economic incentives for land restoration in South Africa after open cast mining

(from McNeill, 2014³⁷)

In South Africa, the granting of mining licenses explicitly require land rehabilitation (and/or restoration) to a pre-determined state to remedy open cast mining damage when the extraction is finished. Mining property rights include rights to prospect, explore, and mine natural resources found in ore bodies and seams. These natural resources are deemed a public good, with mining rights allocated by the state as custodian of the nation's natural assets (South Africa, Mineral & Petroleum Resource Development Act 2002). Mining rights applications are required by this law to include:

- A public participation process with all stakeholder interests and concerns documented, addressed and where possible resolved, and;
- Environmental Impact Assessments and Environmental Management Plans providing technically and financially for land rehabilitation (and/or restoration) to a pre-determined state to remedy open cast mining damage when mining is finished.

The rights to use the surface of the land ('surface rights'), including the right to drill or mine through the surface when subsurface rights are involved, are deemed a private good. Surface rights can be transferred through commercial transactions. The

mining companies therefore have strong incentives generated by statutory and regulatory requirements to:

- Purchase land ahead of the mining application to reduce transaction costs associated with the legally required stakeholder consultation process. There are possible trade-offs between higher purchase prices paid to farmers and more expensive leases paid by farmers;
- Restore land at minimum costs because of the lack of legal definition over what constitutes a 'natural' or 'pre-determined state' and the associated level of interpretation around these concepts, and;
- Restore land to a level so that it can be leased out to farmers for natural grasslands and cultivated pastures for cattle production after mining is finished. There are possible trade-offs between lower costs and revenues derived from land use after rehabilitation compared to before (with the same overall profits with change or adaptation of land use).

In the case of South Africa, legal incentives seem to be lined up with economic ones to promote a level of land restoration that is satisfactory to society as a whole.

marginalisation³⁵. This is even more so when international investors, perceived as 'rich' by the local populations, are involved. Specific assessment parallel to the cost-benefit analysis could be undertaken to identify whether the current legal environment could promote adoption of more sustainable land management practices or uses.

Economic sustainability of land use and land-based economic activities also depends on how the property rights for land tenure and land uses are allocated and formally recognised, with both the type of property right owner (open access, individual property, common property) and type of land use and management formally recognised (user rights, access rights, control rights, transfer

rights, tenure security^{25,36,37}) (see Box 6.5). When customary property rights are not formally registered, they can be ignored or overlooked by governments or international investors to the detriment of local and poorer populations, leading to social unrest and marginalisation. Customary rights are referred to as *de facto* property rights while formally registered claims are referred to as *de jure* property rights. Establishing formally recognised land registers and enforcing individual and collective property rights can help to identify the appropriate stakeholder(s) who should be taking action against land degradation or receiving compensation when property rights are transferred to another land manager (e.g., foreign investors). The UNDP/GEF Small Grants Programme

benefited mainly people with less than an acre of home garden to cultivate, with 82 per cent of them having legal ownership of the land in their own name or that of a family member⁹.

In many developing countries, there is a lack of harmonisation of customary and statutory laws, resulting in considerable contradiction²⁵. Well-developed land registers recognising all types of land uses can facilitate identification of such contradictions. It can also facilitate the implementation, monitoring and evaluation of various instrument and mechanisms based on land-use restrictions and operating on a per-unit-of-area basis (see CATIE & GM, 2012, pg. 38–39⁸). Who compensates whom differs depending on whether the ‘beneficiary-pays’ (duty of care) or ‘polluter-pays’ principle applies. The FAO has established a set of voluntary guidelines regarding responsible governance and land tenure, which could act as a policy template for governments, policy-makers, and practitioners in determining what constitutes acceptable or fair practices for all.

Cultural conditions for success

Sustainable land management options may not all be feasible depending on cultural values, practices, ideas, beliefs, and behaviours, which can be very strong at the local level. The main constraint is often the objective(s) to be attained, such as poverty reduction, equality of opportunities provided to stakeholders, etc. For example, the establishment of latrines with anaerobic digestion of organic waste can improve sanitation practices and provide energy for cooking and lighting (biogas or fuel briquettes from bioslurry), thereby improving quality of life. It can also provide slurry that can be used as agricultural fertiliser and improve the sustainability of agricultural practices^{38,39}. However, not all communities or societies are comfortable with the handling of human waste, with social stigma placed on those ‘poo managers’³⁹. The success and sustainability of establishing anaerobic digestion systems thus depends more often on cultural acceptability than technical or economic feasibility. Specific assessment undertaken parallel to cost-benefit analyses could identify whether the current cultural environment could promote the adoption of more sustainable land management practices or uses.

The sustainability of the options that are adopted also depends on cultural norms and values relating to gender relations. For example, in Hunshandake China, overgrazed grasslands by cattle, goat and sheep caused severe dust storms impacting distant locations as well as local populations³. Replacement of some of hooved animals with free-range chicken farming has helped to reduce soil erosion and raised family incomes six-fold through sales of chickens, eggs, and hay from ‘spared’ biomass. However, genders may have different responses to incentives offered, and changing the incentive structure (i.e., males may manage hooved animals, whereas women may care for poultry) may change the gender balance, intentionally or not. The UNDP/GEF Small Grants Programme’s main beneficiaries were women (91 per cent), over 40 years old (69 per cent) and the majority (53 per cent) with formal education up to General Certificate of Education Ordinary Levels⁹.

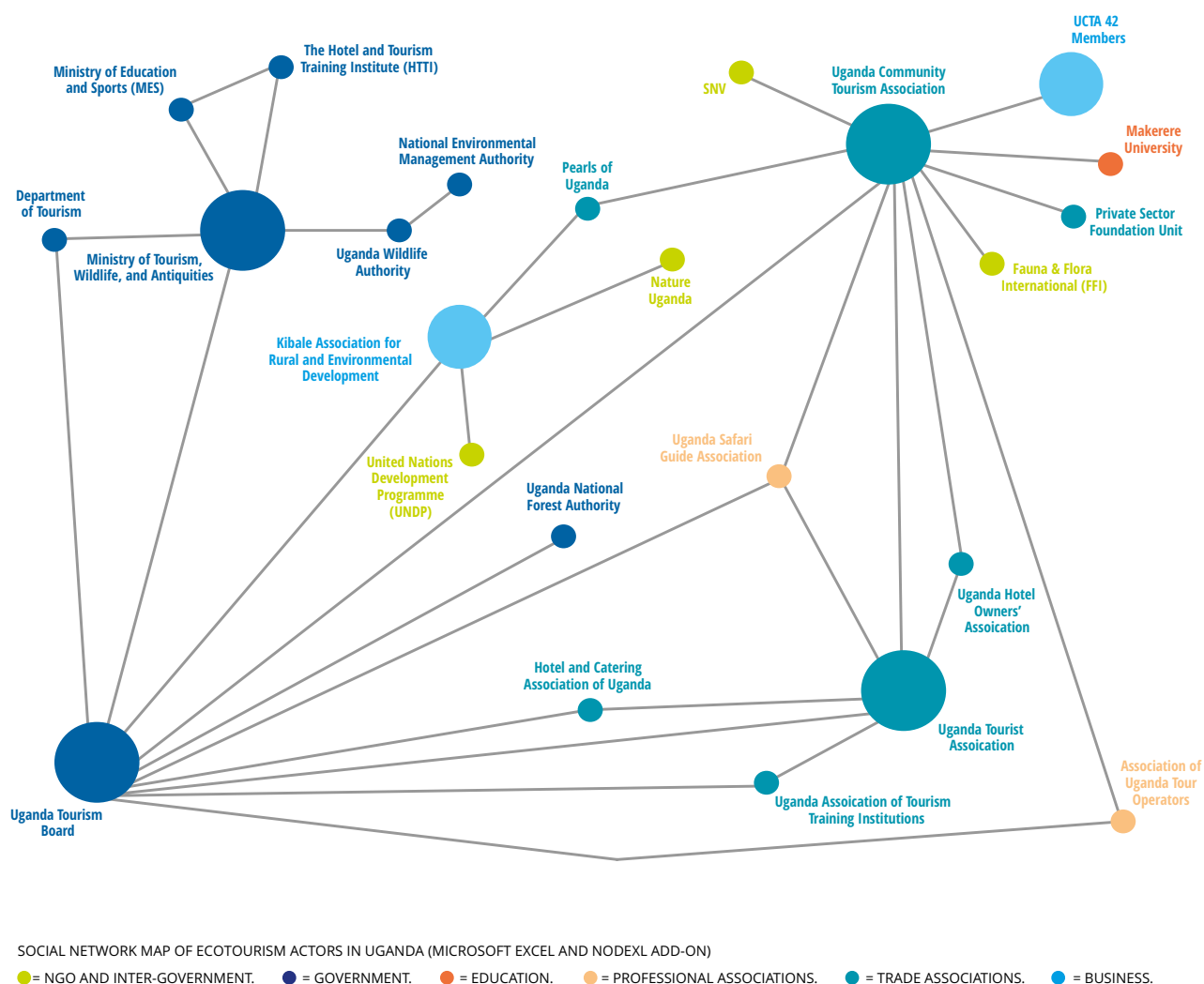
Sustainability of options that are adopted further depends on cultural norms and values relating to power relations. If power relations are unbalanced or if key stakeholder groups are ignored in establishing land use agreements, as was the case in *Case study 6.1*, consensus reached over land use may not hold in the long run. The TEV framework can be used to help rebalance some of the bargaining power asymmetries through provision of a common basis for assessment of the comprehensive value of land.

Provision of outreach activities and land-related education may help change some of the cultural values associated with different land management options through provision of and access to information at the levels they are needed.

Social and sociological conditions for success

Options for sustainable development may not all be feasible depending on social and sociological factors. Success requires consideration of all groups of stakeholders – including marginalised and poorer people that do not always have a strong voice – as well as social capital, social networks, and local, indigenous traditions and knowledge. Social analysis could be used to ensure that an option is socially acceptable. Social networking maps may help visualise whether different stakeholders involved in governance or policy-making interact

FIGURE 6.2

Figure 6.2: Social network map of ecotourism actors in Uganda*(from UNU-INWEH, 2015, Figure 2, pg.16³⁹)**Note: Microsoft Excel and Nodexl add-on*

together to identify possible communication channels for adoption of sustainable land management, possible conflicts between specific stakeholders over pathways to be set up because of a lack of communication^{38,39,41} (see Figure 6.2). Stakeholder selection and knowledge exchange processes set up by public decision-makers can help discuss and identify win-win options that are socially and sociologically acceptable^{42,43,44,45,46} (Chapter 5). Options that establish sustainable land management often fit with local, indigenous traditions and knowledge. These forms of knowledge are now seen as highly relevant and valuable, to the extent that organisations and initiatives are becoming interested in putting

traditional knowledge forward. This includes WOCAT, the UNU-IAS Traditional Knowledge Initiative (www.unutki.org), as well as the UNCCD scientific conferences. Specific assessments undertaken parallel to cost-benefit analyses could identify whether the current social environment could promote the adoption of more sustainable land management practices or uses.

Environmental conditions for success

Options for sustainable development may not all be feasible depending on environmental factors, and particularly externalities (costs or benefits

imposed to a third party – e.g., pollution). Activities to raise awareness on the links in physical terms between environmental quality and economic activities may be needed to ensure options are environmentally acceptable (see CATIE & GM, 2012, pg. 39⁸). Environmental Impact Assessments and Environmental Management Plans – mandatory or voluntary – could be used to ensure sustainable land management options put forward are environmentally acceptable³⁷ (see *Box 6.5*). This would be important for alternative livelihood options or options that require land use change.

Enabling action through identifying and removing barriers to action

Identification of barriers to action can help inform the choice of relevant sustainable land management options or the design of pathways so as to ensure successful adoption of selection option, using a mix of economic instruments and mechanisms, legislation and regulation, participatory processes etc. The methodology developed by CATIE and the Global Mechanism⁸ (see *Box 6.3*), particularly the scorecard element, can be used to identify the main barriers to action. The scorecard structure can be expanded and structured along cultural, economic legal, political, social, sociological, and technical factors to assess which aspects constitute barriers to action.

Combined with participatory approaches, scorecards and cost-benefit, legal, political, institutional, and environmental analyses can help uncover barriers to action through listening to or establishing dialogue with stakeholders. Participatory discussion can help reveal social, sociological, and cultural barriers to adoption of specific more sustainable land management options⁴⁶ (*Chapter 5*). Participatory processes can be used as a means to raise awareness over issues that need to be addressed urgently, such as land degradation, but also possible means of addressing them. They further provide a channel to build local individual, social, and institutional capacity. They can help design appropriate measures, building on local traditions and customs and giving an active role to traditional authorities whose support is often needed to spur action⁴⁷. Transdisciplinary approaches – holistic approaches that draw from multiple disciplines and various types of knowledge and expertise – may prove useful and appropriate here. Such approaches may help uncover market failures (i.e., situations where economic markets do not work perfectly), and institutional and policy failures (e.g., when government action cannot compensate for market failures).

Lack of stakeholder participation in policy-making processes has been identified as a possible barrier to action. Providing opportunities for stakeholders to participate in policy-making has thus been put

CASE STUDY 6.2

Pioneering a system of payments for ecosystem services: Carbon storage and watershed services in Costa Rica

(from *ELD Initiative, 2013, pg. 26–27*¹; *Chomitz et al., 1999*⁵⁰; *Kosoy et al., 2007*⁵¹; *Engel et al., 2008*¹⁰)

The problem

In the late 1900s in Costa Rica, forest on privately owned land was rapidly being converted to agricultural land and pastures. This conversion was done without consideration of the value of ecosystem services derived from these forests by others, both in Costa Rica and abroad. In response, Costa Rica adopted a law in 1996 that formally recognised the value of services provided by these forests in terms of carbon fixation, hydrological services, biodiversity protection, and provision of scenic beauty. The country has aimed to provide payments to forest owners for each of these

values, but has so far only been successful for carbon fixation, hydrological services, and some biodiversity protection.

What is the level of payment?

Levels of payments have generally been set based on previous payment levels provided to forest owners in a different form, and/or after consultation of stakeholders and negotiation. Even when available, no environmental valuation study was used to set up payments levels (e.g., the estimated willingness to pay for water quality in

CASE STUDY 6.2

Honduras was not used to inform the setting up of payment levels for the PES scheme). Payment levels typically tend to be fixed and at a lower level than the costs of provision. Forest owners around Heredia (Central Valley of Costa Rica) are paid USD 51/ha/yr for forest conservation, USD 124/ha for reforestation their first year, USD 100/ha for their second year of restoration, and USD 67/ha for the third to fifth years.

Who pays?

In the case of carbon and other greenhouse gas fixation, polluters (mostly fossil fuel users) foot the bill – the ‘polluter-pays’ principle. This is in accordance with the Kyoto Protocol on emission reductions which has now become mandatory to its signatories. On the contrary, beneficiaries can choose to pay for hydrological services on a voluntary basis – the ‘beneficiary-pays’ principle. GEF granted a budget to fund agro-forestry contracts for biodiversity conservation and carbon sequestration benefits, but the local tourism industry has not yet committed any funds to conserve the benefits of natural ecosystems – land users may or may not be aware of the available PES schemes in place.

How is the budget levied?

Most of the budget is levied through a mandatory, dedicated tax on fuel sales, with one third of the tax (5 per cent of fuel sales in 1999) earmarked for forestry. A much smaller part of the budget comes from negotiated voluntary payments by water users such as bottlers, municipal water supply systems, irrigation water users, and hotels. This voluntary contribution changed in 2005 to a mandatory conservation fee earmarked for watershed protection as part of a water tariff.

Who benefits?

Costa Rican forest owners benefit directly from the scheme because they receive financial compensation for forest maintenance. Evidence however suggests that the level of compensation is too low compared to the opportunity costs of conservation. Polluters benefit because they can keep operating on the global market while looking

for less polluting technologies or inputs. Users benefit because of the improved environmental quality. They also have a way of expressing their views by providing for these payments, which was not previously an option.

Ultimately, Costa Rica directly benefits as a country: new institutions have been set up to administer these payments with either with the government or NGOs acting as intermediaries, with the associated creation of employment opportunities and increased economic activities. Costa Rica has also received payments from other countries for this system of payments for ecosystem services (e.g., from the Norwegian government, private companies, GEF).

Who administers the programme?

The Costa Rican government and its administrations facilitate the budget collection and implementation of payments. Local level intermediaries have been created in order to reduce the transaction costs associated with payment implementation, and take advantage of economies of scale. These local level intermediaries have helped forest owners fill in the paperwork and liaised between forest owners and the government (e.g., FUNDECOR, a Costa Rican NGO).

What are the conditions for success?

The ecosystem service values to society are recognised by the Costa Rican legal system. The government has been proactive in establishing such payments on a decentralised basis, letting intermediaries establish themselves, obtaining commitments from both stakeholders and providers, and ensuring environmental objectives are met. These commitments are crucial to ensure long-term sustainability of the payments for ecosystem services system.

Being pioneers in payments for ecosystem services meant that Costa Rican stakeholders and institutions have had to be flexible enough over time to evolve and take into account lessons learnt and changing circumstances.

forward as a way to help make policy more relevant to on-the-ground action. However, providing opportunities to participate does not guarantee that stakeholders will, or that they will do so equally, as this depends on their available human and financial resources for such activities³⁴. In some cases, it is more empowering for stakeholders to make a conscious choice not to participate. Stakeholders may also devise various strategies in relation to the means they have to try and influence the setting up of an enabling environment. This encompasses the idea of indirect participation strategies³⁴ as well as created/claimed spaces for participation⁴⁸.

Another way to remove barriers to action can be the co-development of economic sectors, building on their complementarities and synergies. Joint development of complementary economic sectors may lead to faster development than that which would be achieved if developed independently. For example, an ecotourism sector and sustainable sanitation sector in Uganda could be jointly developed so as to take advantage of synergies between the two (see scoping study by UNU-INWEH³⁹). Adequate sanitation facilities are key for a pleasurable (eco)tourism experiences, both in terms of personal use and cleanliness of the environment in which they are staying. In turn, (eco)tourists increase the volume of waste generated and collected and therefore increase the

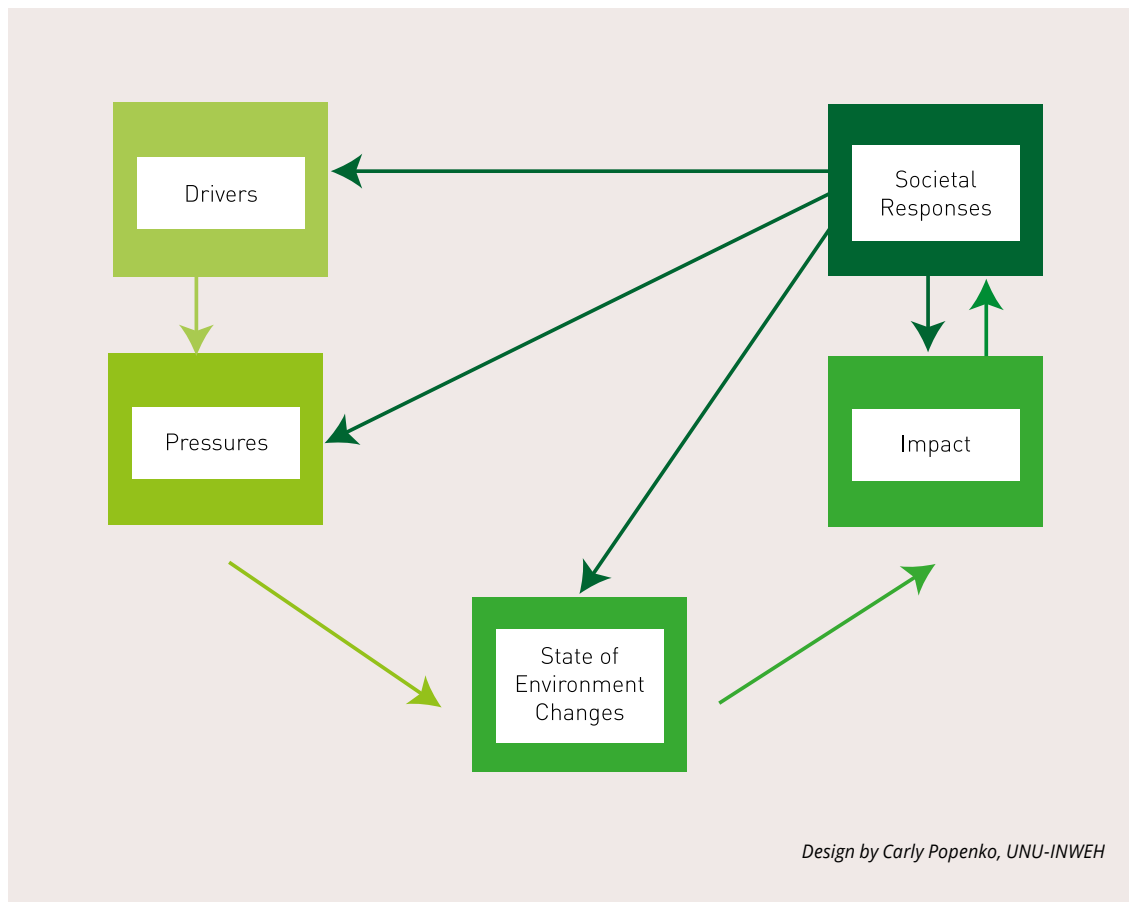
volume of positive waste management by-products generated (energy and fertiliser). These by-products can be used to support local tourism for cooking and lighting (energy) and for increased food production (fertiliser). Common physical flows of waste and waste management by-products can be associated with monetary flows. The level of flows will vary depending on specific negotiations and level of mutual benefits.

Another barrier to action is the lack of recognition of the stewardship role land users can have. Land users managing their land sustainably are often stewards of important ecosystem services benefiting society. Managing the land in a sustainable way may contribute to local, and potentially national, regional, and global benefits (e.g., food security, carbon sequestration, water regulations). If society acknowledges these benefits, and that land users may incur costs in providing or protecting them, compensation schemes may be economically justified. This can be done via private deals, with intermediaries such as NGOs, or by public regulations or funding. For example, Costa Rica has chosen to pioneer a PES scheme paying forest owners for ecosystem services, with the government or NGOs acting as intermediaries (*Case study 6.2*). In Vietnam, a decree has been put in place regulating payments from water companies to farmers⁴⁹.



FIGURE 6.3

The Driver-Pressure-State-Impact-Response (DPSIR) framework



Implementing adaptive processes: building in flexibility to take lessons learnt into account and adapt to changing circumstances

This section focuses on specific operational thematic clusters listed in *Chapter 5*, and expands them by taking a flexibility angle:

1. Sustainable land management technologies, including adaptation;
2. Capacity building and awareness;
3. Knowledge management and decision support;
4. DLDD and SLM monitoring and assessment;
5. Policy, legislative, and institutional framework;
6. Funding and resource mobilization, and;
7. Participation, collaboration and networking.

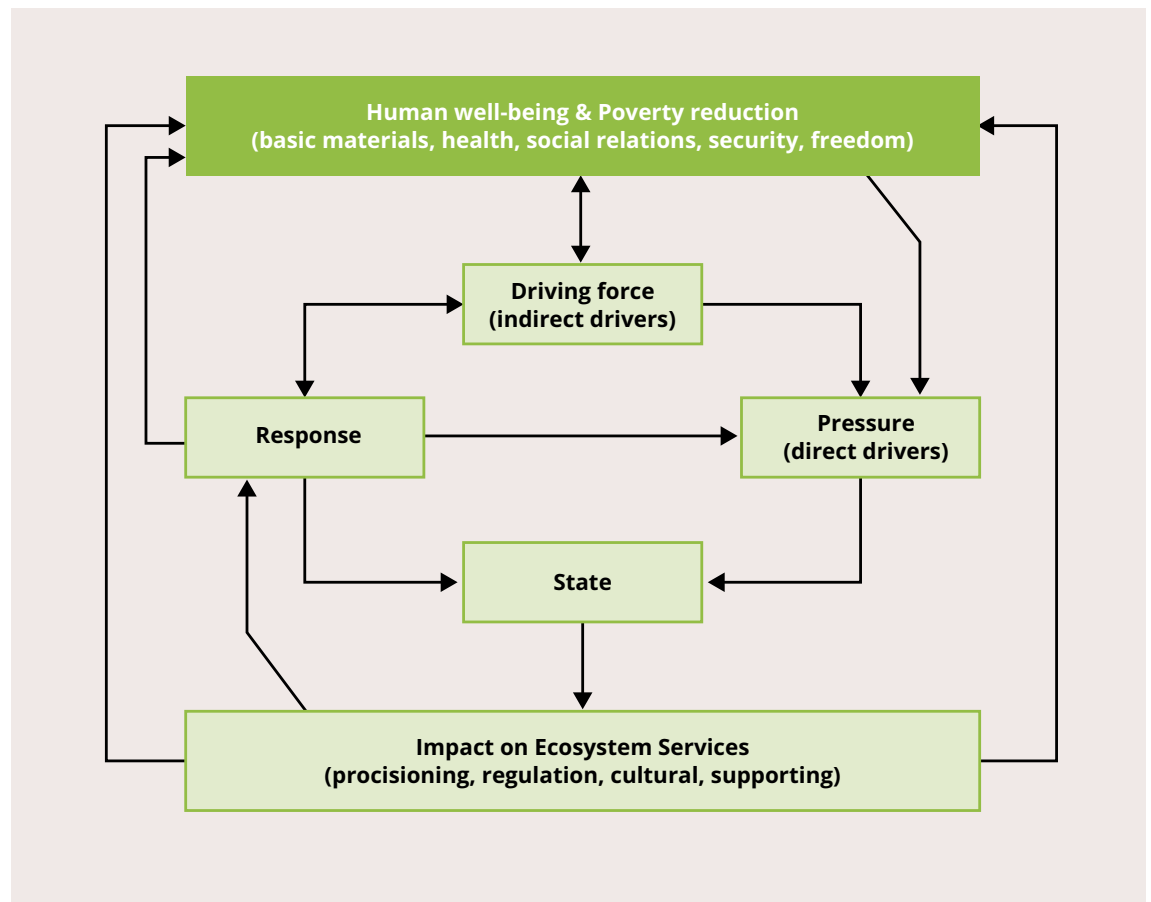
Assessment and policy cycles

The experience of pioneering payments for ecosystem services in Costa Rica (*Case study 6.2*) has shown the importance of **keeping processes flexible** to be able to take lessons learnt into account over time and adapt to changing circumstances. Being able to adapt to changing circumstances implies that assessments will eventually need to be repeated. The future cannot be predicted, but it is possible to consider and prepare for a range of possible futures⁵². Assessments should thus not be a one-off exercise, but rather be applied at regular intervals to gain an idea of how the benefits derived from ecosystems evolve over time. This requires iterative processes that are in line with a changing environment, drivers, and pressures from natural or human forces.

One framework that could help decision-makers take appropriate action is the Driver-Pressure-

FIGURE 6.4

Hybrid SLM framework for monitoring and assessing impacts from SLM interventions (Schuster et al., 2010⁵⁸)



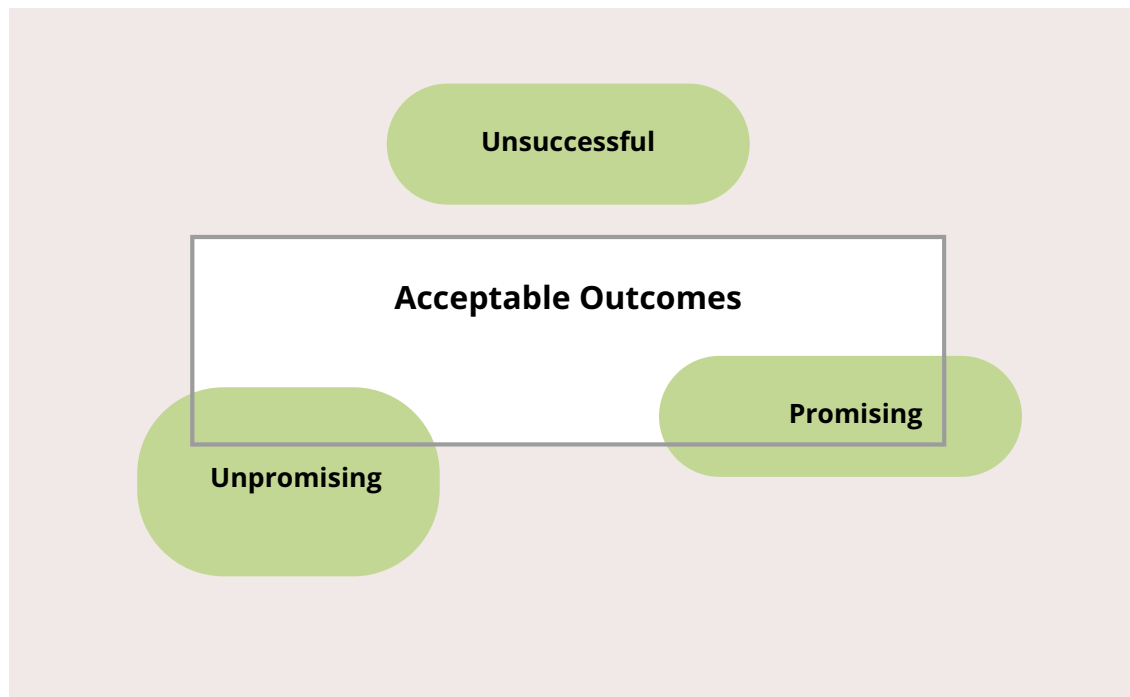
State-Impact-Response (DPSIR) framework (Figure 6.3). The DPSIR framework was originally designed in the 1990s to bridge the science policy gap. It integrates different types of knowledge and dimensions to show cause-effect relationships between environmental and human systems. The DPSIR framework can be used as a basis to communicate solid facts and evidence, which are often rigid, unidirectional, and difficult to understand, by structuring information in a way that is meaningful to policy-makers in formulating their decisions, monitoring the outcomes of such, and reacting to unexpected events⁵³. Drivers (e.g., future socio-economic trends, including technological development and policy drivers), which may be social, economic or environmental developments, exert Pressures on a certain environment. As a result of these Pressures, the State of the environment changes

(including ecosystem service provision). This then leads to an Impact (social, economic, or environmental), which may lead to a societal Response. The response may feed back to Drivers, Pressures, States or Impacts^{53,54}. As such, the framework adopts an explicit dynamic perspective. The DPSIR framework nicely complements the ecosystem service framework which also outlines the links between ecosystems and the services they provide society but in a way that put across a more static perspective (relating to states rather than pressures). The DPSIR framework links up instruments and mechanisms (drivers) as possible ways to mitigate and regulate pressures. Inclusion of a wide diversity of stakeholders has been shown to reduce potential biases in the results generated by applying the DPSIR framework. Combined with the frameworks and assessment approach detailed in Chapter 2, previous sections of this chapter (Box

FIGURE 6.5

The acceptable outcomes zone to inform the design of adaptive policies resilient to a range of possible future changes

(from Walker et al., 2001, Figure 2, pg. 287⁵²)



6.3), and participatory and stakeholder engagement approaches, the DPSIR framework shows potential to provide insights into the selection of relevant and appropriate sustainable land management options and establishment of action enablers. Ultimately this can help facilitate the delivery of healthy ecosystems and associated human well-being (Figure 6.4).⁵⁸

Similarly to assessments necessitating repetition over time, policy also needs to be revised regularly to avoid becoming obsolete. Policy formulation and supporting legislation need to be flexible and forward looking to encourage the institutionalisation of action planning and implementation^{25, 52}. Such formulation needs to be supported by evidence with monitoring and evaluation informing revisions and adaptations of policies, but also instruments and mechanisms in a comprehensive way. Policy can be designed to be more resilient over time by taking a range of plausible possible future evolutions of the natural and human environment into account⁵² (Figure 6.4). The notion of the policy cycle is often put forward in relationship to this need to design

policies that can be adapted and revised in time. The policy cycle includes the 'feedback loops' or 'backward engineering' necessary in order to iteratively re-adjust information, instruments and mechanisms to the often very versatile needs of users²⁵. An example of policy evolution over time is the development of agri-environmental measures in the EU. Their format was piloted in the 1980s by the UK and the Netherlands. They were then adopted in all EU Member States from 1985, originally on a voluntary basis then with compulsory implementation at national level from 1992. Over a 30-year time period, agri-environmental measures have been given progressively more importance in terms of allocated budget as well as requirements over outputs to be achieved. Such policy evolution was driven in part by the EU itself, and partly in answer to pressure exerted by other countries under the WTO negotiations. As for the PES system established in Costa Rica (Case study 6.2), this shows that it is sometimes just as important to start a process and let it evolve over time in a flexible way, in order to best suit the objectives to be achieved, the transaction costs and other considerations.

BOX 6.6

Examples of innovation platforms

The Consortium for Sustainable Development of the Andean Ecoregion (www.condesan.org) uses innovation platforms to address issues in natural resource management. They engage local actors to discuss how to share benefits and resolve conflicts.

In the Fodder Adoption Project, the International Livestock Research Institute used innovation platforms in Ethiopia to improve livestock feeding (www.feeding-innovation.ilri.org). Through platform discussions, the project's initial narrow focus on feed broadened to include the procurement of improved crossbred cows, new milk transportation arrangements, and the establishment of a dairy cooperative.

Innovation platforms are also used in several other projects notably the Nile Basin Development Challenge (www.nilebdc.org), and the imGoats (www.imgoats.org) and PROGEBE (www.cgspace.cgiar.org/handle/10568/27871) projects.

In southern Africa, the International Crops Research Institute for the Semi-Arid Tropics (www.icrisat.org) used innovation platforms to improve

the production and marketing of goats. Innovation platforms helped lower transaction costs in the value chain, meant that farmers could make a bigger profit, and ensured that the market could guide investment in goat production.

The Convergence of Science–Strengthening Innovation Systems program (www.cos-sis.org) used innovation platforms in West Africa to improve smallholder agriculture. The platforms studied bottlenecks in production systems and induced institutional changes in value chains and policymaking.

The International Center for Tropical Agriculture and its partners (www.aliasasdeaprendizaje.org) developed a regional 'learning alliance' in Central America to improve market access for farmers through collaborative innovation.

The Forum for Agricultural Research in Africa (www.fara-africa.org) promotes the use of innovation platforms in integrated agricultural research for development programs that target productivity, markets, natural resource management and policy issues.

(More information can be found at: www.ilri.org/taxonomy/term/58)

BOX 6.7

Examples of knowledge and capacity building

Building institutional capacity with establishment of research, policy, and stakeholder networks and platforms for exchange. The development of networks and platforms leads to greater information exchange between local stakeholders and decision-makers, as well as increasing the scientific basis for informed decision-making⁴⁰. The ELD Initiative is promoting the establishment of regional hubs for exchange around knowledge but also to promote joint projects and activities (see *Appendix 1*).

Improving data availability. The current spatial variations in data availability impair scientific research activities and active international communications⁵⁷. Data availability depends on the wealth level (per capita GDP), language

(English), security level, and geographical location in relation to the country. Through scientific education, communication, research, and collaboration, data availability can be improved by building capacity in low-GDP countries with fewer English speakers that are located far from the Western countries that host global databases, and in countries that have experienced conflict.

Building stakeholder capacity. Training workshops for case studies (Tunisia, Central Asia) and two e-learning courses (www.mooc.eld-initiative.org) have been set up as part of ELD Initiative activities to build stakeholder and research capacities in specific countries. Such activities require participants to actively engage and apply theoretical content to a real situation of their choice.



Innovation pathways

Innovation platforms defined as spaces for learning and change are being tested as ways to bring together different stakeholders including farmers, agricultural input suppliers, traders, food processors governments, etc., to identify solutions for common problems or to achieve common goals^{55,56} (see *Box 6.6*). They can help spread the risks and start-up costs of interventions to achieve sustainable land management and can work at village, community, district, or other scales. Organisations that use innovation platforms include agricultural research, development agencies, NGOs, local and national governments, the private sector and donors. They can be initiated by any one organisation or stakeholder group, and by including stakeholders can identify the focus and bottleneck around a particular issue, identify and test options, and develop any lacking capacities. Once a successful option has been established, the platform can facilitate its implementation and scale-up via training and use of communication media. Being highly participatory, innovation platforms create ownership and facilitate communication, both in terms of space (replication to other areas) and

institutions leading up to policy-/decision-makers, and hence able to achieve greater impact.

Knowledge and capacity building: supporting flexible designs and evolutions

Knowledge and capacity, alongside building the necessary connections, networks and platforms, provide important support to flexible designs and discussions around how to make the enabling environment evolve in time (*Box 6.7*). In most cases, building individual, social and institutional capacity needs to be done “one brick at a time”, in a way that is adapted to stakeholders’ needs and values. Solutions and an enabling environment need to be carefully considered by people knowing the context inside out to select sustainable land management options and pathways that are adapted to the specific environment. Guiding and coaching are often more important than providing a finished product, and knowledge and capacity building need to remain flexible, with lessons learnt supporting flexible evaluation and revision processes. The ease of implementation will vary, as some cultures may traditionally value and be more comfortable with blueprint approaches than flexible processes.

Conclusion

Mainstreaming and multi-stakeholder communication and action on land issues are more than ever the crux for sustainable land management, together with shared ownership and polycentric approaches to action. People seem to be ready to accept additional efforts and costs if they can identify with the issues being tackled and trust the actors that are promoting them.

Making options and pathways for action successful in terms of promoting adoption of sustainable land management is feasible but presents some challenges. Such challenges summed up by the Global Mechanism of the UNCCD represent the need for people working to promote sustainable land management to:

- Secure reliant donor or government support ;
- Establish willingness by governments to put in place policies, strategies and plans with appropriate instruments and mechanisms working in synergy;
- Consider transaction costs which can be in some cases very high;
- Consider situations where demand for specific ecosystem services is limited, and;
- Consider a mix of different actions for different scales for land use management change, partial or full land use change.

Economics are part of the solution, but are not necessarily sufficient to promote lasting change on their own. Transdisciplinary approaches drawing from multiple disciplines and including knowledge and experiences from practitioners and traditional sources can be key in the success of specific options and pathways. Psychological and behavioural barriers are possibly the most difficult to overcome. There is a need to debunk incorrect perceptions of future benefits, switching and novel operating costs, level of efforts required, and difficulty in going around 'red tape'. There is a rationale for choosing pathways and ways to promote relevant land management options by drawing insights from the psychology of individuals as well as group psychology. Psychology insights could help promote adoption of more sustainable land management and alternative livelihood options, but also aid with scaling up and out current practices where suitable. The main barrier to action is to encourage people to overcome their natural

tendencies to keep doing 'business-as-usual' even when not in their best interest. It is possible to build evidence to take down one barrier to action after another, but the state of land degradation globally currently exists in a context where action is often needed now and fast rather than later and slow.

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This was published with the support of the partner organisations of the ELD Initiative and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ).

Design: kipconcept GmbH, Bonn
Printed in the EU on FSC-certified paper
Bonn, September 2015
©2015

www.eld-initiative.org

ISBN 978-92-808-6061-0

