Negotiation-support toolkit for learning landscapes

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17 Adopt and learn: modelling how decisions are made and the flow of information

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Adopt and Learn is a simple model of an 'adoption' process. It explores how farmers learn of new technology or information and eventually make a decision to adopt or not. The model is useful for understanding factors influencing the success or failure of a technology-dissemination project, including the role of extension agents. The model works at community scale with a diversity of agents and their multiple learning styles.

Introduction

Adoption of 'new' or 'better' land-use practices, compared to the existing ones, depends on many factors. These factors can be broken down into two main factors: internal and external factors. How and by whom (agent of change) the technology was disseminated are external factors that influence farmers' perceptions and trust of the technology. Internal factors relate to the style of learning of the farmers themselves, whether they tend to be 1) conservative, that is, resisting change and preferring 'old' technology'; or 2) experimental, that is, always trying new and quickly discarding 'old' technology. Usually, farmers' learning styles will be in-between the two extremes: they will be willing to experiment but need experience or to see how others experience the new technology before they make a decision to adopt or not.

Adopt and Learn was developed to simulate such a situation. The model was initially developed as a module to be incorporated into dynamic models of land-use change. The model assumes that farmers make decisions among the options available on the basis of their perceptions of the relative merits of these options for local conditions. Farmers also take into account the specific constraints and availability of resources on their farms. The perceptions of the relative merits can change with time on the basis of experience obtained through external contacts with extension agents.

Objectives

Adopt and Learn provides an analytical framework for understanding factors influencing the success or failure of a technology dissemination project, including the role of extension agents.

Steps

Adopt and Learn was developed in the STELLA programming language and can be incorporated as a module in more comprehensive models. Specifically, the model explores eight aspects.

1. The expected performance of the 'new' technology with existing practices, taking into account local resource options and constraints.

2. The variability of performance of the 'new' technology' in the various local settings (different farmers with different learning styles; different plots with different inherent soil fertility; and different financial capital). The variability measures the degree of risk involved in the 'new' technology project to fail in meeting its minimum targets.
3. The actual year-to-year performance of the 'new' technology' in the various local settings.
4. The divergence between farmers' perceptions of the 'new technology' with distribution of actual performance carried out by all farmers.
5. The way actual experience with the performance of land-use options (managed using 'new' technology) in the local environment can lead to changes in perception ('learning style').
6. The way decisions are made, in particular how relative preference is given to the option that is perceived to be the best ('prioritization').
7. The fraction in the total population that follows an 'experimental' strategy in its learning style (with the remainder assigned the 'conservative' strategy).
8. The impact of 'adaptation' or local fine-tuning of the performance of the various options, indicated by increase in average performance mean and/or increase in stability.

Adopt and Learn simulates the interactions between the above factors and allows users to focus on five important questions.

1. How long will it take before 'superior' land-use options will become the preferred choice for the two strata of farmers (conservative and experimental)?
2. What impact will the 'adopt and learn' process have on the actual benefits that the farmers gained in both groups, relative to that prior to use of 'new technology'?
3. Does the magnitude of fraction of experimenters modify the time to adoption and the actual benefits achieved by the conservatives?
4. Under what conditions can the exposure of farmers to the 'perceptions' of extension agents help in the adoption process?
5. How long can we expect the transient state with mosaics of different land-use types to last and contribute to agrobiodiversity?

Example of application

Adopt and learn concept is at the heart of the scheme used in Figure 8.2 to explore gender differentiation of land-use decisions (Villamor et al 2014).

The landscape scale is a meeting point for bottom–up local initiatives to secure and improve livelihoods from agriculture, agroforestry and forest management, and top–down concerns and incentives related to planetary boundaries to human resource use.

Sustainable development goals require a substantial change of direction from the past when economic growth was usually accompanied by environmental degradation, with the increase of atmospheric greenhouse gasses as a symptom, but also as an issue that needs to be managed as such.

In landscapes around the world, active learning takes place with experiments that involve changes in technology, farming systems, value chains, livelihoods' strategies and institutions. An overarching hypothesis that is being tested is:

> Investment in institutionalising rewards for the environmental services that are provided by multifunctional landscapes with trees is a cost-effective and fair way to reduce vulnerability of rural livelihoods to climate change and to avoid larger costs of specific 'adaptation' while enhancing carbon stocks in the landscape.

Such changes can't come overnight. A complex process of negotiations among stakeholders is usually needed. The divergence of knowledge and claims to knowledge is a major hurdle in the negotiation process.

The collection of tools—methods, approaches and computer models—presented here was shaped by over a decade of involvement in supporting such negotiations in landscapes where a lot is at stake. The tools are meant to support further learning and effectively sharing experience towards smarter landscape management.

World Agroforestry Centre
ASB Partnership for the Tropical Forest Margins
AARD
Federal Ministry for Economic Cooperation and Development
Norad
IFAD Enabling poor rural people to overcome poverty
CGIAR Research Program on Forests, Trees, and Agroforestry