SCALING UP SOIL CONSERVATION PROGRAMS: THE CASE OF LANDCARE IN THE PHILIPPINES

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Abstract
Soil erosion is a major concern in the Philippine uplands where poor households farm sloping lands that are ill suited to intensive cultivation. In the Southern Philippines, the development of contour barriers in the form of natural vegetative filter strips (NVS) has provided a simple, cost-effective solution to the problem of soil erosion, and has been rapidly adopted in selected locations through the Landcare approach, based on partnership of Landcare groups, local government units, and the World Agroforestry Centre (ICRAF). The initial success of the Landcare approach raises the possibility of scaling up these activities to other areas. This paper reports on a study to investigate the minimum requirements for effective adoption in other areas. It was found out that scaling up has a strong technical dimension, that is, the technology promoted was highly adoptable. The formation of Landcare groups was a key element, enabling farmer-led extension. Local government support was present in some cases and absent in others; hence, though desirable, was not essential to successful adoption. However, in the absence of local government support, institutional backing from a committed, technically competent non-government organisation appeared to be crucial. Soil conservation efforts will thus remain islands of success unless these elements can be replicated on a wider scale.

Introduction
The issue of scaling up soil conservation programs has recently gained attention based on the pragmatic argument that successful conservation initiatives should be scaled up to a level that will generate larger economic and environmental benefits more rapidly. However, scaling up is a multifaceted subject, embedded in socio-political and institutional contexts, hence different users of the concept consider different issues. Uvin (1999) encountered a variety of definitions and perspectives of scaling up, based on the complexity of the sector in question and differences in structure, program, strategy, and resource base. He identifies four types of scaling up—quantitative, functional, political, and organisational. Quantitative scaling up simply means an increase in the number of people drawn into the program, while functional scaling up takes place when new activities are added to the program, implying an expansion of operational range. The process becomes political when deliberate building of a political power-base is desired to achieve broader impacts. Where changes in organisational structure are made to ensure sustainability, the process becomes organisational scaling up. Guendel *et al*. (2001) conclude that there is no single strategy or design for scaling up research in natural resource management, and that the prerequisites for successful scaling up need to be addressed extensively in pre-project and implementation phases. Franzel *et al*. (2001) also conclude that scaling up agroforestry innovations entails building institutional capacities in the community to sustain the innovation and adoption process. Because of the multi-dimensionality of the scaling up process, adaptation is said to be the key for successful scaling up. The caveat is that the scaled-up program could turn out to be significantly different from the original model, such that the effectiveness of the program is compromised.

This paper examines the scaling up of the Landcare approach to soil conservation in the Philippines. The Landcare approach centres on the formation of community Landcare groups and municipal-wide Landcare associations, supported to varying degrees through partnerships with government and non-government agencies. Such groups identify problems at the local level and mobilise information, community effort, and finances to help improve the management of their soil, water, vegetation, and other natural resources. Landcare emerged in the mid-1990s in the municipality of Claveria, where the International Centre for Research in Agroforestry (ICRAF) – now the World Agroforestry Centre – had established a research base and was working with farmers to develop and test suitable conservation practices. Landcare was viewed as an approach that could rapidly and inexpensively disseminate conservation farming technologies, based on an effective partnership between stakeholders. The initial success of the Landcare approach raised the possibility of scaling up to other Philippines sites. With additional funding from the Australian Centre for International Agricultural Research (ACIAR) and the Spanish Agency for International Cooperation (AECI), Landcare was scaled up in the southern and central Philippines, with currently about 10,000 farmers and 15 partner institutions involved. However, this was not achieved without issues and challenges; the factors for successful scaling up were found to be more complex than those associated with technology dissemination and adoption. Unless the elements for successful scaling up are in place, the wider promotion of

successful conservation programs such as Landcare will not be feasible. The objective of this paper is to examine the effectiveness of the Landcare approach as adapted from one site to another, to see how its elements change with different levels of technical and institutional support from ICRAF and local government units (LGUs).

Methods

To investigate the requirements for effective scaling up of Landcare in the Philippines context, five case studies were undertaken, of which only three are reported here, namely, the municipality of Claveria in Misamis Oriental Province and the municipalities of Lantapan and Manolo Fortich in Bukidnon Province. These sites encompassed the essential features of the Philippine uplands, including rapid population growth, the expansion of settlement and intensive agriculture into ecologically fragile areas, land degradation, and poverty. The sites were selected because they had all experienced a Landcare program but with progressively reduced technical and institutional input from ICRAF and differential support from local government (Table 1). The case studies relied on the following sources of data: (1) key informant interviews with farmers, project staff, local officials, and other key partners; (2) focus group discussions with Landcare groups; (3) project databases; (4) local government statistics; and (5) participant observation. Data collection was conducted from July 2002 to March 2003.

Table 1. Resources used in the Landcare sites

Sites	ICRAF's Input	Local Government Input
Claveria	Fully staffed (ICRAF's first research site)	Medium to high level of financial and human resources
Lantapan	Reduced number of staff (ICRAF's second research site)	Low level of financial and human resources
Manolo Fortich	1 half-time facilitator	Low level of financial and human resources

Case study 1: The Landcare Program in Claveria

Claveria is an upland municipality in the province of Misamis Oriental. It's landscape consists of steep mountains and rolling hills, comprising 68 per cent of its total land area; only 7 per cent of the lands are classified as level to gently sloping with slopes up to 3 per cent (Stark, 2000). From 1997 to 1999, the average annual rainfall was 3,208 mm. Claveria's soils are well drained with moderate depth and various textures. Farmers are concerned with the consequences of excessive soil erosion, since high rainfall causes severe erosion on slopes that have insufficient cover of biomass, and 59 per cent of the cropping occurs on lands of more than 15 per cent slope (Fujisaka & Garrity, 1999; Stark, 2000). Its proximity to the regional capital, Cagayan de Oro, has made it a major food bowl for the northern Mindanao economic development zone. ICRAF became involved in farmer-participatory on-farm research on contour hedgerow systems in Claveria in 1993. The research goals were to develop practical, low-cost conservation farming and agroforestry systems that were suited to resource-poor smallholders in sloping uplands. ICRAF found that natural vegetative strips (NVS) were effective in controlling soil erosion and provided a superior, low-cost conservation technology for the uplands. NVS evolved as a variant of Sloping Agricultural Land Technology (SALT), or contour hedgerows, when farmers experimented with the hedgerow concept by placing crop residues along the contour lines and leaving the native weeds to re-vegetate in the unplanted strips, eventually forming stable natural barriers to erosion (Mercado & Garrity 2000; Stark 2000). The benefits of the NVS system were: (1) soil erosion was reduced by more than 90% and water infiltration was increased during heavy rains; (2) the labour requirement for establishing and maintaining NVS was substantially reduced – there was no establishment cost other than to mark out the contours before ploughing, and the labour for maintenance was less than a quarter of that for the conventional hedgerow system; (3) there was minimal competition with adjacent field crops; (4) pesticides, nitrates and soluble phosphorus were filtered from runoff; (5) subsequent land preparation and crop management were made easier; and (6) farmers had a good foundation to develop their farms into various agroforestry systems and increase productivity.

By 1995 farmers were adopting the NVS technology quite spontaneously. The initial uptake of NVS encouraged ICRAF to examine the phenomenon further, to see how public sector research and extension institutions could develop more effective techniques to diffuse the NVS technology rapidly to a large number of interested farmers (Stark, 2000). With increasing demand for training in soil conservation technologies, in early 1996 ICRAF, in partnership with the municipal government, set up the Contour Hedgerow Extension Team (CHET), comprising a trained farmer, an agricultural technician, and an ICRAF staff member. In late 1996, a number of trained farmers agreed to form a municipal-wide group, named the Claveria Landcare Association (CLCA), which then proceeded to set up community Landcare groups in the villages and sub-villages of Claveria to help promote NVS. Landcare

thus developed into an approach that rapidly and inexpensively disseminated conservation farming technologies based on an effective partnership between farmers, local government, and ICRAF's technical facilitators.

This three-way partnership, described as the Landcare triangle, has resulted in widespread adoption of NVS and agroforestry practices. By 2003, the total number of farmers adopting NVS and agroforestry reached 1844, representing 27 per cent of the total farming population (6233). The aggregate area of parcels treated with conservation technologies increased from 75 hectares in 1996 to 1820 hectares in 2003, representing 23 per cent of the total cropped area. Farmers also expanded their repertoire of timber, fruit, and indigenous tree species, and established a total of 421 communal and household nurseries, which produced 288,707 seedlings of fruit and timber trees in six years (1996-2002). Given a planting density of 1000 to 1500 per ha for timber trees and 400 to 600 per ha for fruit trees, the total area planted was around 250 hectares.

It was widely agreed that the technical merits of NVS were a major advantage, but rapid adoption was also attributed to the triadic partnership of the CLCA, the LGU, and ICRAF researchers and facilitators. The CLCA and its network of Landcare groups promoted farmer-led extension of technologies, while ICRAF provided technical and logistical support and the LGU provided policy and financial support. Both LGU and ICRAF informants indicated that the CLCA was the centre of the partnership and was crucial to its success. Other important ingredients included the catalytic role of ICRAF in technology development and dissemination, the active support of Landcare facilitators, and the provision of effective training programs. The stable political situation was also important, in which LGU political leadership and administration were in the hands of one political family, and Landcare leaders had an established relationship with LGU officials. It can be concluded from this case study that the Landcare program flourished in Claveria because of a favourable environment, in which locally-adapted technologies had emerged, the LGU was supportive of grassroots initiatives and had the desire to work with farmers and other agencies, and ICRAF provided a long-term research and extension presence.

Case study 2: The Landcare Program in Lantapan

Lantapan is located in the western part of Bukidnon Province, having an average elevation of 600 metres, which increases to a maximum of 2938 metres. About 70 per cent of the area has slopes greater than 10 per cent. Soil types are generally classified as Adtuyon and Kidapawan clay, are mostly well drained and have clayey surface and subsoil horizons, which are slightly to moderately acidic with low organic matter and high P fixation capacity, and have a low capacity to retain nutrients (Coxhead & Buenavista, 2000). The average annual rainfall was 2,470 mm, and air temperature and solar radiation decrease with elevation. Lantapan's population revealed a steady increase since the 1970 census. In 1995, the National Statistics Office (NSO) recorded a total population of 36, 943, which increased to 42, 383 in 2000. Given this, it was projected that the present population will triple in the next 15 to 20 years. Lantapan also includes an important ecosystem, the Mt. Kitanglad Range Natural Park (MKNRP), and also encompasses the upper watershed of the Manupali River that supplies an irrigation scheme and hydroelectric power plant. Land scarcity for smallholder production is pervasive in Lantapan due to expansion of corporate banana farming. ICRAF established its second research site in Lantapan in 1994.

As mentioned above, the initial success of Landcare in Claveria encouraged ICRAF to test its applicability in other sites. Landare in Lantapan was developed using a different pathway, though most of the activities were imprints of those in Claveria. ICRAF expected that the municipal natural resource management planning process was an effective strategy for institutionalising Landcare in the LGU. In 1997, Landcare was incorporated in Lantapan's Natural Resource Management and Development Plan (NRMDP). However, a change in political leadership in 1998 provided a major setback to implementation of the plan, as the new LGU administration was unsupportive of the Landcare program due to political factionalism. From 1999, then, ICRAF became responsible for initiating and implementing Landcare. Although a technician was assigned to coordinate the Landcare activities and some of the training sessions and nursery materials were supported by the LGU on an irregular basis, the agricultural extension team as a whole was reluctant to get involved due to lack of impetus from the mayor. With little support from the LGU, the triadic partnership of the Claveria model could not be replicated. A major dilemma in scaling up the Landcare approach to Lantapan was how to preserve as far as possible the farmer-led or "demand-driven" nature of Landcare as it had evolved in Claveria, even though the approach was clearly being introduced from outside. To achieve this, ICRAF initiated a massive information campaign on broad environmental issues, and surveyed farmers' interest in conservation farming. This approach established a certain level of demand and rationalised selection of villages where efforts could be initially focused. ICRAF started to conduct training sessions and cross-farm visits in the villages that had indicated interest. There was a rapid response in terms of formation of Landcare groups and the Lantapan Landcare Association, and adoption of NVS and agroforestry technologies. Adoption in

the Landcare program was high compared to the preceding 15-year period of various project interventions in Lantapan, with adoption of contour barriers doubling within a 3-year period (1999-2002). The majority of adoption occurred in the environmentally critical upper watershed villages. About 17 per cent of farm households adopted conservation measures and the aggregate area over which conservation measures were applied was about 23 per cent of the environmentally critical lands. Thus the Landcare program made a significant impact in a short time.

However, from mid-2000 there was a decline in group formation, membership, and farmer participation due to the following: (1) employment of about 70 per cent of farmers in at least five villages in two new banana plantations; (2) proliferation of intensive swine and poultry enterprises and expansion of sugarcane farms, which changed the farming systems and opened up off-farm employment to farmers; (3) intensive production of temperate vegetable crops in the higher-elevation areas, in which farmers were tied to traders who financed their production and controlled their practices; and (4) limited LGU support. Nonetheless, while some Landcare groups had disintegrated, others had continued and new ones were formed, indicating that, with training and facilitation from a committed agency, farmers could still mobilise without support from the LGU. Thus, Landcare was successfully scaled up to Lantapan, despite limited LGU support and major economic changes in the municipality. This required strong involvement from ICRAF throughout, compensating for the lack of effective partnership with the LGU. The Landcare program had to be adapted to this political and economic environment and was somewhat distorted in the process (especially in deviating from the triadic partnership model), yet the outcomes in terms of soil conservation were similar to the Claveria case.

Case study 3: The Landcare Program in Manolo Fortich
Manolo Fortich is a municipality in the northern part of Bukidnon Province. It lies above sea level at 257 to 1979 metres. The predominant topographic feature is highland plateaus, characterised by deep canyons carved out from rugged terrains caused by river courses. The central and southern portions are characterised by gently rolling hills, while the southern part is the Mt. Kitanglad range. The northern plateau is characterised by flat lands. The general soil type is Adtuyon clay (62%). Soil erosion is normally confined to the relatively steep shoulder and side waterways. Corporate pineapple farming in has pushed small farmers towards the more steeply sloping lands and the MKRNP.

The Landcare program in Manolo Fortich started in 2000. The scaling up mode in this case was characterised by integration of Landcare activities in the municipal extension system, with significantly less institutional support from ICRAF hence requiring more support from the LGU. The municipal government and ICRAF agreed to work together in a partnership mode with the roles clarified and mutually agreed upon at the planning stage. Under this arrangement, the LGU had to manage the Landcare program, and ICRAF had to provide training for technicians and village facilitators, with minimal direct input from a half-time Landcare facilitator. The mayor institutionalised the Landcare program in the extension system, but efforts were short-lived due to the local government elections in the following year (2001). Leadership transition, organisational changes, and political issues created a dilemma for Landcare. Although, the new set of LGU officials appreciated the program and "ownership" was apparently not an issue, their willingness to take on the Landcare program was unclear. The newly crafted extension program did not explicitly carry a Landcare agenda, hence the technicians abandoned the tasks of facilitating Landcare and activities were effectively discontinued.

Most of the activities in 2000 were replications of Landcare in Lantapan, but the initial activities were somewhat different, starting with a cross-farm visit and training of village facilitators. Although scaling up the whole Landcare approach was envisaged, only the promoted technologies, particularly seedling production, were easily adopted. The process of institutional formation and partnership building were more difficult to replicate. The triadic partnership was weak and ineffective because of the individual circumstances of the key actors (LGU, ICRAF, and the farmers). First, the LGU support was vague due to a different development agenda. Second, ICRAF deliberately limited its input because of the goal to understand how Landcare could be initiated by the LGU with less external support. Third, it could be that trained farmers were not fully organised around shared interests, hence collective support for conservation efforts was lacking.

Nonetheless, farmers' uptake of technologies, particularly seedling production, had been more rapid than in the pre-Landcare days. The most practical benefit identified by farmers was improved knowledge of sloping-land agriculture and tree farming, with perceived environmental and economic benefits. Except for the seeds provided for the training sessions, farmers had established 14 nurseries using their own resources and planted 10000 seedlings of fruit and timber trees. When aggregated, these would be equivalent to nine hectares of tree plantation,

which would require a minimum of P171,000 to establish. Comparing this to the cost incurred by ICRAF for one year (P60,600), this was still a cost-effective undertaking within a sensible timeframe.

Given this short timeframe, it was quite difficult to assess the impacts of the adopted technologies and of the Landcare program in general. However, the indications were that this mode of scaling up, relying on ICRAF support for the municipal extension system rather than direct involvement with farmers, was considerably less sustainable than in the Lantapan case.

Discussion

The most practical benefit of Landcare was the rapid adoption of NVS and agroforestry practices. By the middle of 2003, the number of farmers who had adopted NVS and agroforestry practices in the three sites had reached 3371. Consequently, the total area under conservation technologies was 3440 ha. Farmers also enjoyed social benefits through improved community relations and leadership.

The initial emphasis of the Landcare program was on building farmers' capacity to implement NVS and agroforestry practices through an information and training campaign. Establishment of NVS and tree nurseries were common activities, but once the initial farming goals were met, farmers moved on to other activities. Farmers saw the relevance of Landcare based on the adoptability of the NVS system to their situation, highlighting a strong technical dimension to the Landcare approach in the Philippines. Hence, the adoptability of NVS as an effective and low-cost soil conservation measure was essential in the scaling up process. The formation of Landcare groups at sub-village level was another important activity, along with the organisation of an apex body of Landcare groups that promoted farmer-led extension of technologies. The decentralised and non-hierarchical approach embodied in these groups was found to be effective in knowledge dissemination and management. The Landcare association, as a secondary level organisation, was important in sustaining collective action and strengthening the social capital that resided in individual Landcare groups. In addition, the way training, group formation, facilitation, and the information dissemination campaigns were implemented were important for success. The training sessions facilitated technology adoption, not only because they were effective in information dissemination, but also because they fostered social bonding and networking among participants as they were less formal and focused on practical, hands-on exercises.

In Claveria, the connection of Landcare leaders with politicians paved the way for instituting LGU support in three succeeding political transitions. Hence, the political machinery of Landcare was well established at the onset within a stable political climate. In contrast, Landcare received marginal LGU support in Lantapan and Manolo Fortich because of a lingering political commotion. The Landcare triangle was thus strong in Claveria and weak in Lantapan and Manolo Fortich. Hence, this part of the Landcare triangle, although desirable, was not essential for scaling up. However, the case studies revealed just how the dynamics of local politics could positively or adversely affect program implementation. The political dimension of local governance was thus an important consideration in scaling up. The role of ICRAF in the scaling up process was also crucial. ICRAF consciously sought to experiment with different modes of implementing Landcare, with decreasing technical and institutional input, and to adapt its support to local situations. Although financial capacity was important, emphasis on functional teams, professionalism, consolidation, and ability to institute systemic personnel and structural changes were important. According to Berman and Nelson (1997) this is important to improve the organisation's ability to systematically transmit its values in constantly changing situations. Even so, the relative lack of success in Manolo Fortich compared to Lantpan shows that, in the absence of consistently strong LGU support, reducing ICRAF's direct involvement jeopardises the success of the scaling up process.

The modes of scaling up were characterised by two main strategies: (1) implementation of direct impact activities, that is, engaging an ICRAF staff member to directly influence the affected communities; and (2) relying on indirect-impact activities like training and hosting visits to influence the project partners to implement the activities on their own with intermittent follow-up and mentoring. Municipal governments were the main pathways for scaling up, but non-government organisations were also alternative pathways. The approach used in implementing Landcare was mainly integration in municipal NRM plans and extension activities. The modes of scaling up involved different levels of technical and institutional investment from an external agency (ICRAF). On the basis of the Lantapan and Manolo Fortich case studies, reduced support from ICRAF clearly undermined the likelihood of success.

Conclusion

The study found that scaling up the Landcare approach in multiple sites was possible with progressively reduced technical and institutional input from ICRAF and differing levels of LGU support, though implementation was met with issues and challenges. Nonetheless, the overall impacts of Landcare were impressive. The most important impact was in the improvement of human and social capital, enabling farmers to adopt soil conservation technologies with foreseeable improvements in natural and financial capital. It was found that Landcare could be only partially scaled up where the conditions of the original site were not fully replicated. The promoted soil conservation technologies were more easily adopted, based on their inherent relative advantage, than was the Landcare process itself. The flexibility offered by NVS to evolve into an agroforestry system was an advantage in the scaling up process, suggesting that a proven set of flexible technologies is a key element in promoting conservation efforts. However, the complex socio-economic and political environments provided a formidable challenge to the scaling up process. It was found that Landcare was more likely to succeed in areas where farmers were wholly focused on farming and free from competing economic interests and the ill effects of rapid urbanisation. Additionally, Landcare had better prospects where local politics were stable, allowing for the triadic partnership to prosper. In cases were LGU support was limited, a committed and highly competent external agency was an essential ingredient, temporarily offsetting the immediate need for LGU support.

The larger message in this study is that, successful scaling up requires a thorough examination of the nature and relevance of the program against the prevailing local conditions, and of the capacity of the institution to implement a scaled-up program in multiple sites. Scaling up conservation programs such as Landcare requires a broader and longer-term commitment than simple technology dissemination. Soil conservation efforts will thus remain islands of success unless these institutional elements can be replicated on a wider scale.

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