



Investing in rural people



# Learning from each other: South-South and triangular cooperation in East and Southern Africa

A report of the East and Southern Africa (ESA) Division

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# Foreword

“Why do we spend time and money documenting stories, when so many people still go hungry?” This valid question was asked in April 2014 at a documentation workshop in Rwanda. Should our resources not be better used to directly support poor family farmers, as do many IFAD-financed projects in East and Southern Africa (ESA)?

In support of family farmers in the region, agricultural and marketing specialists, sociologists, project leaders and many others are building practical knowledge on what works, and what does not. However, this knowledge is rarely made explicit, and if so, it is often ‘lost’ in voluminous project reports. Emerging practical knowledge and experience is rarely documented, analysed, synthesized and shared beyond the immediate sphere of the project. As a result, information that may be very valuable to others is not made available, and opportunities for learning, scaling up and out are missed. In response to this gap, IFAD’s ESA Division – facilitated by the ESA knowledge management grant, IFADAfrica, and with technical support from the Centre for Learning on Sustainable Agriculture (ILEIA) – is engaged in bringing out lessons from countries throughout ESA.

## **South-South learning**

South-South and triangular cooperation (SSTC) has become an integral part of IFAD’s support to ESA programmes. The transfer of effective approaches and technologies enables countries of the South to join forces in meeting their aims of reducing rural poverty and ensuring food security. By using experts from other countries in project design, for instance, or setting up learning and sharing opportunities in the region, IFAD has helped foster such exchanges.

In October 2013, the Fund participated in the Global South-South Development Expo in Nairobi, Kenya. Here, various partners – including IFAD – agreed to collaborate in the context of an Alliance on South-South and Triangular Cooperation for Development Impact at Scale. A joint publication by this alliance documented experiences in SSTC and identified options for partnerships and the scaling up of successful interventions. IFAD contributed by harvesting its own experience in the ESA region.

The seven documented experiences in this booklet took place in Madagascar, Rwanda and Uganda, and range from biogas systems to household mentoring approaches. However, in all cases, the initial ideas for the implemented activities came from other countries in the global South and, after local adaptations, this knowledge then spread to other countries. Thus the articles in this booklet are more than the description and analysis of specific technologies and approaches in the field. They reflect on the international processes of sharing and learning between countries of the South, as well as at local and national levels.

### **The process: From the field onto paper**

Documentation of experiences is a highly participatory process. Guided by a few simple steps, it becomes easy to turn the implicit knowledge within the minds of the experts into explicit lessons that can be shared.

In April 2014, staff of IFAD-funded projects in Madagascar, Rwanda and Uganda conducted three participatory documentation workshops, during which participants identified the important elements of each project story described in this booklet. What happened, what were the expected and unexpected outcomes, and what made it work (or not)? The process of documentation looked at both the technology or approach that was implemented, such as the system of rice intensification in Rwanda or public/private partnerships in Madagascar, and the way in which these approaches and technologies have been shared across borders and within each country.

These initiatives were then translated into separate articles. In a peer-review session – held as a side event to the ESA Regional Implementation Workshop in Zambia in May 2014 – a number of people, including project staff from IFAD-funded projects in Rwanda, Uganda and Kenya, helped further improve these articles by critically reviewing them.

### **Sharing stories**

These seven stories come directly from the experiences of practitioners: from project staff and farmers who were willing to share their stories as far and wide as possible. I hope you will find them interesting, may learn something from them, and that family farmers somewhere else in the world will benefit from this knowledge.

*Perin Saint Ange*  
*Director*  
*IFAD ESA Division*

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# Acronyms

AD2M	Project to Support Development in the Menabe and Melaky Regions
AROPA	Support to Farmers' Professional Organizations and Agricultural Services Project
AVSF	Agronomes et Vétérinaires Sans Frontières
CCI	Chamber of Commerce and Industry, Itasy, Madagascar
CIC	community innovation centre
COACLMA	Coopérative des Agriculteurs des Céréales et Légumineuses de Mahama
COOPERNIC	Coopérative Européenne de Référencement et de Négoce des Indépendants Commerçants
DLSP	District Livelihoods Support Programme
ESA	East and Southern Africa
FORMAPROD	Vocational Training and Agricultural Productivity Improvement Programme
GALS	Gender Action Learning Systems
KWAMP	Kirehe Community-based Watershed Management Project
PAPSTA	Support Project for the Strategic Plan for the Transformation of Agriculture
PROCASUR	Regional Programme for Rural Development Training
PROSPERER	Support Programme for Rural Microenterprise Poles and Regional Economies
SCAMPIS	Scaling up Micro-Irrigation Systems
SPIU	Single Project Implementation Unit (Ministry of Agriculture and Animal Resources, Rwanda)
SRI	system of rice intensification
SSTC	South-South and triangular cooperation
UCORIBU	Union des Cooperatives Rizicoles de Butare



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## Executive summary

South-South and triangular cooperation has an enormous potential role in agriculture and rural development in developing countries, both in unlocking diverse experiences and lessons and in providing solutions to pressing development challenges.

From the cases that follow, a number of common lessons emerge. First, it is important to create a space for interaction and cross-country learning. In the Scaling up Micro-Irrigation Systems project or with the household mentoring approach, for instance, workshops and ‘writeshops’ gathered people from diverse countries who could then share their own knowledge and experiences. In such spaces, participants could compare how a similar approach or technology required certain adaptations to better fit with local cultural, social and environmental contexts, offering important lessons for future scaling up.

Sometimes individual champions can make a difference. In Madagascar, the project design for a public/private partnership improved drastically when an IFAD consultant with similar experience in another country became involved. In this case, it was also an ‘unexpected outcome’, as the innovation came from a replacement for the regular consultant, who had broken his foot .... So even through small staff changes, knowledge of a complementary innovation from another country can have a big impact.

Another key ingredient in the successful transfer of approaches and technologies has been the adoption of a learning attitude, as was the case in the household mentoring approach in Uganda and with biogas systems in Rwanda. People at all levels, including farmers, technicians and project leaders, made a conscious effort to learn from their experiences and to share these lessons with others. For example, not all biogas systems are suitable for all types of farmers, and continuously searching for better solutions in other countries, as well as your own, led to new and better options becoming available to farmers.



Learning from direct practice has proved to be one of the most successful ways to get to know and understand new approaches and technologies. The Regional Programme for Rural Development Training designed the 'learning route' for this purpose. A dynamic, practical and reflective method, it has been used in ESA and has also proved to be an excellent way to learn of initiatives in other countries. It was during a learning route that an Ugandan project adopted a new tool to complement its household mentoring approach. In Rwanda, community competitions were implemented after seeing a similar, successful approach during a learning route in Peru. The physical visiting of successful initiatives – personal exchanges and 'seeing is believing' – offers enormous inspiration to try these approaches in one's home country.

The importance of adaptation also emerged from these documented cases. Inspiring examples in other regions or countries encourage people to take up certain approaches, but they can almost never be copied exactly into any new context. The community competitions concept only worked so well in Rwanda because some local 'herbs and spices' were added to the Peruvian model, fitting it into existing structures, including community innovation centres and the Inteko y'Imihigo. Similarly, *bocage* is an agroforestry system introduced in Rwanda, but farmers only adopted it enthusiastically after they experimented to find tree species suitable to their region.

One of the clearest lessons from Rwanda is that learning from fellow farmers works incredibly well. Such exchange, whether international or within the community, in real life or using audiovisual tools, gives farmers confidence that a transformation is possible in practice. Changing one's farming techniques can pose a great risk, especially for smallholders. But when farmers see that a proposed change is relatively easy to implement and has clear benefits, they are more likely to be convinced to use the system of rice intensification, to adopt *bocage*, or to invest in biogas installations. Lead farmers and community networks play an important role in this direct learning, encouraging farmers to keep trying when times are difficult, and generally creating long-term learning processes.



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## Community centres and competitions – creating an atmosphere for learning

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On a visit to the southern highlands of Peru in 2010, six Rwandan rural development professionals discovered community competitions as a way to strengthen local competencies and decentralize decision-making on development initiatives. Together with a group of some 40 participants embarking on a PROCASUR ‘learning route’,<sup>1</sup> the Rwandan representatives watched a local resource allocation committee help community groups learn about business plans by competing for financial assistance. This idea, they thought, could serve us in Rwanda, too.

*Fidele Urimubenshi, Pascaline Mutumwa and Viateur Karangwa*

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The initial ‘competition’ concept seen in Peru was the beginning. It was eventually adopted for use in the IFAD-funded Kirehe Community-based Watershed Management Project (KWAMP) and the Support Project for the Strategic Plan for the Transformation of Agriculture (PAPSTA). To make the concept viable in Rwanda, adaptations were needed. With the support of KWAMP and PAPSTA, a Rwandan equivalent of the Peruvian local committee was devised. Called Inteko y’Imihigo, it fits the culture of Rwanda. The ‘imihigo’ is traditionally a performance contract under which people agree to comply with promised actions if they are supported. ‘Inteko’ means ‘council’, working together for a common purpose. In this way, the Rwandan Inteko y’Imihigo reflects a typically Rwandan focus on commitment.

1. The learning route methodology was developed by the Regional Programme for Rural Development Training (PROCASUR). See box on page 25.

## Community competitions and Inteko y'Imihigo

In community competitions, cooperatives submit business plans and villages submit natural resource management plans. 'Winning' proposals then receive grants from PAPSTA and KWAMP to help achieve their goals. Leading up to the competition, the Inteko y'Imihigo community structure strongly supports participating villages and cooperatives. This is a council of elected representatives from public and private bodies, including financial institutions, cooperatives and others. Council members also sit on the boards of their respective community innovation centre (CIC) (see box on page 11).

Personnel from each centre train members of the Inteko y'Imihigo, who then organize the competitions. Working directly with cooperatives and villages, they strengthen the planning and management skills of participants, select the winners, and follow up on winning and losing proposals.

The day of the competition event is a festive occasion, gathering up to 2,000 people from the whole community. Participating groups present their plans and proposals to a jury in creative ways, including posters and other visual means. Winners are awarded grants in the range of one to four million Rwanda francs (RF) (about US\$1,500-6,000). By April 2014, six districts had organized 13 competitions.

As with the local committee in Peru, the Inteko y'Imihigo supports community members in competing. However, the competition rewards also needed to be adapted. In Peru, winners received a small cash grant immediately, before proceeding to the transfer of the total funds. But in Rwanda, to further encourage people's commitment, funds are distributed in a more-structured format. The Inteko y'Imihigo requests competitors to open accounts, engaging them with banks and credit unions. The goal of the competitions is to improve design and management skills, and not just to give monetary support. Although initially there was some resistance from financial institutions to transferring funds to a group of farmers, their hesitation disappeared when they saw that groups were spending the money on the agreed purposes, supported by the 'performance contract' with the Inteko y'Imihigo.

### Building skills and confidence

The first community competition took place in February 2011 in Kirehe district. "The Inteko y'Imihigo helped our cooperative become better at preparing business management plans ourselves," said Alexis Nsanzabaganwa of the Coopérative des Agriculteurs des Céréales et Légumineuses de Mahama (COACLMA) in Kigarama sector, Kirehe. "Before, we had to pay consultants to prepare our business plans. Now we are able to do it ourselves with the coaching we received." The cooperative submitted a plan for post-harvest handling, and won funds to purchase maize from cooperative members, store it collectively, and then sell it to wholesalers for a better price.

Cooperative members also benefited from the increased confidence that participating in the competition gave them. After the competition, they submitted new proposals to a bank and a local savings and credit union. Both granted them loans for their proposed plans, which included training of cooperative members in improved handling techniques.

In addition to the cooperatives submitting business proposals, the competition welcomed villages with plans for natural resource management of their direct environment. One winning village was Kagane. Community member Fidele Bucyana remembered well how the

competition and the support of the Inteko y'Imihigo helped them strengthen their skills in natural resource management. "We were aware of our problems, but we did not know how to solve them. The competition helped us do that. KWAMP taught us about soil and water conservation and composting. We learned that we need to avoid deforestation, and how we could collect water for household use."

Participants acquired new skills and increased their leadership abilities. This affected all community members, but women in particular. Louise Nyirahabineza of COACLMA testified to this. "These training courses built something in me: I am not the person I was before. Learning about how to prepare business proposals helped me overcome my fear of going to banks. I appreciate especially that they made an effort to increase the number of women who participated." Cooperative and community members are trained in public speaking and in presenting themselves favourably – to banks for example. Everyone, even the shy people, are asked to help represent the cooperative or village.

### **Sustainable learning**

Community competitions and the Inteko y'Imihigo are vehicles for learning and have a more lasting impact combined than the competition prizes alone. And it is not only the winners who benefit. Learning mostly takes place in preparing for the competition, allowing everyone to benefit. Moreover, the long-term support of the Inteko y'Imihigo as an institutionalized committee in the community, based in local CICs (see following box), helps 'losers' learn as well. They discover the weaknesses in their proposals and see how they can make improvements for the next competition. Losing is a learning moment. This long-term coaching through CICs is another adaptation of the original Peruvian concept. Winning participants benefit from the long-term coaching as well, as the Inteko y'Imihigo regularly visits and advises them long after the competitions. Payments are made in instalments, with strict criteria on what needs to be achieved before the next payment, based on each individual plan. This further guarantees long-term commitment.

An atmosphere for learning is deeply embedded in the competitions. "In the competition, nobody is afraid of presenting a bad idea," said Pascal Mudahunga, the head of Isangano village. "If you are mistaken, they ask you questions and guide you further. By having such sessions, we improved our skills in spreading a message. We are not afraid to talk anymore." The competitions contribute to greater participation, equality and a positive impact on the community as a whole. They bring communities together, building solidarity and improving relationships. One village head noted that, after the competition, villagers felt closer and would talk more when meeting in the market, for example. This resonates in the stories of the winning villages and cooperatives, as they express a desire for other community members to become as successful as they are.

Before the Inteko y'Imihigo, other initiatives that attempted to support rural communities had proved unsustainable. They did not include community members during planning and thus did not address communities' most important needs. In contrast, community competitions are all about inclusive, decentralized development.

### **Centres of learning**

CICs have proved to be a perfect institution through which to implement community competitions. They offer space for exchanging experiences and learning. The results of agricultural research often take a long time to reach farmers. The centres help fill that gap, acting as a meeting point between farmers, scientists and other experts, such as the members of the Inteko y'Imihigo. Given this, they also offer a great way to mobilize farmers.

### Community innovation centres

Community competitions are organized and held in CICs. These consist of a modern building complex with a large meeting room, library, computer room and offices – all under one roof. The same model was used for the four centres built in Kirehe district under the PAPSTA and KWAMP projects. They are primarily centres for technical and organizational support, where farmers can find information and services, but they are also places to meet, socialize and exchange ideas. The computer room is the only place in these rural areas where farmers can improve their computer literacy. The library offers issues of many magazines (including *Hinga Worora*, meaning “cultivate while breeding livestock”), information booklets on the cultivation of different crops, and other literature from the Rwandan Ministry of Agriculture. In addition to offering services such as veterinary support, the centres are also a space to share innovations in rural communities, for instance through organization of the community competitions.

“The centre opens our mind,” said Evariste Nzabandora from Isangano. “It was through the Inteko y’Imihigo that we achieved the most as a community. But we don’t expect everything, you have to put effort in yourself. We were supported by the competitions, but we needed to contribute ourselves.” It is support from the Inteko y’Imihigo and the centre that facilitates continuation of group transformation after a competition. Farmers mention this approach as a key contributor to their success in learning. Competitions are run in a transparent process, and there is also a specific effort to increase the number of women participants. This is very important, many believe, but could be improved even more. Women still tend to stay at home, and a lot could change in their households if they were encouraged more.

### The spread of a promising approach

Community competitions and the support of the Inteko y’Imihigo had a large impact on communities in Kigarama and other areas where they were held. The visible effect of the competitions in Peru was an important reason that KWAMP and PAPSTA adopted this

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promising approach. In Rwanda, they did not exactly replicate the Peruvian experience, but adapted the demand-driven approach of involving farmers in innovation and learning in order to understand what farmers need.

But it was also the way in which they learned about community competitions that contributed to their successful spread across international borders. During the learning route in Peru, the learning process was made attractive, participatory and reflective. "The approach is not boring," one participant said. "You constantly discuss and feel free to exchange, ask and learn more." Learning by seeing makes the learning process more lively and includes both beneficiaries and field staff as teachers. The approach encourages participants to continuously consider possible adaptations and implementation in their home country.

This Rwandan adaptation of a Peruvian success story has helped build a new vehicle for local capacity-building. The community competitions model involving the Inteko y'Imihigo is still in a pilot phase. Though there are no concrete plans yet to take the approach up to the national policy level, an initial evaluation of its application in the district recognized it as innovative and sustainable. However, solid monitoring of the implemented business and natural resource management plans is still missing – an essential ingredient in assessing the long-term impact of the competition system. Future competitions will help build a collection of successful and perhaps challenging experiences with the approach, from which Rwanda can continue to learn.

#### Isangano in the community competition

"We live at the bottom of the hill where rain causes a lot of damage," said Pascal Mudahunga of Isangano village. "We learned how to control erosion, and the community competition gave us extra support in that." Isangano competed as a village. They were trained to prepare a natural resource management plan, which they presented to the competition jury using drawings on 19 May 2011.

The map drawings of Isangano illustrate how rain used to damage land and houses, and the process the community intended to use to solve its problems. The second map shows activities undertaken before the competition, including the digging of trenches. The third map shows some planned implementations: planting trees and making channels for rainwater. The fourth map shows Isangano's dream for the future, with banana plantations and more cattle.

"We joined forces with many in the village, and we managed to be among the best," Pascal proudly said. The winners in Isangano village began to implement their plan after they received the first instalment of the total grant of some US\$5,000. Now, after having received the entire grant and having completed their plan, they have reduced soil erosion and Isangano has achieved its vision for the future.

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## Reducing the burden of watering with locally made microirrigation systems

Changing climates are leading to a reduction in rainfall in some areas, which is seriously affecting the livelihoods of many poor family farmers. Large-scale irrigation schemes used to be seen as the answer, but today the very opposite is showing itself more able to meet farmers' needs. A project in Madagascar shared the experiences of three continents and adapted farm-sized systems into even smaller and more appropriate 'microirrigation' kits. There were excellent initial successes in productivity and in attracting private companies to produce them locally, but further uptake has proved less rapid than hoped.

*Christin Ramaroson, Zo Mamisoa Rafenomanantsoa, Andriamihamintsoa Rasamoely and Fanomezantsoa Lucien Ranarivelo*

Malagasy farmers that have installed small-scale drip irrigation kits are clear about the benefits. William Rafanomezantsoa said, "Before I needed 60 watering cans a day for my 100 m<sup>2</sup> of garden, where, with the new system, I now use only 16 buckets of water." Also, the hand watering of vegetable crops is generally women's work, which becomes harder as the water levels in wells drop and require more strength to draw up. That is why farmers are so open to microirrigation, to save water, time and effort. Men, too, are enthusiastic about drip irrigation. After the systems are installed, men often tend to take over watering, as they like the technical challenges of operating them.

### What are microirrigation systems?

These use drip irrigation from a system of plastic pipes and tubes that direct water from a reservoir directly to the roots of individual crop plants. The water tank is a low-cost sack, drum or bucket, fixed on a home-made, raised platform. This feeds a solid underground plastic pipe, with junctions and taps that then supply rows of flexible tubes with outlets, which are buried at the base of each plant. Each row can be turned on and off individually, and the farmer adjusts the rate of interval watering to the needs of each crop. In Madagascar, various systems are available, for areas of 200, 100 and 50 m<sup>2</sup>, and for flat or sloping plots of varying shapes. The reservoir is often filled manually (but a novel 'pedal pump' can draw up to 3,000 litres per hour from wells 8 metres [m] deep). The system halves water requirements, and reduces the time needed for watering by two thirds. The growing season can also be extended further into the dry season. Other benefits include: a reduction in pest and disease attacks, because the plant leaves don't become wet during watering; less tilling, which decreases soil erosion; and efficient fertilization, because fertilizers applied to each plant are not spread around by top watering.

### Realizing the benefits of small-scale drip irrigation

The Scaling up Micro-Irrigation Systems (SCAMPIS) project ran from 2009 to 2012 and involved partners in India, Guatemala and Madagascar. SCAMPIS resulted from an innovative collaboration between the Coopérative Européenne de Référence et de Négoce des Indépendants Commerçants (COOPERNIC), a consortium of five large European food retailers, which provided financial support, and IFAD, which supported project teams for coordination and training. In Madagascar, the NGO Agronomes et Vétérinaires Sans Frontières (AVSF) implemented the project, assisting more than 9,300 poor farmers in adoption of the technology.

The project goal was to establish a local, sustainable supply chain for the equipment, while stimulating demand. In addition to promotional awareness-raising to generate interest in adopting drip irrigation, the project provided training in cultivating high-value crops and in maintenance and simple repairs to the system. Another essential component was an extensive promotion and marketing campaign for the kits, as well as support to manufacturers and retailers. It was clear that a local market for drip irrigation equipment was needed – to allow farmers sustainable access.

Many regions of Madagascar were covered, with SCAMPIS working directly in Itasy, Atsinana, Analanjirofo and Vakinankaratra. Other IFAD projects scaled out the technologies: the Support Programme for Rural Microenterprise Poles and Regional Economies (PROSPERER) in Haute Matsiatra, Vatovavy Fitovinany and Sofia; the Support to Farmers' Professional Organizations and Agricultural Services Project (AROPA) in Anosy and Androy; and the Project to Support Development in the Menabe and Melaky Regions (AD2M) in Menabe. Subsidies of 50-90 per cent of the cost price of the kits and a comprehensive capacity-building programme reinforced distribution.

### True South-South sharing

SCAMPIS also allowed IFAD to test and refine this new approach to microirrigation, which, with adaptation, could potentially replicate in a wide variety of situations. Working simultaneously in Madagascar, India and Guatemala, the project was able to draw on and share some positive experiences and challenges among these countries, despite the language



barriers. Using the experiences of widely differing contexts in the three countries, it was able to identify the importance of system *adaptability*. Availability of water, local terrain and availability of local manufacturers influenced what was needed, both in terms of the drip irrigation equipment and the process of establishing a sustainable market and supply of the irrigation kits.

Strong South-South collaboration, knowledge-sharing and learning were particular strengths of the project from the design stage to the very end. This included many exchange visits and a 'learning path' workshop in Madagascar in October 2011, which identified each country's comparative advantage in their market approach. Implementing staff from all three countries presented their experiences from the pilot phase and visited several sites to learn from Madagascar's practice.

Each country had something to teach the others. In India, self-help groups were actively involved, particularly women's groups. Women in India (and in most other parts of the world) are usually in charge of food preparation and gardening, making them particularly interested in the microirrigation system. Women were also explicitly targeted in Guatemala: 75 per cent of the farmers involved were women. Madagascar learned from them, as women's inclusion rate there was only 12 per cent. From Madagascar, the other countries learned about industry development. Involving the private sector for promotional activities and recycled materials to create a dynamic local manufacturing chain proved a success in Madagascar. In Guatemala, there was a specific focus on sharing knowledge on nutrition, food preparation and health, which was the most important pathway for introducing the drip irrigation system there.

There was much sharing, and participants were eager to continue the interactions. All gathered concrete innovations to take home. This international collaboration also helped create a knowledge base for scaling the approach up in other IFAD projects worldwide. AVSF also expressed a clear commitment at the end of the project to further South-South cooperation on this approach to microirrigation by replicating it in the Comoros, Haiti, Seychelles and Togo. Nonetheless, the workshop could have enhanced South-South sharing more – according to some participants – had it paid greater attention to issues of logistics and language.

### **Resounding successes**

Results by the end of the project in 2012 were impressive. For example, Malagasy farmers growing a crop of tomatoes on 100 m<sup>2</sup> using microirrigation reported a 140-kilogram (kg) or 120-per-cent increase in yield, on average, over traditional top watering. The technology required only half the water, saving 14,000 litres, and two thirds less time, saving 43 hours of labour. A small decrease in the use of pesticides saved US\$2.34 per year. Overall, this led to a 150-per-cent increase in the incomes of family farmers, or an extra US\$27 per crop, with several cropping cycles possible in a year. Moreover, microirrigation increased the cropping season by an average of eight weeks, and families also reported a marked increase in their ability to save.

With support from the project, several national companies began to produce and sell microirrigation kits, including Gasik'art, Innovagri and Patrakala. They invested in equipment, production lines, staff time and marketing. Four main adaptations were made in Madagascar to the originally introduced irrigation systems. These design changes to the kits ensured that they could be used with smaller and different shaped plots. And maximizing

the use of local materials and skills reduced production costs. Complete kits for 50, 100 and 200 m<sup>2</sup> retailed for US\$30, US\$55 and US\$80 respectively, with pedal pumps selling for US\$200. Manufacturers made a further special adaptation in response to farmer demand – modifications for use on sloping land.

Robson Ramanampamonjy was one of the first farmers to adopt the technology. He began using a 50 m<sup>2</sup> kit in 2010, “and now I have bought a 100 m<sup>2</sup> *maroloharano* (microirrigation kit) as it also reduces pests and diseases as the leaves are kept dry.” Other farmers also noted that it requires less hoeing and mounding up of soil, thus reducing erosion.

### Post-project challenges

At the end of the project in 2012, Fenomanantsoa Andriamanalina, then head of the AVSF/SCAMPIS initiative, identified the main challenges to further adoption of the technology. “We need to create a sustainable value chain for the kits to outscale them to other areas through cooperation with other projects and financial backers, and to have the manufacturers and retailers to ensure a ready supply that enhances farmer demand. We also need more partnerships with development stakeholders to develop the chain, including the Government, investors, farmers and manufacturers, and to include microirrigation in environmental protection policy and in regional, communal and intercommunal development plans.”

### Lessons learned

By 2014, it can be seen that manufacturers and retailers have taken up the challenge and invested in the value chain – achieving a main aim of the project. There is continuing support from IFAD-funded projects, the Government and other development initiatives. Microirrigation has been incorporated into Madagascar’s regional strategies. Demonstration centres have been established that increase farmer awareness. But not all goals have been achieved, and further uptake of the systems is still limited in most areas.

Since 2012, the constraints to more-widespread adoption have not been systematically documented, but there are clues. Following a demonstration at a new centre opened in



October 2013 at Antanetibe Mahazaza in Ambohidratrimo district, a local farmer, Emiliane Ravaoarisoa, gave her views. "I am interested in drip irrigation and could use it. It does not look complicated, but I don't know anyone who has installed such a system. I could afford one, but I am not sure about others here. However, I don't think that the benefits over such a small area would merit the investment." When asked why, it became clear that she had not understood that it could be used over many years and not just for a single season, highlighting the fact that explanation during demonstrations could be further improved.

More often, it appears that farmers misunderstand some basic principles of the microirrigation system. For instance, farmers inexperienced in drip irrigation tend to increase the outflow, because they think that would be more efficient – even though it contradicts the principle that aims to reduce water consumption, time and waste. This example underlines the need for grass-roots counselling services in close proximity to farmers.

"In three years we have sold 250 kits and 25 pedal pumps in this area, which were subsidized," said Nirinarisoa Rakotovelof of Patrakala Enterprises, the local retailer that helped with the demonstration. "We also have our own experimentation and demonstration sites, where we constantly learn and improve the kits – like creating a more-efficient water filter or a more-robust reservoir. But our constraint is still in communicating the benefits of these systems to the farmers." If the cost and time benefits over a single season, which have already been quantified, were multiplied by the expected lifetime of the kits (at least six years and possibly double that) and communicated, then this, for example, would make the retail price of the kits much more attractive.

### **More 'watering' of the project concepts needed?**

The most-often-stated challenge to improving adoption of microirrigation is how to make the equipment more available and affordable to poor rural households. Private companies now make and distribute the kits via local dealers, so availability is no longer an issue. The project still subsidizes 50 per cent of the retail price, making the systems more affordable to farmers, but uptake continues to be limited. Further analysis is needed of the reasons behind this continued reticence of farmers to invest in microirrigation, as well as more-detailed investigation into possible solutions.

Could private-sector players involved in the original consortium, or others, be convinced to invest further in overcoming these problems with further subsidies or support? With their experience in retailing, are they not also the best placed to assist new private companies in Madagascar in marketing the technology better to small farmers? Could improved microfinance and credit schemes be made available to help farmers afford the initial investment? Or might increased farmer-to-farmer sharing be an option? These are just a few possibilities among many.

The potential benefits to millions of small farmers struggling to feed their families and make a living in the face of low water availability are enormous, and this project has resulted in many success stories. With just a little more targeted effort, it appears that the remaining constraints can be overcome and this technology could then fully achieve its true potential.

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## Learning new ways from fellow farmers to improve rice yields

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A new system for growing rice spreads very quickly when one farmer learns from another. In Kirehe district in Rwanda, this has clearly been the case. The system of rice intensification (SRI) has seen a remarkable uptake in the area after rice farmers from Madagascar showed their Rwandan colleagues what works, what doesn't and what the impressive results can be after shifting to a method that uses less seed, land and water.

*Olivier Faida and Viateur Karangwa*

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Before being introduced to SRI, rice growers in the Rwabutazi community, Kirehe, faced low yields. Trained in SRI by agronomists from the Ministry of Agriculture, but also by two rice farmers from Madagascar, farmers in Rwabutazi quickly saw the advantages of this different approach to rice cultivation. "It wasn't easy to just adapt to this new way of growing rice, where we used much fewer seedlings than before," rice grower Celestin Nyecumi admitted. Before, they planted about 100 kg of seed and harvested 3,000 kg of rice per hectare (ha). Now, with SRI, they use only 7 kg of seed and have more than doubled their yields to 7,000 kg/ha. "So we decrease our expenses and use less effort, but get higher yields and profit. SRI makes rice cultivation easy." Increased incomes have allowed rice growers in Rwabutazi to pay for education and medical insurance, improve their houses and save extra money. Celestin is able to put his five children through secondary school.

### System of rice intensification

This innovative way of growing rice, commonly known by its acronym SRI, was first developed in Madagascar in the 1980s, and has since spread throughout the world. It is a flexible agricultural system that requires efficient management, but uses less water, seed and chemical fertilizers and increases crop yields significantly. Whereas traditional rice cultivation practice keeps the rice fields constantly flooded, with SRI the soil is kept alternately dry and wet, allowing the roots to take oxygen from the ground surface. Instead of transplanting seedlings in groups from the nursery to the field after three or four weeks, in SRI seedlings are transplanted individually and much younger (8-12 days), with plenty of space between them, enhancing the growth of the roots. Rather than using chemical fertilizers, compost enhances the nutrients in the soil. Weeding takes place much more regularly, at least every 15 days. SRI is not a fixed set of techniques, but offers various practices that can be adapted to the specific conditions of farmers in different contexts.

Celestin, a farmer who enjoys respect and a position of leadership in the community, constructed a demonstration plot to show his neighbours how SRI works. "All rice growers in the area are now using SRI," Celestin proudly states. Joined in a cooperative, they sell the rice together. "We were so enthusiastic," Celestin added, "because even before the Malagasy experts came we used to buy rice from Madagascar. It was the best rice available, and now we produce it ourselves."

#### **From farmer to farmer**

SRI became a success in Kirehe because farmers learned about the process and its possible benefits directly from other farmers. When an extensionist introduces a new technology, the first thing a farmer will do is take a step back and look at it sceptically. Yet they will be more easily convinced if they see the results of such a technology. Lead farmers can play an important role in this, but it is not always easy to find them.

IFAD was familiar with this successful, low-input approach to rice cultivation. To support South-South knowledge-sharing, it facilitated a learning visit by Malagasy rice farmers to Rwanda. In 2006, PAPSTA organized a visit by two technicians and two rice farmers from Madagascar to the Union des Cooperatives Rizicoles de Butare (UCORIBU), an umbrella of rice cooperatives in southern Rwanda. With the support of the Rwanda Agricultural Board and the former Institute of Science and Agricultural Research, more Rwandan farmers learned about SRI. PAPSTA then supported a visit by Malagasy farmers to Kirehe and Bugesera districts for four months in 2008. Presently, SRI is being practised in all suitable Rwandan marshlands where rice is grown.

#### **From neighbour to neighbour**

Spreading knowledge on SRI does not involve teaching a standardized technique. SRI depends on careful observation of the local context and adaptation of the principles to current conditions. Moreover, the labour-intensive nature of SRI requires farmers to coordinate their activities. Thus a constant and structured support system for implementation of SRI has been particularly useful in Kirehe: rice growers' networks.

A network was set up in each zone to facilitate large-scale replication of SRI. Within such networks, rice growers' cooperatives are joined in a local cooperatives union, which mobilizes and trains capable cooperative members to in turn train community members in the use of SRI. 'Group facilitators', such as Celestin, are motivated and experienced SRI farmers, and they offer continual technical support and supervision in their own communities. A decentralized community-based training system such as the rice growers' networks creates long-term learning processes and strengthens cohesion in the community.

Convincing neighbours are a great asset, for not all farmers automatically adopt SRI. Even though it spreads faster in countries with greater pressure on land, such as Rwanda, SRI is not ideal for all types of farmers. Because of land scarcity, some farmers have small plots – and SRI is more attractive to farmers with at least 500 m<sup>2</sup>. Smaller plots won't provide enough rice to sell to generate income for family food security. Households will need to grow other crops in addition to rice to feed the family. If rice is one of many crops a farmer cultivates, it takes relatively great dedication by the farmer to implement the time-consuming weeding necessary.

### **Students becoming teachers**

After having learned about SRI from their Malagasy colleagues and their neighbours, rice farmers in Kirehe have become experts themselves, spreading their knowledge to other districts and countries. To share the innovations that PAPSTA tested with others within the country, a PROCASUR learning route in September 2012 took farmers, technicians and decision makers from diverse regions in Rwanda to meet SRI farmers in Rwabutazi. Also, Rwabutazi rice growers shared their knowledge through study tours to the large rice-growing areas in the Southern and Western Provinces and within the Eastern Province. Celestin confirmed that these exchanges have a long-term effect: they are still in touch with the Rwandan farmers who came to visit, who sometimes consult with the Rwabutazi farmers by phone.

SRI then continued to spread to neighbouring countries, again thanks to farmer-to-farmer exchanges. Six technicians and ten groups of farmers from Burundi came and saw for themselves what farmers in Rwanda were doing. They introduced SRI in their home country and ensured that it also spread there. PAPSTA and KWAMP linked the Rwabutazi rice growers to other countries using video-conferencing as well: India, Kenya, Madagascar and the United States. Celestin and others discussed rice cultivation directly with rice growers from these countries, learning from each other. "They were very grateful, but it was also a very positive experience for us," rice farmer Jeanne Uwizeyimana added. Seeing that other countries need Rwandan knowledge empowered the farmers and increased their confidence. "It made us see ourselves as the experts, and we felt proud because people came to learn from us. They asked for our knowledge. Really, we are happy to see that other countries need us! We would really like to reach these other farmers, to ask them whether they are using what we taught them."

In addition, in collaboration with Cornell University, IFAD facilitated the wider spread of the accumulated knowledge in Burundi, Madagascar and Rwanda through a series of four instructional films. Intended as a farmer-to-farmer knowledge-sharing tool, these videos can be used in the field directly. About 15-20 minutes long each, the videos focus on specific approaches to seed germination and nursery preparation, field preparation and transplanting, weeding and water management, and experimenting with the system through farmer field schools. Experienced SRI farmers from the three countries share their knowledge

and show the impact of their shift to SRI, offering farmer-to-farmer learning on a much larger scale. In Rwanda, CICs have projected the films, which have inspired farmers and technicians to use SRI.

Throughout the world, the dissemination of SRI has been enormous. And the spread happens primarily from farmer to farmer. East and Southern African rice farmers have shown that farmer-led extension, whether through exchange visits, video conferencing or short instructional videos, is the key to spreading new approaches and technologies. Farmers know how to talk to farmers, and showing their increased profits proved more convincing than many messages farmers had heard before.

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## Household mentoring – motivating people to help themselves

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Household mentoring is working wonders in rural Uganda. Stimulating support within communities, it creates a lasting and effective pathway out of poverty for some of the most vulnerable people. Motivation is a key word at all levels of implementation. Household members improve their lives, mentors experience personal gratification in their work, and at the programme level, people are eager to share their experiences. The success of the household mentoring approach in the IFAD-supported District Livelihoods Support Programme (DLSP) has motivated others to adopt it – both nationally and internationally. But the programme itself has also been continuously learning and improving.

*Ann Turinayo, Judith Ruko and Lawrence Kasinga*

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Motivated mentors support poor families in their community in developing their own action plans and using their own strengths and resources to break out of the poverty trap. That mentors are regularly available is an important strength of this approach, and ensures lasting impact even when programme support ends.

In Uganda, an element of household mentoring had been part of the initial design of DLSP, though the step-by-step guidelines were not well developed. From earlier experiences with approaches in Zambia and Kenya, staff recognized the value of household mentoring. It adapted the programme in 2009 to include a strong community development component, with the intention of focusing on the household and on issues such as gender justice and



'near-nil' investments. Experts from the NGO Resource Projects Kenya, who were involved in an IFAD-supported project and had also been using the approach, were contacted to support the development of systematic guidelines – the Household Mentoring Handbook. And it was at that moment that the household mentoring approach was born in Uganda.

### **Problem-solving at the household level**

In Kikonda village, 32-year-old Scovia Namwanje and her seven children are one family mentored by Margret Sserunga in Kiteme parish, Luweero district. Scovia and Margret embody the deep and personal impact household mentors can have, as Margret monitors Scovia's progress weekly. "I can trust her," Scovia said. "She tells me what I'm doing right, which gives me the strength to continue. Her friendship is precious to me." When Scovia's husband abandoned the family, she lost her will to continue. The house was falling apart. "Then Margret encouraged me to fix my house and take care of my children. I still don't have enough money to pay school fees for all my children. I hope to be able to produce and sell even more in the future." Household mentors place problem-solving at the household level and do not depend on outside support.

Margret became Scovia's mentor in 2011. She taught her how to look after her banana fields, enabling her to expand her plantation. With grit and determination, Scovia managed to prepare three acres of land; she grew beans and 10 times more banana plants. The plantation allows her to feed her children, and gives her some surplus to sell. With this money, she was able to buy goats and pay for three of her children's school fees. "People come to my house and are surprised. I am poor, but I am able to take care of my children now. They recognize that I work hard, and that my children look well fed."

#### **What is household mentoring?**

Household mentoring is a development partnership based in the community. A locally trained mentor visits vulnerable households with the aim of sharing knowledge, skills and information that will foster the personal, social and economic growth of household members. Mentors discuss with each household what caused the current situation, what its members want to achieve, and how they can achieve it. Together they set priorities and make an action plan. All adult members are engaged in the process, which helps the household 'open up', better understand their vulnerabilities and also appreciate their capabilities.

During a participatory rural appraisal exercise using wealth-ranking tools, communities select the households for inclusion. These may include families with poor housing, nutrition or access to services, but that do have access to resources that can be used for their benefit. Every family has something that helped them survive until now, whether it is their plot of farmland or selling their labour. Importantly, they must be willing and able to respond to mentoring.

In 2010, DLSP trained the first mentors in 13 districts. In each parish, two mentors each start coaching 10 new families per year for a period of two years. The action plans they produce together help households begin investing in improvements that do not require external inputs. Mentors monitor and review these plans and, after one year, they may approach the local government for inputs and services to boost the households' development, such as seedlings, tools or literacy training. In this way, mentors link households to other services and groups, which helps them continue improving over the long term.

The household mentoring approach builds the confidence and capacity of family members to use their own resources, multiplying the initial inputs through the family's efforts. In the whole of Uganda to date, some 600 fully trained mentors have already reached more than 18,000 households.

### Learning from each other

Margret and her fellow mentor in Kiteme, Sylvester Kasozi, have worked with 80 families since they started in 2011, and have covered 6 out of 15 villages in the parish. But not all the mentored families in Kiteme parish have been equally successful. As with Scovia, some now have basic sanitation and can consistently feed their families, while others are improving at a much slower pace. Logistical issues demotivate families, such as delays in receiving promised inputs. A few families are interested mainly in the inputs the programme provides, and not necessarily in changing the way they run their households. The mentors and their support system actively address the problems families face, such as persistent gender inequalities (see box “The gender challenge”). Mentors in each subcounty meet quarterly to discuss the difficulties they are each confronting. Community development officers use the mentors’ experiences to develop additional training based on the most pressing problems.

In all areas in which household mentoring has taken off, much informal learning takes place. To strengthen their work, many mentors establish support groups that include various households. This helps families tackle problems they cannot handle on their own, and spreads the success of the household mentoring approach by showing positive examples. In such a setting, mentored families can start mentoring other families. One exceptional woman, Mrs Byalero of Bukoba village, Masindi district, heads a mentored family and experienced the effectiveness of the mentoring process herself. “I didn’t want my neighbours to lose out,” she explained. She started a mentoring group, and in that way developed her leadership skills. She also established a farmers’ group in which to learn from each other and to improve access to services and markets.

### Motivated mentors

Mentors work on an almost completely voluntary basis, making it a sustainable approach. They receive only a small allowance and a bicycle, but there are many more-intrinsic motivations to be a mentor. Sylvester explained, “Being a mentor has made us more respected in the community. ‘What a good man,’ they think when they see me. Also, I’ve learned so much from the families themselves. They have so much knowledge.” As respected community members, mentors are often chosen to be leaders for other projects that come to the community. Margret, for instance, is a village health worker now as well.

#### The gender challenge

The main challenge for families in improving is usually unequal gender relations, Margret and Sylvester lament. Of the 80 families mentored in Kiteme parish, women head 36. Overall, these families are doing better. “They work hard and have more perspective on the importance of food security,” according to Margret. “In the families with men and women at the head, men still tend to be overbearing and leave less space for women’s decisions.”

Despite the setup of the household mentoring approach, which specifically addresses intrahousehold issues and aims to transform gender relations within the family, this is not always easy in practice. Mentors try to train both men and women, but often women in these families are not encouraged to make decisions. Wives have turned away mentors when the husbands are not home, as the wife believes she shouldn’t be involved in decision-making. “We emphasize that the development of the home is up to both of them,” said Margret. Slowly, changes are being seen. Women take up some ‘male’ work such as repairing the walls of the house, and men engage more in traditionally perceived female tasks such as putting away the dishes. If the husband continues to refuse to share responsibility with his wife and children, the mentor approaches village leaders, who will then address such issues in community meetings.

In their training, mentors have learned about integrity, approachability and confidentiality. This is also a motivation for Sylvester to continue as a mentor. "Being a mentor inspires me to be exemplary myself. I need to practise what I preach." Building trust is an important part of their work. When households are selected, mentors do not judge the families for what they haven't done well. As a result, both mentored households and others from the village confide in them.

### **Continuous learning**

Not only do mentors learn and improve their work, but a learning attitude spreads throughout the programme. Mentors tried to undertake 'visioning exercises' in the households to help families picture their desired future, but in the past mentors usually recorded the family's vision in writing and kept the records, since very few of the farmers are literate. DLSP then introduced a tool for all households, including illiterate ones. This 'visioning' tool had been successful elsewhere.

#### **The 'learning route' and household mentoring**

PROCASUR developed the learning route methodology, which emphasizes learning in the field and exchange among stakeholders. Participants are taken to visit local initiatives that embody best practices. Local actors become trainers of the route, sharing their knowledge and innovations. Participants come from diverse professional and geographical backgrounds, and collectively analyse the cases they visit. While travelling the route, they work with facilitators and other participants to identify specific lessons relevant to their individual contexts. Throughout the whole journey, time is dedicated to the elaboration of 'innovation plans' that will introduce innovations and changes in participants' institutions and organizations. This approach allows innovations to travel from one place to the next.

The learning route has proved to be an effective methodology for sharing knowledge of the household mentoring tool. In contrast to the more-common 'exchange visits', learning routes offer an opportunity for two-way learning, as hosts and visitors exchange experiences. In addition, the methodology encourages participants to define their own learning objectives beforehand. This enables them to draw concrete lessons to implement in their home country, region or organization. Development of the innovation plans further stimulates this purposeful learning. PROCASUR repeatedly contacts participants after the route to follow up on their progress and on implementation of the plans.

By combining learning from what actually works in practice and enjoyment, learning routes trigger the creative transfer of ideas in real time. Even though it is not always easy to return to a formal session after informal 'fun' with fellow participants, the strength of the methodology lies in this personal contact. Apart from the cases visited, the route also offers ample opportunity to learn from others and their experiences all over the world.

Two learning routes took place in Uganda in which household mentoring was featured: "Gender and rural microfinance" in March 2011 and "Boosting the contribution of value chain development to gender justice and pro-poor wealth creation" in September 2012 – the latter in collaboration with Oxfam Novib (the Dutch affiliate of Oxfam International).

The learning route methodology has inspired IFAD knowledge management within the country as well. The methodology will be simplified and incorporated in future exchange visits in the country. Still following the guiding principles of preparation, learning, innovation, implementation and review, it will be adapted to intra- and interprogramme levels at which everyone can use the key principles to successful learning.

## Gender Action Learning Systems<sup>2</sup>

GALS is a community-led empowerment methodology that aims to give women and men more control over their lives and catalyses sustainable gender justice. Women and men develop their individual visions and road maps for change to help them forward. A key focus is breaking through the gender-based barriers that prevent the family from achieving its vision. The methodology uses images to document these analytical models. There are several GALS tools, including the vision journey tool. Rather than having the mentor write the household action plan in a book that s/he keeps, plans are drawn by household members on flipchart-sized paper or on sisal sacks, which they then keep for themselves. By making and keeping the plans at home, households participate more actively and follow up on their plans more consistently. In this way, visioning is a tool both for planning and for monitoring how the family is developing.

PROCASUR, IFAD and Oxfam Novib organized a learning route in 2011 to visit the Bukonzo Joint Cooperative in western Uganda. Participants discovered Gender Action Learning Systems (GALS) and the drawn 'vision journey' tool (see box "Gender Action Learning Systems"). GALS help families plan and monitor their progress in a way that increases their ownership of the planned development. The programme immediately recognized a way to fill the gap in its existing mentoring approach. The drawn vision journey helps develop and simply, visually capture each family's action plan for the future. This diagram is kept in the household, becoming the major driving force for the family in following their plan, reviewing progress and holding themselves accountable.

The programme has introduced the vision journey tool to over 90 per cent of household mentors, as well as to programme-supported farmers' groups as a business planning tool.

### A sharing attitude

With its years of experience with household mentoring, DLSP has been able to influence others to adopt the approach. Through learning routes and exchanges during IFAD meetings and the IFAD Uganda Sharing Platform, people have had the opportunity to learn between projects. After one such meeting in December 2013, staff of the Ugandan National Agricultural Advisory Services requested training on household mentoring so they could implement it nationally. And after a recent meeting, the Vegetable Oil Development Project decided to take it up in Kalangala and in northern Uganda.

To spread knowledge on household mentoring, the inclusion of community development officers in learning processes is an important strategy. They coach and monitor the mentors, and have a good understanding of how household mentoring is implemented in practice. The philosophy is that there are more experts at the district level, where the officers have first-hand experience, than at the programme level in Kampala. Using community development officers works. It reduces costs, because there is no need to call in external experts. Proponents of household mentoring make a conscious effort to train such officers all over the country, as it gives Uganda a large group of experts to disseminate the methodology and increase institutional memory for the moment when IFAD support might end.

### Wider learning

Household mentoring is an approach that works wonders in Uganda – but not only in Uganda. Following the learning route in 2012, the technical division of IFAD organized a 'writeshop' on household methodologies in Uganda. Staff from IFAD-funded projects – and other organizations

2. GALS is a key part of Oxfam Novib's Women's Empowerment Mainstreaming and Networking (WEMAN) process for gender justice in economic development interventions, including market and value chain development, financial services and economic policy and decision-making.

in Africa with experience in working with the methodologies – gathered for a participatory event in October 2013. Participants came from nine countries, including Kenya, Mozambique, Sierra Leone, Swaziland, Uganda and Zambia, to discuss what works – and what doesn't. Using role play, discussions and campfire storytelling, participants drew out key lessons on household methodologies. The workshop organizers recorded and translated these lessons in a sourcebook due for publication in July 2014.

The writeshop was another opportunity for DLSP to share its experiences and learn more ways to improve the impact of its work. Telling cultural stories around the campfire, a method used more often for challenging conceptualizations of gender, helped in comparing cultural outlooks on gender and effects on household approaches. The presence of practitioners from different regions of Africa allowed for greater exchange on the unique qualities of household approaches in different contexts – including that of Uganda. In the future, this will allow others – new to the household approach – to pick and choose from a variety of tried and tested styles and methodologies. For DLSP, this learning event strengthened its resolve to ensure that household mentoring improves gender relations within the mentored household.

Household mentors support families in accessing the inputs they need for their development plan, but they also guide family members on a path towards more confidence and more equal relationships within the family. Families benefit from the inputs the district supplies, but the main strength of the household mentoring approach lies in building the strength of the household, itself, through community support that lasts beyond the lifespan of any external project. Using trained mentors to support families has proved to be an extremely effective and sustainable tool for rural development. The main lesson learned from household mentoring is that changing the mindset within a household is the key. And this is a lesson that mentored families, mentors, district officers and programme staff have all made an effort to share far and wide.

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## From cow dung to biogas – reducing deforestation and the drudgery of fuelwood collection

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When the first biogas systems were installed in Rwanda in 2007, results were mixed. Biogas seemed to be a good solution for the problems of deforestation and lack of firewood. Yet the initial Chinese fibreglass model seemed inefficient and costly, and the materials were difficult to obtain. To enable Rwandan farmers to benefit from biogas in their homes, the IFAD-funded KWAMP learned from various countries and improved the suitability of the systems to diverse types of farmers through step-by-step adaptation.

*Jean de la Croix Ntawukuriyayo, Raymond Kamwe and Viateur Karangwa*

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In providing gas for cooking, biogas systems reduce demand for firewood. This in turn reduces deforestation and the time spent by children and adults collecting fuel. Not cooking with wood in enclosed kitchens also reduces respiratory disease, especially among women, while the rich manure the system produces increases crop yields. Salim Sibomana and his wife Shakila Nyirahirwa of Nyarubuye sector, Kirehe, used to buy petrol to light their house, and faced difficulties collecting enough firewood for cooking. “For us who cook, biogas brought a big change,” Shakila explained. “Cooking is faster and I don’t need to worry about having to get firewood. Now when we come home late in the evenings, we can eat sooner. This has also reduced quarrels within the family!”

## Biogas

Using animal dung, biogas digesters produce gas for cooking and lighting. Household members feed dung mixed with water into a sealed tank, where anaerobic bacteria multiply and convert some of the slurry into combustible gas. The by-product is a valuable organic fertilizer that does not require composting and can be used immediately on farmers' fields. Common biogas systems require a permanent installation, often underground, that is relatively expensive and time-consuming to install. A new 'flexi-biogas' system has been developed, which uses, instead, a tunnel made with plastic sheet and metal supports, like a miniature greenhouse up to 6 m long, 3 m wide and stands 1.5 m high.

Not only the gas, but the high-quality fertilizer from the system has an impact on the household. Salim and Shakila have increased their yields by about 250-300 per cent and are able to use previously barren land. "We used the biogas fertilizer on our plot close to the road, which had very bad soil. Before we didn't even plant it, but now we can grow bananas there that prove to be much better than the neighbour's."

One of the biggest changes – and one that wasn't expected – has been for younger family members. Using biogas to feed a gaslight, children can now study later in the evening – even until 10 p.m. The neighbours' children come to study in biogas households. Children's school marks have improved, because they work more and study together. The benefits of the family's biogas system have not remained unnoticed, as Salim proudly stated. "When visitors come, they ask, 'How did you improve your lives so much?' We say, we eat because of cow dung!"

### From Nepal to Kenya

Salim and Shakila are using a biogas system that KWAMP adopted from Nepal. In contrast to the Chinese system, it comprises an inlet with mixer and tank that can be built by masons using locally available resources. It costs less, but needs more labour, taking 12 days to install. The Ministry of Infrastructure sent staff to Nepal to learn about the system. On their return, they trained Rwandan companies and technicians, while modifying the concept along the way to better suit the Rwandan context.

Still, technicians noticed that the Nepalese biogas system was not ideal. It works well for farmers such as Salim and Shakila, who have at least three stall-fed cows and are able to pay a small contribution. Technicians then tried to interest government programmes and domestic companies in a different system – and with success. The Kenyan company Biogas International Ltd developed a modified flexi-biogas system that is cheaper, easier to install, produces gas more quickly and requires less dung. IFAD supported a trip to Kenya by two Rwandan technicians to learn about the system directly from Biogas International. With a few adaptations to improve the quality, flexi-biogas was ready to be introduced into Rwanda in December 2012.

### More flexibility

Ten households have now piloted flexi-biogas systems in Kirehe district. All are still working and being used daily. Esperance Mukakarori of Nyarubuye heads one of these families. Her cooperative had identified firewood collection as a major problem, as it limited the time

available to work in the fields. KWAMP approached Esperance and others in more-difficult situations to pilot flexi-biogas. Prerequisites for selection were: at least one stall-fed cow in the household compound, access to water, and motivation to improve their lives.

A private company came to Esperance’s homestead to install the system and showed her how to operate it and make minor repairs. This inclusive process helps families maintain their systems, even when technicians are unavailable. “Because I saw how it was installed, I am able to fix small problems myself,” Esperance noted. She demonstrates this immediately: when the stove does not light due to a blockage, the family ‘engineer’, her son, comes to fix it immediately. One minute later the stove is working. Esperance also discusses the challenges and benefits of flexi-biogas with the nine other recipients of the system in the area. Six of these are widows, as is Esperance, and two are orphans that head their own households. These households support each other, talking about the changes that flexi-biogas has brought and discussing how to solve problems.

### Benefits

“Once the system was installed, I saw that many things changed,” Esperance said. “I use the gas to cook everything, even beans and maize that take a long time to prepare. I don’t need any firewood at all anymore. I have so much more time in the field now. I can put the beans on to cook and go out again to work.” In addition to gas for all her cooking needs, as with Salim and Shakila, the flexi-biogas system provides Esperance with better manure for her crops. Her land is more productive now: where she produced 100 kg of maize before, she gets 1,000 kg now. Her two sacks of beans grew to five. Bunches of banana that would weigh 5-10 kg now weigh up to 50-60 kg. Unfortunately, her flexi-biogas system does not provide enough pressure to light Esperance’s house, as is the case for Salim and Shakila. But she has a plan for this, as she is saving the extra income she earns for a solar panel and lighting system.

### Financial contributions

From both families, tales of the success of the biogas systems have spread throughout the community. Esperance’s neighbour, for instance, was very positive. “When I come here and see how much it is helping my neighbour, I would pay for such a system myself if I could do so in instalments.” Salim also hears positive comments from his neighbours, although they are reluctant to pay for the more-expensive Nepalese system. Price was an issue for Salim and Shakila, too, until KWAMP and the Ministry of Agriculture offered to contribute. Even the flexi-biogas system is not widespread due to financial limitations. Although it is cheaper

	Cost	Installation time	Materials	Production time (dung to gas)	Cows needed	Benefits
Nepalese biogas	US\$950	12 days	Underground, concrete	4 months	3	Gas and light
Flexi-biogas	US\$650	5 hours	Above ground, PVC tarpaulin	6 days	1	Gas



than the Nepalese system, costing RF 450,000 or US\$650, compared with US\$950 for the Nepalese system, it is often still too costly for many farming families.

Families that do invest, however, see an increase in their sense of ownership, with a positive impact on the durability of the system. "Because I invested my own time and resources," Salim said, "I am committed to protect my biogas installation. I won't let it fall to pieces." Before they made this investment, KWAMP discussed this necessity for commitment in detail with farmers. Even though recipients of the pilot flexi-biogas installations received them without making any financial contribution, they would be willing to pay if necessary. "If I didn't already have the flexi-biogas system, knowing its benefits now, I would have happily paid a contribution myself," Esperance said.

### **What works?**

So what contributed to the successful spread of biogas systems in Kirehe? The power of audiovisual tools had a big impact. Films were used to disseminate information on the systems. Salim was hesitant at first, he said. "We were not convinced about the system at the beginning. But then we saw a documentary at the local community innovation centre that showed us the benefits of the biogas system and the results that other farmers had experienced. That took away our fears." In addition, eligible farmers received technical assistance from project staff, who explained the system, so farmers are able to fix minor problems themselves.

Continuous improvements and adaptations to the system helped the spread of biogas. Technicians and project designers learned how to adapt it, improving cost effectiveness, ease of production and repair, flexibility and practical feasibility. Before, for example, farmers needed three cows to feed a biogas system, now they need only one. In this way, the system can become more inclusive, but further improvements are still needed. The project is still in its pilot phase, but much has been learned. A proposal is being developed to support the installation of 100 more flexi-biogas systems, assembled in Kenya and set up in Rwanda. Plans are also being made to establish a branch of Biogas International Ltd in Rwanda, which will train more technicians in the installation and use of flexi-biogas.

The cost of the system still appears to be the main limiting factor preventing further uptake. For Salim and his family, it was only when financial assistance was pledged that it became a viable option. But proponents of biogas are trying to find other solutions. KWAMP had interested government and private-sector actors in the flexi-biogas system, in the hope of securing more financial support. More subsidies or cofinancing could be the answer, yet the sustainability of such solutions might be questioned. Credit schemes or microfinancing are also seen as possible ways to support farmers in installing their own systems. Links with financial institutions have proved successful in Kenya, where flexi-biogas was introduced earlier and is spreading. In Kenya, other innovations have been developed, such as biogas producers sharing gas with their neighbours using balloons. As the pilot project in Rwanda learns and develops further, incorporating new improvements and structures, flexi-biogas will hopefully reach many more households.

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## A public/private partnership pays off for small-scale pineapple farmers

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Much has been done to improve agricultural productivity in Madagascar. But increases in yields have not always seen corresponding increases in farmers' incomes. Why? Farm produce needs to be sold to make money, but where are the markets, and can farmers organize themselves to identify them? An IFAD-funded programme adapted a market-led approach that proved successful in Burkina Faso and that also began to show promise in a community of pineapple farmers in Itasy, Madagascar.

*Harimisa Andrianony Ramahazo, Tahina Razanapahatelo, Lalatiana Maharavo, Malalanirina Rabearivony and Vladimir Ratsimandresy*

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Elisabeth Razaiarisoa held up one of her pineapples with pride and a large smile. "Since our cooperative signed this contract with the company to buy our produce last year, my family's income has gone up a lot." Elisabeth has not always been this positive about her income. In Antanetibe, Soamahamanina and neighbouring villages in the Itasy region of Madagascar, the land is particularly suitable to growing pineapples. But during the peak season from January to March, it is difficult to sell them. In la Grande Île (the big island) as Madagascar is known, distances are huge. At 1,600 km long, almost 600 km wide and with all but the main trunk roads in very poor condition, transport is a key issue. Buyers certainly don't want to go to every farm.

Women would sit by the roadside all day hoping that passing traffic would stop and pay them their asking price of 1,000 Malagasy ariary (MGA) per pineapple, less than half a United States dollar. Or they could try their luck by taking a load to the capital city, Antananarivo, some 65 km to the north-east. Or selling to passing middlemen for a much lower price. In the end, much of the fruit tended to rot away, unsold.

The Chamber of Commerce and Industry (CCI) in Itasy was aware of the plight of pineapple farmers, and had also been working since 2008 with the IFAD-funded PROSPERER programme. This programme aims to improve the livelihoods of farmers by developing microenterprises, but initially by providing technical and financial support to increase on-farm productivity. It soon became clear, however, that the actual yield did not matter if farmers were unable to find a market for their harvest and receive a reasonable price for their produce.

### **A business model adapted to Madagascan markets**

Enter Guy Raoul Sanon, an economist brought in as a consultant to work with PROSPERER in 2012. He saw the problem and proposed a solution based on his experience working on another IFAD project supporting rural microenterprise in Burkina Faso from 2000 to 2008. There, first with honey and then with other produce, he saw how a 'markets first' approach appeared to work time and time again, and thought that with some adaptation, it could also work elsewhere.

In Madagascar, he first proposed setting up a national database of all potential buyers of different agricultural products, as the first step in organizing markets for rural entrepreneurs. PROSPERER then set up linkages between specific businesses and new and existing farmers' groups, and formalized these linkages in *couplage*, or 'OP/OM' as it became known (producers' organizations/ market operators). Businesses set certain demands in terms of quality and quantity. PROSPERER enables producers' groups to meet these demands and makes an 'upgrading plan' with both producers and businesses. Engaging partner organizations and sometimes the buyer, itself, PROSPERER arranges training, advice and financing of farmers. This form of public/private partnership operates on a small scale, concentrating its efforts on a specific linkage. In this way, the programme can better measure and evaluate processes and impact.

Public/private partnerships are nothing new, but the way the process was adapted and adopted appears to offer a useful example of how lessons are learned and transferred between countries. In Madagascar, structured agricultural procurement is poorly developed. Long-term linkages are rare, and public support for creating such linkages is nearly absent. Of the numerous successes applying this approach already seen in Madagascar, the case of pineapples offers a good, representative example.

### **A new business, cooperation and aggregation**

In 2012, a new company, HavaMad, started building its first fruit processing factory in Madagascar – a state-of-the-art multimillion dollar plant. It began looking for reliable sources of top-quality pineapples along with other fruit, primarily for export to Europe as juice and pulp. "On our first look on the Internet we found PROSPERER and made contact," said Cédric Reyes, in charge of sourcing for HavaMad, "and they put us in touch with their office in Itasy." Dany Rasolofoniaina of the CCI continues: "It all started with Elisabeth and a

few other women, and then they convinced farmers from 10 villages to form a cooperative.” With the facilitation of PROSPERER and the CCI, 38 farming families officially formed the Faharetana cooperative. Twenty-four members immediately received basic management training. PROSPERER also provided help in arranging initial meetings with HavaMad, and continued its support through signing of the first guaranteed purchase contract in January 2014. It also cofunded a pineapple storage and collection centre, along with HavaMad and the cooperative. Producers were reticent to accept the initial price offered. But the programme then played a vital role as mediator during negotiations on the contract details, and especially the price, helping farmers calculate their costs of production and understand what could be ‘fair remuneration’ for their labour. When farmers saw that the price provided a 30-per-cent net benefit, and that they could sell their whole crop and not just a small part of it, the company’s offer became acceptable.

It wasn’t all plain sailing at the beginning though. There were disagreements between cooperative members, some with less than a quarter of a hectare, others with six hectares. There were issues between the villages. Some were nearer to the collection centre, others much further away. PROSPERER and the CCI also identified other constraints and critical points, and helped resolve them. Moreover, with a view towards transparency and to avoid possible future problems, the contract was signed in the presence of local government officials. But HavaMad also worked directly with the cooperative to find solutions together, for example making arrangements for payments to be made promptly and to everyone at the same time. All the cooperative’s problems soon evaporated, in any case, as the money began flowing in.

### **Quality – towards organic production**

HavaMad also had issues regarding quality control. It wanted chemical-free fruit. It showed farmers the benefits of manure over granular fertilizers, and insisted that it wanted ‘paint-free pineapples’. To reduce the risk of theft, marking ripening pineapples with paint is a common practice among local farmers. However, even when they agreed not to use paint, there were no reports of increased robberies. But some farmers said they had found large thorns in their fruit, and they suspected neighbours who weren’t in the cooperative of being responsible, jealous of the new contract. The new cooperative had agreed not to accept new members until it could at least satisfy the demand of HavaMad and sell all its members’ produce during a good year, leading to discontent among those who had been denied membership.

HavaMad intends to become organically certified, and it has set up all the procedures to date with this in mind. The company has individually identified and mapped all the pineapple fields by GPS, and it can already trace each batch of fruit juice or pulp back to a specific farmer. It is also investigating how it can become involved with other partners, who could turn the collection centre into more of a community information centre, offering advice on health and the environment. This would be a most welcome, but quite unexpected benefit of such a public/private partnership – but one that should be noted and attempts made to replicate it. The possibility of additional impact could be enormous.

### Young farmers set up a dried pineapple business

In another part of Itasy region, also famed for its pineapples, the problems are even worse. Many kilometres along a very pot-holed dirt track lies the village of Ambohitrambo, where even selling your pineapples on the nearest tarmac road is a challenge. Seven young pineapple growers, who had participated in PROSPERER agribusiness vocational training for youth in this area, had an idea. They had seen dried pineapples for sale and wondered why they couldn't do the same. Jean-Claude Ramiaramanana, president of the youth cooperative Taratra, formed after the training, said, "We all produce pineapples, but it is the middlemen that make all the money, if any even come this far. So we thought – why not process them ourselves?" The programme, glad to encourage the use of new technologies, equipped a building for collecting, cleaning and cutting the fruit, and supplied four simple solar driers. "With these, we can process 100 pineapples every week during the December to March season," Jean-Claude noted, "and we sell the packets of dry pineapples to a wholesaler for MGA 2,500 each."

The cooperative members meet each week to divide the work. Their profit margin is MGA 2,000 (US\$1) for every five packets sold, with 10 per cent going to the cooperative and the remainder divided among them. Now they are experimenting with other fruits, so they can produce during the rest of the year. Dried lychees are already proving popular, and they will try banana next. But demand far outstrips supply. "Thanks to PROSPERER," concluded Jean-Claude, "we have created a business that is evolving, and they are now helping us build a gas-fired drier so we can expand our production even more and hopefully be a model for other young people to follow."

### Lessons learned

This success is partly owing to the facilitating of connections at multiple levels by PROSPERER. The programme aims to strengthen commodity chains and integrate traditional systems into modern value chains, with the aim of increasing the incomes of poor farmers. However, it also focuses on offering effective business development and capacity-building services for the development of small and rural microenterprises. It is a win/win approach. Through business/ cooperative linkages, PROSPERER encourages businesses to invest and to build relationships with farmers. Creating trust between the various parties is an important strength of the programme.

PROSPERER did not originally consider demand by larger-scale business as an entry point, which had been a successful approach in Burkina Faso. But when it applied this in Madagascar, it proved to be the turning point. In identifying demand by larger businesses and then linking them with producers' groups, the business/cooperative linkage was seen to be effective. Moreover, it has been this continued programme support – from initial contacts to contract signing, but also follow-up monitoring and assistance as required – that has really helped ensure success and sustainability.

### Advancing, but with a watchful eye

Not every private company is as honest, open and altruistic as HavaMad. This is certainly a story that shows considerable promise for public/private partnerships, but projects promoting market-led initiatives need to be cautious. Family farmers and smallholders have suffered for so long at the hands of exploitative buyers, corrupt officials and merciless multinationals that

special care must be taken to ensure that the bad practices of old are not repeated. In this case, a trusting relationship has developed between the company and the cooperative, thanks in large part to the facilitation of programme staff and the transparent and just processes they have helped instil, benefiting all parties.

Additionally, such a process of 'aggregation' may only work with farms of at least a certain size and that have adequate amounts of excess produce to sell. With 90 per cent of the Madagascan population living on less than two dollars a day, it is essential that other approaches are tried and tested (see, for example, the box, "Young farmers set up a dried pineapple business").

Moreover, promoting the monocultural production of cash crops for export also has certain inherent risks in terms of negative impacts on the development of agroecology practices and maintaining family nutrition, even if it is equitable and organic. The production system could be made more sustainable, for example, by promoting the use of leguminous cover crops, agroforestry and intercropping with other food crops.

### **And to a sweeter future**

Cédric Reyes of HavaMad was very positive. "We had certain apprehensions at first, especially during this first campaign, but we were very happy with how the farmers applied themselves and showed dynamism and flexibility – bravo to the coop!" He added, "We had problems at the outset with our new production line and had to reduce our expectations this year, but we were still able to purchase and process more than 70 tons of pineapples from them." This season wasn't a good harvest either, with two frosts and a hailstorm having reduced the yield. "But next year we aim to purchase much more if they can provide them. Let us see."

"Pineapples are our livelihood," said Elisabeth, "and already after this first season we have opened savings accounts, which we never had before. We can invest in our farms and our future, thanks to our new cooperative and this contract. We now have savings in the bank and are linked to microfinance institutions. This has changed our lives."

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### Cassava creates employment for young farmers

Young people in Andonaka, as with many in rural Madagascar, begin work by helping their families survive. Without a clear vision, they follow their parents' footsteps and cultivate plots of family land, earning little more than a dollar a day. To help them out of poverty, the Ministry of Agriculture and PROSPERER joined forces in 2011 to promote rural entrepreneurship. In Andonaka, Ambalavao district, 85 unemployed youth were allocated four hectares each, given cassava cuttings for planting, and trained in improved cultivation, processing and business management. Today, they all have stable, profitable work, and other local farmers have also benefited, with an estimated US\$38,000 of additional business sales generated in 2013 thanks directly to this initiative.

"We are grateful for the opportunity of acquiring farmland, and our standard of living has improved in such a short time," explained Oliva, one young farmer. Marie Antoinette added, "And we produce eight tons of cassava per hectare using improved techniques on land that used to yield only four tons." These practices were transferred through farmer field schools, with additional support from the Common Market of Eastern and Southern Africa (COMESA). A store of agricultural tools and two ploughs were provided for the use of youth association members, who also receive ongoing advice from a business consultant based onsite. But this area is well known for a high level of crime, and insecurity remains a major issue preventing investment.

Support for young people was coupled with the introduction of new equipment for producing high-quality cassava flour, adapted by the International Institute of Tropical Agriculture (IITA), based in Nigeria. Before, cassava was either sold fresh at the weekly market, or as dry cassava at relatively low prices. "Now we make a lot of money from transforming it ourselves," said a pleased Clarisse Mpisambovo. "This leads us to work harder and produce more." PROSPERER works with the private sector in rural areas, but establishing new microenterprises is not an easy task. The programme learned that technical support alone is not enough and that there must be triggers to help the entrepreneurial spirit evolve. The deputy mayor of Andonaka, Dieu Donn  Randriamalala, confirms the positive results: "The programme has had an undeniable impact on the lives of young people in the region."

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## Live fencing – an agroforestry practice increasing soil fertility and livestock production

In response to low soil fertility and environmental degradation, initiatives from other southern countries can offer inspiring solutions. In Rwabutazi in Kirehe district, Rwanda, one solution was to grow hedges in and around fields to restore soil fertility, provide animal feed and separate plots. This agroforestry technique, called *bocage*, has been rapidly adopted in the area owing to inspiring lead farmers, who showed community members how to achieve the same successes they had had.

*Patient Maganya and Joseph Nsabimana*

Low yields, unproductive land and environmental degradation had opened the minds of farmers in Rwabutazi to new approaches. Although technical support from extension staff was appreciated, it was fellow farmers that convinced community members to overcome their initial fears and adopt *bocage*.

In 2006, technicians from PAPSTA introduced *bocage* in Kirehe. On a study tour to Comoros in 2005, two technicians from the Rwandan Ministry of Agriculture learned about *bocage* and suggested its introduction into Rwanda. When PAPSTA identified soil erosion as a major challenge to the region's agriculture, it looked at different possible strategies to



## **Bocage**

*Bocage* is an agroforestry technique that protects and restores soil fertility and increases the production potential of the land. It involves enclosing a parcel of farming land with hedges or 'live fencing' in single or double rows, and ideally includes additional rows within the field as well. In Rwabutazi, farmers plant double rows of trees, mainly *Calliandra calothyrsus* and *Leucaena diversifolia*, around and within their fields. The hedges protect crops from the sun and wind, while roots and leaves increase the recycling of nutrients in the soil. And *bocage* has other benefits. The straight branches are used as stakes to support climbing beans. And the leaves of the two main species are excellent livestock fodder. Pruning for stakes promotes regrowth and the production of fresh new foliage for fodder. Unexpectedly, hedging also helps resolve conflicts between neighbours, as it clearly demarcates each plot of land.

combat it. Previous initiatives had encouraged farmers to create trenches and terraces to limit soil erosion, and farmers sporadically planted trees and grasses. But this was not enough. Ministry technicians then trained and coached farmers in *bocage*, preparing them to train their neighbours afterwards.

### **From neighbour to neighbour**

"I planted hedges of calliandra in my plot and benefited greatly from this system," said Jeanette Murekatete from Rwabutazi. "Before *bocage* I grew bush beans and was never able to harvest more than 500 kg per hectare. Using stakes from the hedges, now I can grow 1,250 kg of climbing beans per hectare. The grasses and shrubs, even though my plot is small, give me enough fodder for my cow." Feeding Jeanette's cow calliandra leaves even increased milk production, an additional benefit of this particular tree. For a local breed, the 14 litres of milk her cow produces daily are impressive. Adding organic manure from her animals, rather than using only chemical fertilizers as she did before, increases her production. The *bocage* system, in combination with increased milk production, enables Jeanette to pay for her daughter's secondary education. She also built a new house with the increased income, and can now rent out her old house.

*Bocage* not only helps prevent erosion, improve soil fertility and provide fodder for animals, but, as already mentioned, the trees also provide stakes for growing beans and resolve conflicts between neighbours. These benefits, as experienced so clearly by Jeanette, are strong incentives for other farmers to adopt the practice as well.

Realizing that farmers learned most effectively from fellow farmers, PAPSTA coordinated the spread of *bocage* throughout the community using the 'Rural Network'. The Rural Network consists of resource people and village 'relays' who transfer knowledge in the community. Resource people act as supervisors and technical advisors, while village relays mobilize farmers to improve their management of the land. In awareness-raising meetings, PAPSTA introduced the *bocage* system to the community and identified progressive farmers to pilot it in the area. The Rural Network then created opportunities allowing for farmer-to-farmer communication on *bocage*. With this system, long-term learning processes are embedded in the community and thus offer a more-sustainable support system for farmers who want to improve their practices.

### **Inspiring leaders**

The Rural Network and the successful spread of *bocage* relied heavily on lead farmers. Resource people are enthusiastic, progressive farmers who can transfer their knowledge to their neighbours. With their personal experience in *bocage*, they are capable of supervising and offering technical support within their communities. Jeanette herself is a resource person for the *bocage* system, and uses her own transformed life to motivate others. “When I received three goats from the project, I was envious of the other people in my community who received a cow. I also wanted to drink milk. But I didn’t let it stop me. I raised my goats with passion, and multiplied them to 16 goats. I implemented *bocage*, increased my production and, using the income from my increased yield and selling my goats, I was able to buy my own cow.” As a widow with three children, Jeanette was among the most vulnerable of the community. Yet she turned her situation around, beginning with only three goats.

Jeannette didn’t keep her success to herself. “I show people the hedges in my fields. My neighbours listen to my advice because they can see my improved harvests and my new cow – and they know how I got it.” One farmer who learned from Jeannette is the village chief, Everest Havugimana. After using the system himself, he increased his production of beans and maize, reduced soil erosion in his field and was able to buy two cows himself. Now, convinced by its merits, Everest also takes up a leading role in promoting *bocage*. “It is among my responsibilities to teach. Because I am the chairman, I was able to share her success and the use of *bocage* during community meetings. Now all the farmers here are using the *bocage* system.” The community even implemented regulations to prevent damage to young seedlings. It encouraged everyone to keep their cattle at home, and installed a fine to cover replanting costs if someone’s cow destroys seedlings.

### **Learning – slowly but surely**

Not all farmers are open to new techniques and some still prefer to use only traditional methods. Implementing *bocage* does not cost much, because seeds are taken from the existing plants in the village nursery, but it takes time and resources to plant seedlings and replant them after termite damage. Also, uncontrollable climatic conditions can make starting with *bocage* difficult, discouraging farmers from continuing.

To discover which plants work well as hedges in the specific environment, farmers need to invest time and attention to developing the *bocage* system in their own fields. In Rwabutazi, they planted seven tree species in the beginning. Three were exotic species, of which farmers were wary. One did not grow well in the soil and weather of Rwabutazi. One wasn’t appreciated by the cows. Finally, two were identified that could serve Jeanette, Everest and their neighbours well: calliandra and leucaena.

#### **Learning from the Rwabutazi community**

The success of the Rwabutazi *bocage* system has spread throughout Rwanda and even to neighbouring countries. In 2011, two buses full of farmers, decision makers and technicians from Burundi came to Rwabutazi and saw for themselves what farmers in Rwanda were doing. In 2012, a PROCASUR learning route took farmers and agronomists from other regions of Rwanda to Rwabutazi to learn from the successful experiences with *bocage* and the Rural Network.

It takes time for farmers to implement *bocage* successfully. Not all farmers showed the same level of patience, however, and some gave up. Thankfully, progressive farmers played a crucial role in helping their more reluctant neighbours continue with these new ideas. Seeing the positive results of those farmers that had benefited from implementing *bocage* inspired them to try to copy the success.

As in the case of SRI, knowledge of *bocage* is best shared from farmer to farmer. Seeing the results in neighbours' fields and being able to approach that neighbour for help and advice has helped spread the uptake of *bocage* in communities such as Rwabutazi. SRI is a clear success story that has received wide recognition. But *bocage*, too, is a technique that simply makes sense for farmers, offers immediate benefits, and thus is easily shared and taken up. Hopefully, international farmer-to-farmer approaches to *bocage* and many other agroecological approaches will form the future of South-South knowledge-sharing.

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## Endnote – sharing knowledge, sharing the load

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But our special thanks go to you, who have shown your interest and taken the time to read these articles. This proves the point that the whole exercise was a valid one – that the knowledge has now been more widely shared than it was before. But it doesn't answer one question: will any of the information in these pages benefit others? Only you can know that. And if it does, or even if it only might do, we would very much like to hear from you.



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