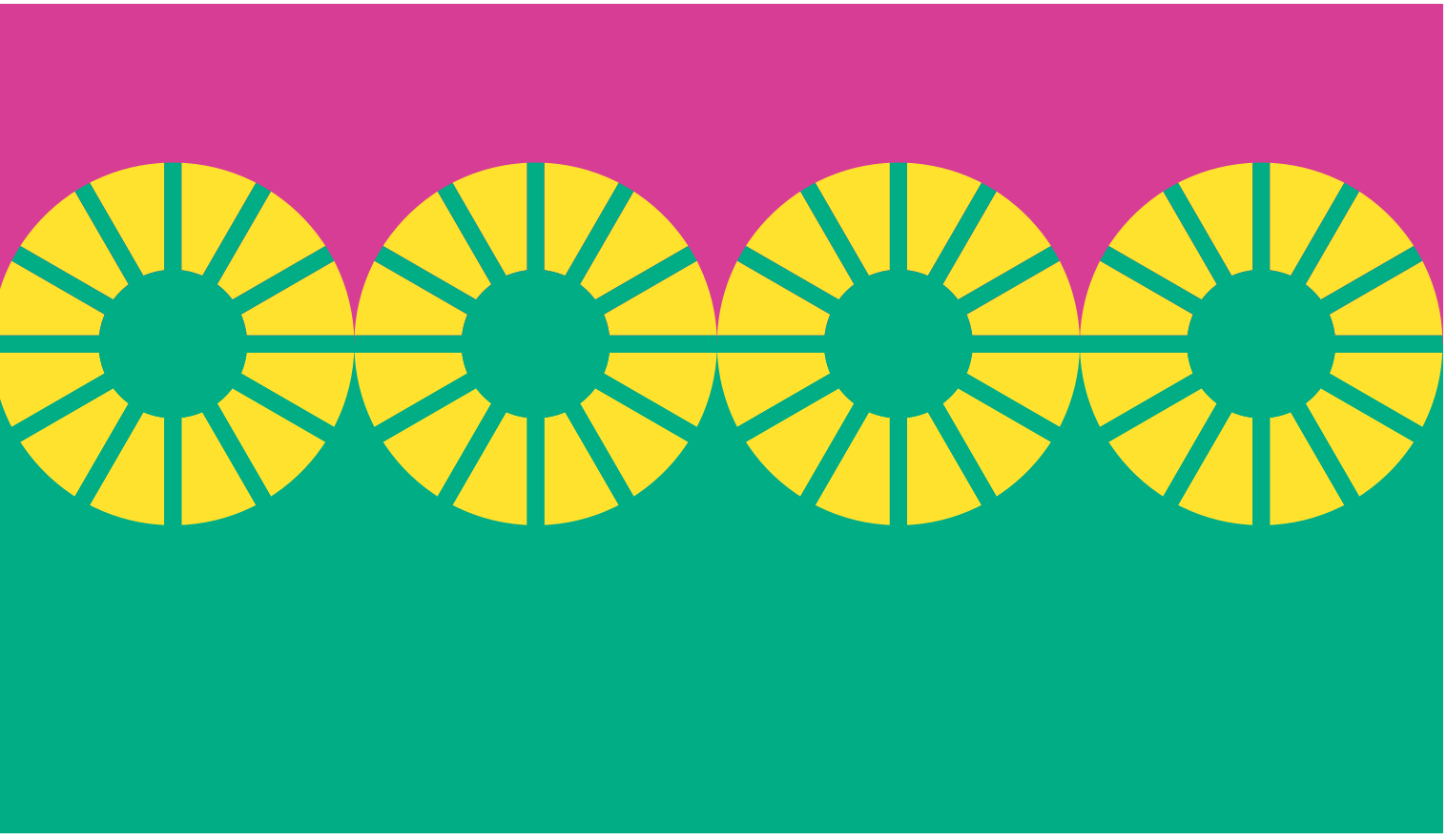
TMG Working Paper

Reaching farmers beyond project beneficiaries

The Tem Sesiabun Gorado model for improving farmer-to-farmer extension approaches



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Written by

Check Abdel Kader Baba
TMG Research gGmbH

Nicolas Patt
TMG Research gGmbH

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Contact

Kader.baba@tmg-thinktank.com

Visit the soilmates.org website to learn more about the project

Photo 1: The Hamlet of Dah Kpaare in Kabanou. A small location neglected by extension workers.

List of acronyms

TSG	Tem Sesiabun Gorado
SLM	Sustainable land management
ProSOL	Projet Protection and réhabilittion des Sols pour améliorer la sécurité alimentaire
NGO	Non-governmental organization
APEM	Association pour la Protection de l'Enfance Malheureuse
CERABE	Centre de Recherche et d'Actions pour le Bien-être et la Sauvegarde de l'Environnement
INUDE	Institution Non Gouvernementale d'Union pour le Développement et pour l'Environnement
GERED	Groupe d'études et de Recherches sur l'Environnement et le Développement
LASDEL	Laboratoire d'Etudes et de Recherche sur les Dynamiques Sociales et le Développement Local

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Why sustainable land management matters

The issue of soil degradation in sub-Saharan Africa

In sub-Saharan Africa, an estimated 750 million hectares[1] of land are affected by soil degradation, constituting an area 20 times the size of Germany. This affects about 180 million people, or roughly the combined populations of France, Germany, and Poland. Among the most affected people are smallholder farmers, who account for 80% of all farms across the region (AGRA, 2014) and heavily rely on healthy soils to sustain and intensify food production (Brondeau, 2014).

Growing efforts but limited achievements in SLM

Despite growing investment in sustainable land management (SLM), the adoption of good practices among smallholder farmers remains low (Cordingley et al., 2015; Kirui, 2016). Challenges to SLM technology adoption, i.e., the sustained uptake of the promoted innovations, include knowledge diffusion issues at the local scale (Baba et al. 2016; Bunning et al., 2016; World Bank, 2006), farmers' perceptions of the promoted technologies (Assogba et al., 2017; Drechsel et al., 2005), and the quality of local stakeholders' participation in the design and implementation of the promoting project (Dolinska and d'Aquino, 2016; Sanz et al., 2017).

Operationalizing self-sustaining and community-led processes for SLM

In order to address those issues, scholars and development institutions frequently call for «self-sustaining and community-led processes»[2] when promoting SLM technologies, emphasizing the central role of local communities in bringing successful land management innovations to scale. This call is not per se new, as development programmes have been promoting participatory and community-based approaches since the late 1980s. However, operationalizing this call to provide sustainable knowledge diffusion mechanisms has remained a persistent challenge for researchers and development practitioners to date. Its resolution requires that past approaches to technology promotion be revisited in order to learn from and build on lessons learned, rather than trying to reinvent the wheel.

1 R. Lal et al. (eds.), 2016: Climate Change and multi-Dimensional Sustainability in African Agriculture. Climate Change and Sustainability in Agriculture. Chapter 5, 61-95. Switzerland, 717p.

2 https://www.icrisat.org/the-future-of-land-restoration-is-community-led-says-wle-icrisat-at-tropentag/

Photo 2: Cattle feeding on rice residues in Donwari Village, Kandi District.

Critical review of SLM technology promotion approaches in Benin and sub-Saharan Africa

Approaches based on model farmers tend to exclude less privileged farmers

In Benin, as in most African countries, SLM technologies have been promoted using various extension approaches, including trainings and visits, demonstration plots, and farmer field schools (Mburu and Kiragu-Wissler, 2017). When implementing these approaches, a group of farmers, often referred to as model farmers, contact farmers, or project-initial beneficiaries, is targeted based on predetermined criteria, often including their capacity to host demonstration plots and adopt promoted technologies (Kondylis et al., 2014). Though presented as community-centred, these extension approaches tend to prioritise wealthy, progressive farmers, often known to extension agents as early adopters, at the expense of resource-poor farmers, in particular women and youth (Kondylis et al., 2017, 2014). For instance, the minimum requirement for demonstration plots usually varies between 0.25 and 0.5 ha (Liniger et al., 2011), while smallholder farmers in Kenya and Ethiopia operate farms of less than 1 ha on average (Rapsomanikis, 2015). Moreover, selecting model farmers based on their political position or social status reinforces local hierarchies and power imbalances to the disadvantage of marginalised farmers (Taylor and Bhasme, 2018). As a consequence, farmers, who are unable to commit sufficient time and space to demonstration plots, or who are socially disadvantaged, face additional challenges in accessing agricultural innovations promoted through model farmers approaches. These approaches have also been criticized by both researchers and practitioners, who have described them as top-down, ineffective in reaching beyond the circle of model farmers, expensive to operate, financially unsustainable, and heavily dependent on external extension agents (Anderson, 2008; Feder et al., 2010; Franzel et al., 2015; Ssemakula and Mutimba, 2011).

The farmer-to-farmer extension approach faces sustainability challenges at practical level

As an alternative to training-and-visit approaches and farmer field schools, farmer-to-farmer extension approaches have attracted increasing interest over the last decade. Defined as the provision of extension services (information, training, support) from farmers to farmers, the approach relies on a network of local farmers (farmer-trainers or farmer extension agents) who are often selected by their peers, trained by the project and given responsibility to share their learn-

ing with other farmers (trainees, farmer-learners) within their communities (Kiptot and Franzel, 2015). In contrast to approaches which consider farmers as passive users of SLM technologies, farmer-to-farmer extension approaches put farmers in the centre of technology generation and dissemination (de Janvry et al., 2016; Ssemakula and Mutimba, 2011). A growing body of research conducted in sub-Saharan countries confirms the potential of farmer-to-farmer extension approaches, especially in creating ownership of project interventions and sustaining technology adoption at local scale (Franzel et al., 2019; Kiptot and Franzel, 2015). However, these authors have also identified limitations and challenges which need to be addressed to ensure the effective dissemination of agricultural innovations. These include the following critical questions:

1 What incentives and other measures are necessary to motivate farmer-trainers over the longer term? Both financial and non-financial mechanisms have been used by development programmes to reward the services provided by farmer-trainers. If successfully implemented processes are to be handed over to public extension systems, low-cost motivation schemes must be established to ensure sustainability (Franzel et al., 2015). Such schemes are crucial to minimizing frustrations that develop over longer periods and result in significant dropout rates among farmer-trainers (Franzel et al., 2019; Kiptot and Franzel, 2015).

2 What capacity development do farmer-trainers need to confidently transfer knowledge and build trust-based relationships with their trainees? Training modules for development projects are often designed to strengthen farmers' technical competences and focus on technical operations. However, supporting farmer-trainers in building legitimacy and confidence within their community and effectively addressing socio-cultural barriers and other barriers that can arise in the processes of technology adoption and knowledge transfer, is as important as the mastering of technical operations (Dolinska and d'Aquino, 2016; Franzel et al., 2019).

3 How can effective accountability mechanisms be established between farmer-trainers and trainees? Reaching farmers beyond direct project beneficiaries, and disadvantaged groups such as women and youth in particular, can be challenging without effective accountability mechanisms. Open discussions and exchanges between farmer-trainers and trainees promote famers' active involvement and leadership in the selection of technologies (Assogba et al., 2017; Drechsel et al., 2005), as well as in the development of knowledge transfer mechanisms (Dolinska and d'Aquino, 2016; Sanz et al., 2017), and help to build trusting and accountable relationships.

Ensuring the sustainability of farmer-to-farmer approaches requires a clear shift in extension workers' priorities from technical operations to a careful facilitation and promotion of farmer leadership

Establishing self-sustaining approaches on the ground will require a shift in the promotion of sustainable land management practices from professional extension to measures with the capacity to build local networks of well-organized farmers who are empowered to take the lead in SLM technology promotion and knowledge diffusion. Achieving this will require the investment of time and resources to develop farmer-trainers' capacities and abilities, and a shift in the role of extension workers from promotion to facilitation.

Unless, these issues are carefully analysed and properly addressed, farmer-to-farmer extension approaches will continue to be dependent on the services of professional external facilitators (public external agents, NGOs, etc.) and the call for self-sustaining and community-led processes in sustainable land management will remain wishful thinking. As pointed out by John Conrood, Executive

Vice President of the Hunger Project[3], there is an urgent need to move away from professional facilitation towards the use of well-mobilized farmer groups who are empowered to take the lead in the solution of their own problems.

«A paid extension worker cannot possibly reach thousands of remote small-holder farmers with improved techniques, but a well-mobilized community always can.» John Coonrod, Executive Vice President, The Hunger Project.

This paper contributes to this debate by introducing the Tem Sesiabun Gorado (TSG) model. The TSG model is an alternative farmer-to-farmer knowledge diffusion approach. It is based on a network of community-based agents (locally referred as «Tem Sesiabun Gorado») and lessons-learned from community-based health services in Benin. Framed by local learning processes and social networks, this model is built on the concept of «social debt» as an incitation mechanism to promote effective knowledge diffusion from project beneficiaries to non-beneficiaries.

3 http://www.thebrokeronline.eu/Blogs/Towards-a-food-secure-world/Rural-governance-that-works

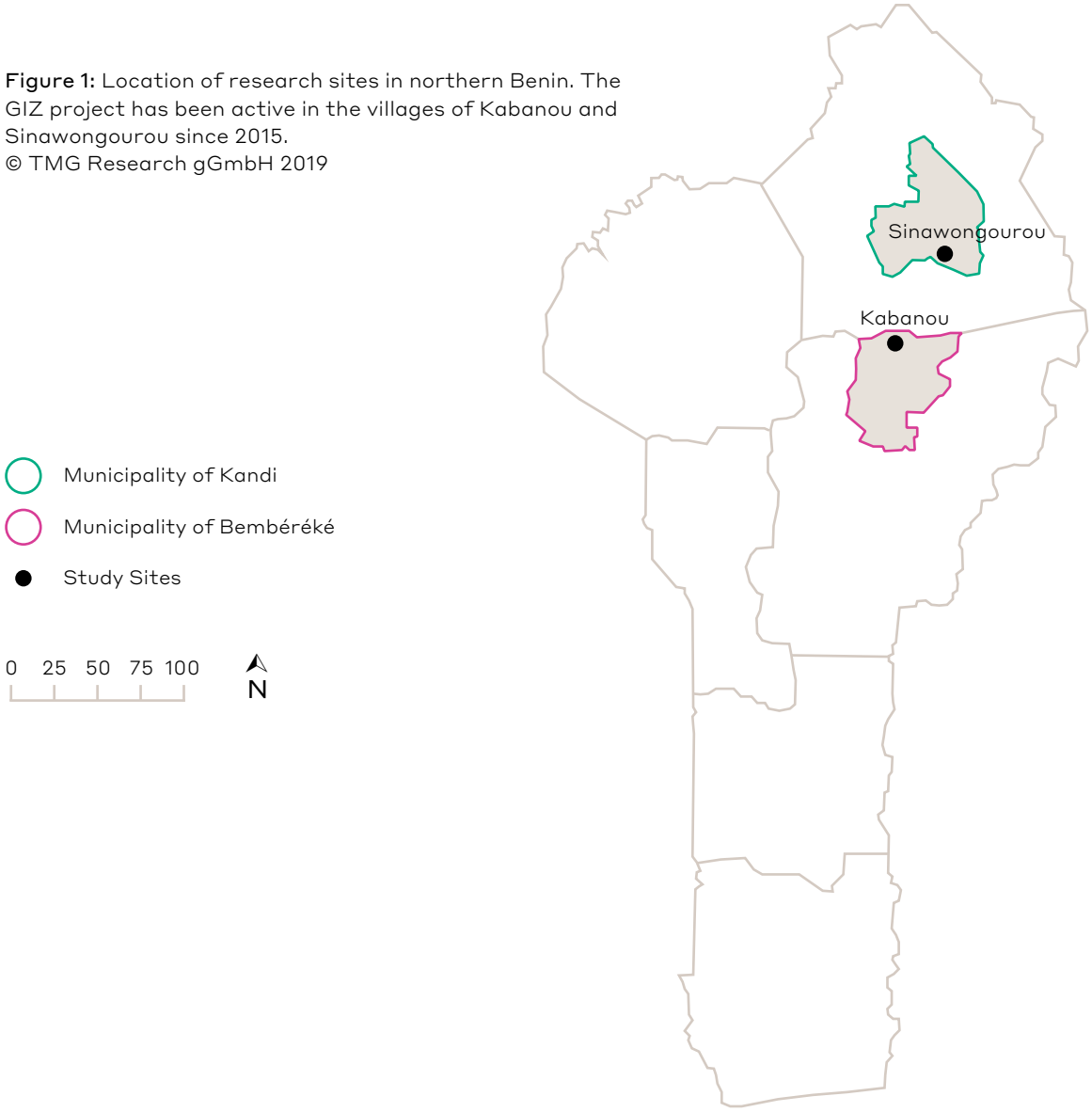

Figure 1: Location of research sites in northern Benin. The GIZ project has been active in the villages of Kabanou and Sinawongourou since 2015.

The Tem Sesiabun Gorado technology diffusion model

The Tem Sesiabun Gorado (TSG) model is a farmer-to-farmer technology diffusion model. It seeks to address common shortcomings of conventional farmer-to-farmer extension approaches, in particular with respect to accountability mechanisms and sustaining the motivation of farmer trainers. The overall objective of this model is to ensure effective knowledge sharing and technology diffusion from project beneficiaries to communities.

Context and background information

The TSG diffusion model was developed within the frame of accompanying research carried out by TMG Research in Benin to support the implementation of a GIZ[4] project on soil protection and rehabilitation to improve food security (as part of the Special Initiative «One World. No Hunger»).

It benefits from four years of quantitative (household surveys) and qualitative research[5] implemented in two villages[6] in northern Benin (figure 1). This contributes to solid understandings of farmers' living conditions and production assets, prior experience with sustainable land management practices, and perception of promoted technologies. TSG also builds on the findings of a reflective process that consisted of critical and open discussions with both project beneficiaries and non-beneficiaries about the promoted technologies and the implementation approach (referred to as the Deep Reflection Process). Engaging farmers in reflective processes was essential to:

1. Understand farmers' constraints in the implementation of specific technologies, their preferences and support needs
2. Go beyond the «quick-fix solutions» often proposed to farmers by field technicians in order to design adaptable, context-specific solutions to their implementation challenges
3. Understand the socio-cultural factors that prevent effective knowledge diffusion between project beneficiaries and non-beneficiaries.

The findings of this process were later presented to both farmer groups (project beneficiaries and non-beneficiaries) during village-level consultations that form the first step in the TSG model implementation approach. (See Figure 3).

4 German Development Cooperation

5 Reports can be downloaded from TMG Research webpage

6 Sinawongourou is a prototype village where basic conditions that support SLM technology adoption (access to market, social infrastructure, credit, etc.) are met. In contrast to this, access to the village of Kabanou is difficult and farmers face challenges to access credit and market facilities.

Framework and implementation approach

At the core of the model is the so called Tem Sesiabun Gorado (TSG), which literally means «community-based agent» in Bariba, a language spoken in northern Benin. The TSG are elected by their communities and entrusted with the responsibility to train their fellow farmers in the application of improved SLM practices. The number of TSG per hamlet or village neighborhood is also decided by communities, based on their size and spatial spread.

Each Tem Sesiabun Gorado (TSG) assumes responsibility for training five farmer-learners[7] in the application of SLM technologies she/he has learned in order to repay the «social debt» she/he contracted towards the project and her/his own community. This debt comprises free trainings, farm inputs and resources, as well as professional technical support, which the Tem Sesiabun Gorado receives on behalf of their respective communities.

Farmer-learners who successfully experiment with SLM subsequently take up the role of TSG themselves, assuming responsibility for knowledge dissemination by selecting and training five new farmer-learners (i.e. a second generation of farmer-learners). In this way, the project's effects are multiplied, with each generation consisting of five times as many farmer-trainers, as well as trainees, as the previous generation. This process can be continued with a minimum of coaching from field technicians until a critical number of farmers is reached within a given location, after which it becomes self-replicating.

The framework in Figure 2 offers a visual summary of how social debt is paid down across generations of farmer-learners through the provision of demand-driven support. The main process goals and mechanisms, which are the pillars for the success of the model, are also described in this figure.

At the practical level, this framework has been operationalized through the nine steps summarized in Figure 3.

While each of these steps contributes to the success of the process, the initial village consultations are of particular strategic importance. The core objective of these consultations is to ensure that both farmer groups (learners and trainers) develop a common and shared understanding of the project's upscaling objectives, of the barriers that hinder the effective diffusion of SLM technologies by each farmer-group, and of the urgent need to remove these barriers. Mechanisms to break down the barriers and concrete approaches to effective technology diffusion are also discussed and agreed upon in the course of these consultations; this includes the development of selection criteria for TSG, their specific tasks and responsibilities, as well as evaluation and review protocols.

7 The term «farmer-learner» is prioritized over terms such as «apprentices» or «trainees». We consider learning as a two-way process that value the targeted farmers' experience. The CBA and farmers she/he identified interact and learn mutually from each other. Although the topic discussed may be mastered by the CBA, other input is needed to ensure a successful implementation.

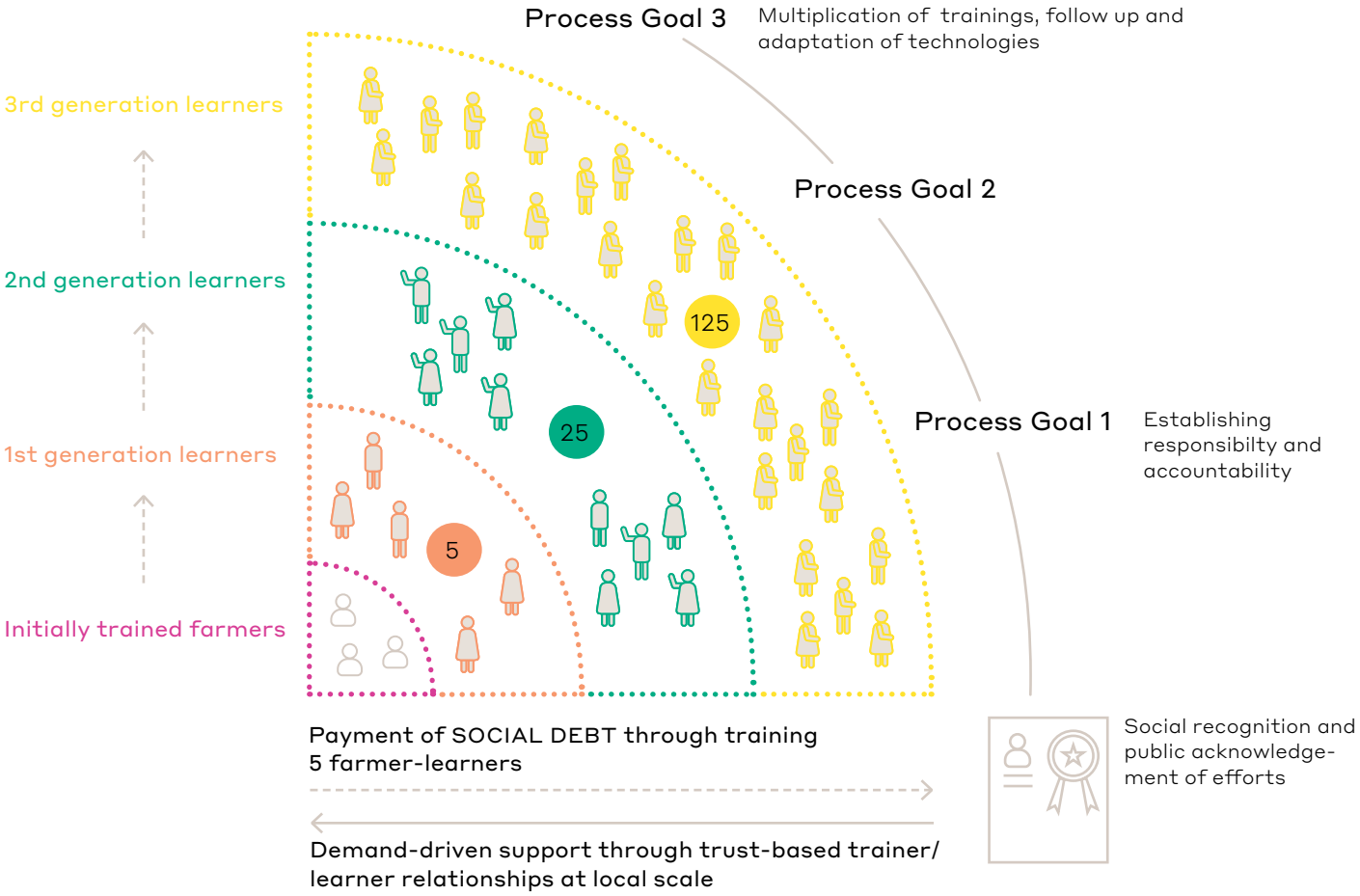

Figure 2: Framework of the Tem Sesiabun Gorado model implemented in northern Benin
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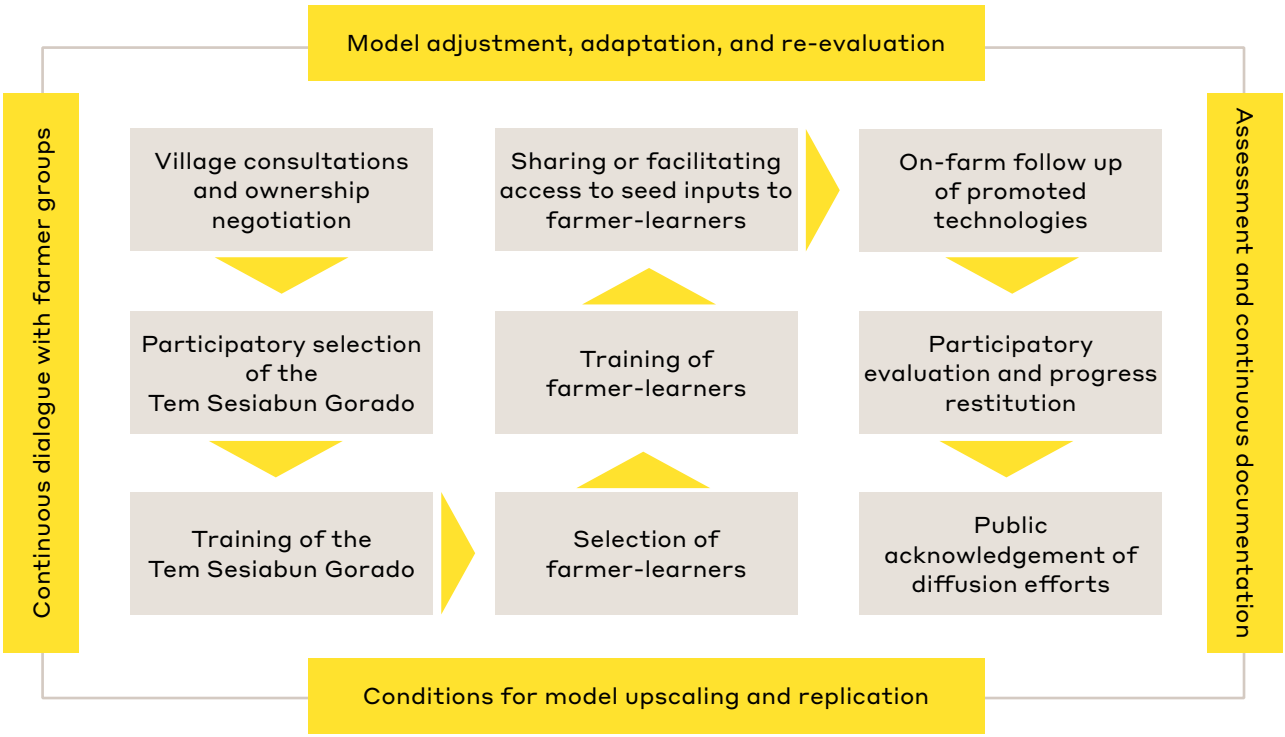

Figure 3: Implementation steps for the Tem Sesiabun Gorado diffusion model in northern Benin. Grey-colored shapes indicate community-based processes. Yellow-colored shapes are iterative actions to be considered at each step of the model implementation. © TMG Research gGmbH 2019

Key principles for the implementation of the TSG model

1

Ensure a shared understanding of knowledge diffusion challenges and the long-term risks for the community if these are not properly addressed

During the village consultations, it is fundamental that project beneficiaries and non-beneficiaries openly discuss specific concerns, constraints, and challenges associated with project activities and knowledge transfer. It is also important to ensure that farmers agree on both the necessity of addressing challenges and approaches to their resolution, including the collaborative development of knowledge sharing mechanisms.

2

Ensure selection mechanisms and criteria are inclusive

It is crucial that farmers participate in the development of the criteria applied to select their representatives. Enabling farmers to reflect on the options for effective knowledge/technology diffusion and to define both the number of Tem Sesiabun Gorado and their respective locations will foster ownership within the community and ensure effective spatial coverage.

Finally, it is vital that farmers' choices are respected and that farmers selected to act as TSGs are not influenced by external political motivations or social privilege.

3

Ensure farmers' agreement on the principle of 'social debt' in order to build commitment and accountability

Efforts to encourage farmers to take responsibility for knowledge diffusion within their communities through the concept of social debt cannot work unless farmers understand and pledge to uphold its mechanisms.

A public commitment to the role of Tem Sesiabun Gorado creates ownership and strengthens the social responsibility that underpins social debt.

4

Realistic expectations on TSG ensure long-term motivation and easy the repayment of the social debt

The TSG model strongly assumes that farmers have the potential and capacity to provide context-based and effective support to other farmers if they are well-trained and empowered to do so.

To ensure long-term motivation and commitment, it is crucial that the workload assigned to and expectations placed on the TSG are manageable. For instance, the practice of working with cohorts of five farmer-learners was discussed and agreed upon during the village consultations.

Limiting the knowledge transfer process to a time frame of one or two growing seasons, for example, minimizes the dropout rate among farmer-trainers and addresses long-term motivation issues that frequently arise in standard farmer-to-farmer approaches.

5
Clear roles and responsibilities for effective knowledge diffusion mechanisms

Knowledge transfer is a two-way communication channel that cannot be effective unless farmer-trainers and farmer-learners establish bilateral partnerships based on trust, mutual respect, and clearly defined roles.

It is important that extension workers facilitate this process carefully to ensure trainers understand their role and attributions. Likewise, it is necessary to ensure farmer-learners are aware that knowledge diffusion needs demand-driven support, i.e. that learners take an active role in the acquisition and application of knowledge in experiments on the ground.

6
Acknowledge the risk of quality loss over multiple generations of farmer-to-farmer knowledge transfer and anticipate corrective actions

Time and resources must be invested in order to safeguard the quality of knowledge transfers across multiple generations of learners. The associated challenges must be anticipated by project designers and addressed as capacity-development objectives during the implementation of this farmer-to-farmer model. This also requires a shift in the provision of extension services to ensure that workers have the necessary facilitation skills in addition to the relevant technical competences.

Results of the model implementation

Quantitative spread of SLM knowledge: number of farmers reached

The 49 TSG who were initially selected, trained, and assigned responsibility for knowledge diffusion in 2018 reached a total of 349 farmers across the two villages (Kabanou and Sinawongourou) within the first growing season. These 349 new learners, of whom 35 % are women, are referred to as 1st generation farmer-learners. This constitutes a multiplying factor of about 7; in other words, each TSG reached 7 new farmers on average. During the second growing season, about 65% of the first-generation farmer-learners (n=217) selected new farmer-learners (based on field data, April 2019), reaching out to 1055 new farmers (38% are women) across the two villages. These numbers are expected to increase over the course of this season as the selection process is still ongoing in both villages.

Figure 5 shows the reach of new farmers by the TSG technology diffusion model in different sub-locations within the two villages.

Spatial spread of SLM knowledge: Farmers' networks extend project reach

The findings also show that carefully designed community processes that give ownership to communities stimulate farmers' social responsibility, accountability, and self-initiative. This empowers farmers to activate their networks, thereby extending the effective reach of project interventions. Through the generation of farmer-learners, for example, eight hamlets/camps[8] that had not previously in contact with the project were reached by these means. This was occurred as a result of farmers taking the initiative in order to repay their social debt. Through the second generation of farmer-learners, an additional three hamlets were reached (Figure 5). As a result, the spatial dissemination of the promoted technologies and practices has improved significantly. Figure 5 highlights this development and indicates the locations reached during the initial trainings (pink bars indicating TSG), the first growing season (yellow bar indicating 1st generation farmer-learners), and the second growing season (green bar indicating 2nd generation farmer-learners).

Overall, the implementation of the TSG model shows that entrusting farmers with clear and strong leadership in SLM technology promotion approaches can enable projects to meet their quantitative expectations in terms of reaching farmers. Moreover, the improved spatial diffusion of SLM knowledge could provide a strong basis for post-project sustainability.

8 Dispersed habitats with links to a central village where small or large groups of people live on a seasonal (farmers) or permanent (pastoralists) basis.

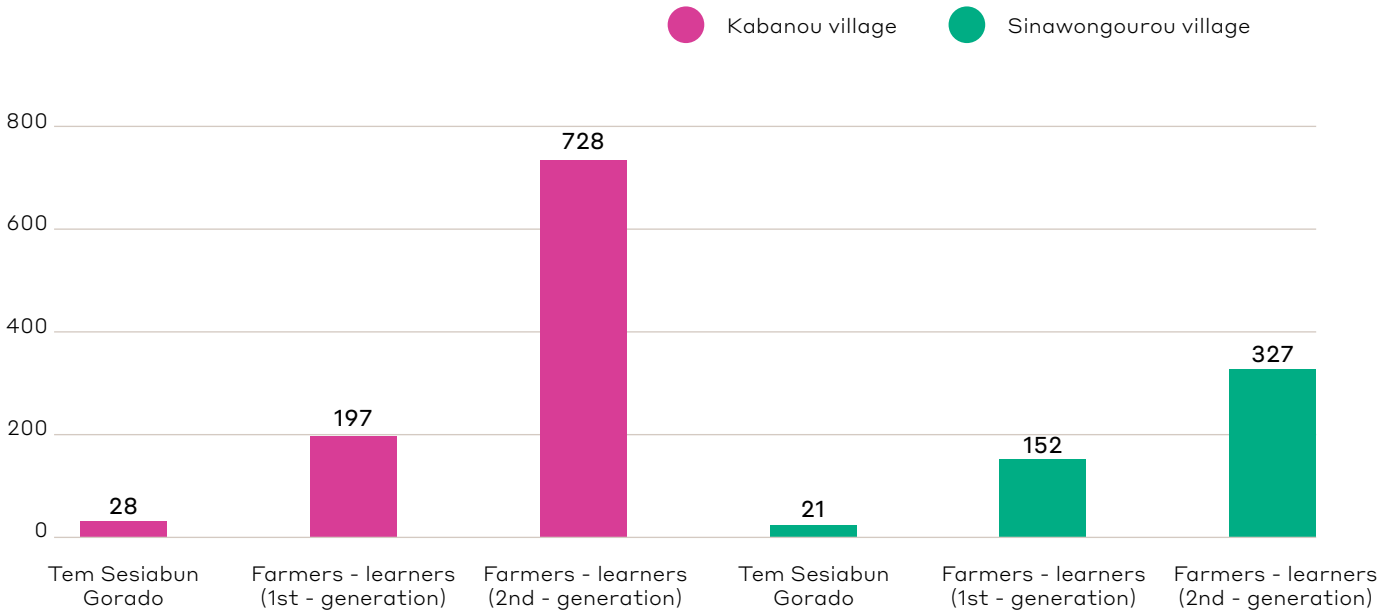

Figure 4: Reach of farmer-learners through the TSG technology diffusion model (field data, April 2019).

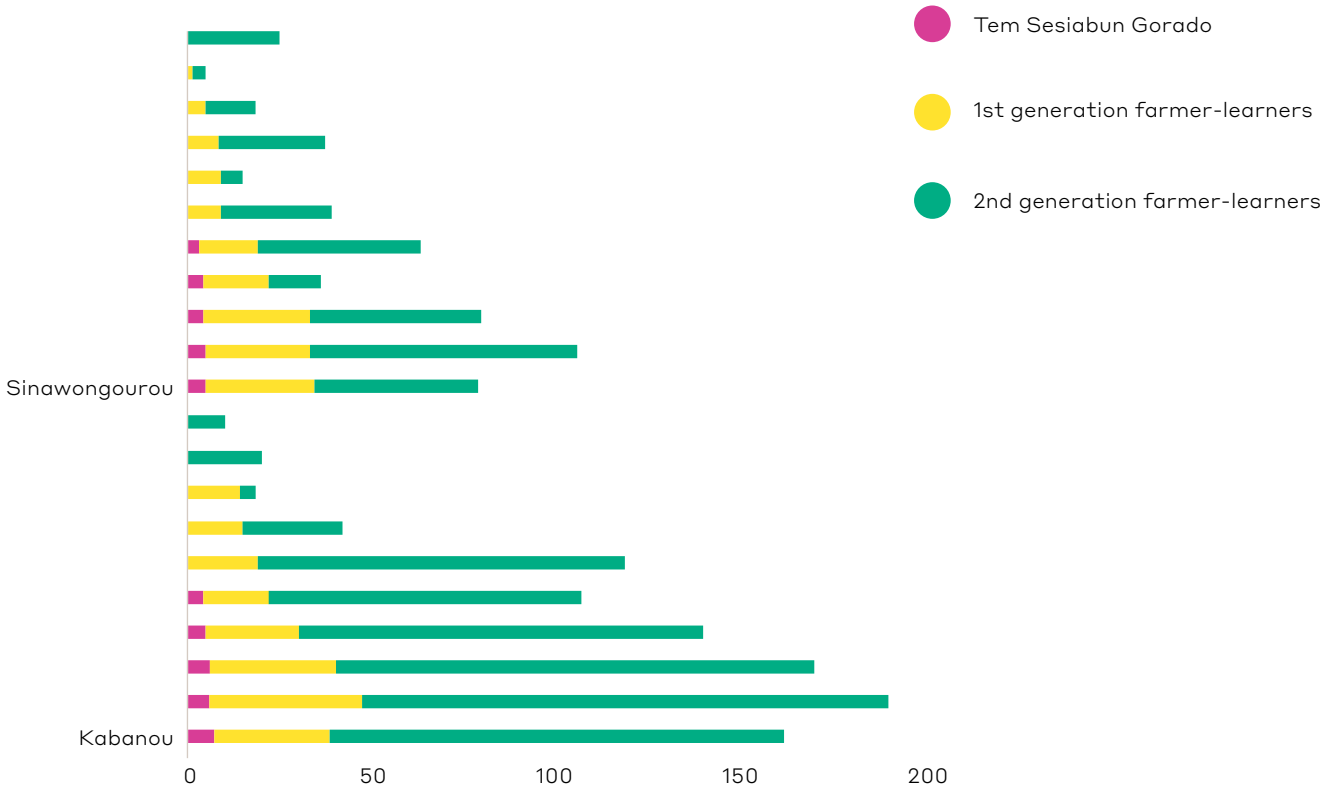

Figure 5: Spatial distribution of farmer-learners reached (in numbers) through the implementation of the TSG model. Yellow bars not supported by a pink bar represent hamlets or village neighborhoods initially not covered by GIZ-project activities and reached through the implementation of the TSG model. Green bars not supported by yellow bars are new hamlets reached during the second year of model implementation.

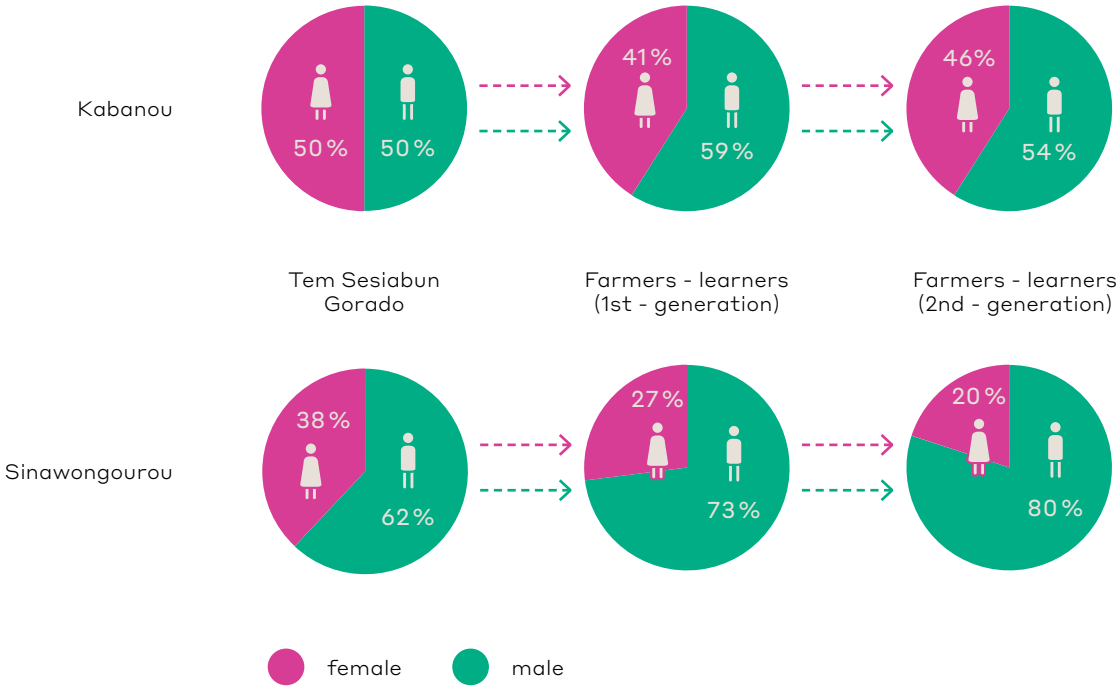

Figure 6: Gender distribution of the community-based agents and their farmer-learners in the village of Kabanou and Sinawongourou © TMG Research gGmbH 2019

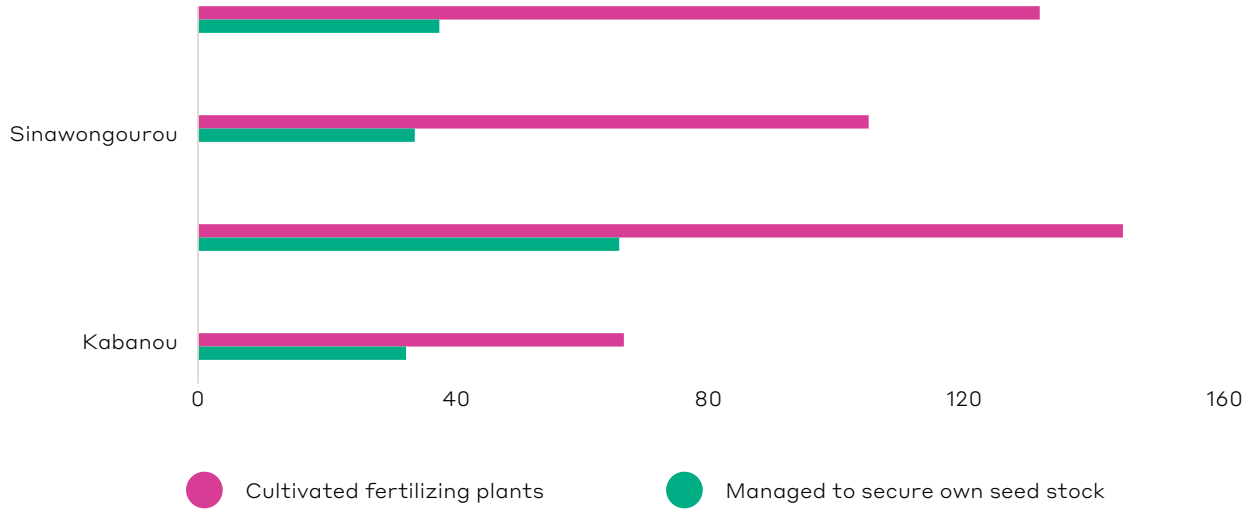

Figure 7: Securing seed stock for 2nd generation farmer-learners (field data, January 2019)

Promoting women's leadership to reduce the gender gap among trained farmers

The pilot trial of the TSG model in northern Benin has shown that including women and men equally as community-based agents reduces gender imbalances among farmer-learners across generations of learners. This is illustrated by a comparison of the trials in Kabanou and Sinawongourou, where the effects of the gender ratio among TSG are clearly reflected in the gender ratio among 1st and 2nd generation farmer-learners (Figure 6).

This highlights the benefits for SLM projects of maintaining gender balance in the selection of initial project beneficiaries and suggests that assigning leadership roles to women is likely to increase the number of women among the project's indirect beneficiaries.

Making use of farmers' capacities to increase time and resource effectiveness

Transferring responsibility for the diffusion process to farmers (with basic training provided through extension agents) and supporting their efforts to share their learnings with communities proved to be more effective than conventional approaches to the promotion of SLM technology (such as demonstration plots, farmer-field schools, or reliance on external extension agents). The pilot project suggests that the TSG diffusion model is highly effective in reaching more farmers within a shorter period of time as demonstrated by the numbers reached over its year-long implementation phase. With its ability to up-scale activities and extend the reach of SLM promotion projects by activating farmers' networks, this model could deliver significant time and cost savings and relieve pressure on field technicians.

Self-sustaining production of farm inputs for increased post-project sustainability

In the process of transferring gained knowledge to five new farmers (payment of social debt), the TSG is requested to identify those farmer-learners, train them, provide them with seed inputs and offer follow up services. This responsibility of providing seed inputs to farmer-learners encourages participants to establish their own seed stock using various innovative strategies, such as planting fertilizing plants within their home gardens or in the vicinity of houses and camps, or planting seed trees in the centre of yam or manioc fields to prevent cattle damage.

Around 38% of farmers who planted fertilizing plants were able to harvest and secure their own stock (Figure 7). As a result, farmer-learners did not have to rely on project donations (external funds) to receive seed inputs but could rely on the TSG to provide these inputs. This outcome was secured for both 1st and 2nd generation farmer-learners, effectively reducing the communities' dependency on external funding and safeguarding post-project sustainability.

In conclusion, the implementation of the TSG model not only promotes sustainability but also delivers financial savings for projects in relation to seed inputs, transportation, and transaction costs.

Key messages and considerations for replication

Photo 3: The Tem Sesiabun Gorado and their farmer-learners in Koussounin Village of Kabanou.
© Kader Baba/TMG Research

A GIZ soil rehabilitation project in Benin recently picked up on the TSG knowledge diffusion model and used the approach as a core component in its upscaling strategy. In applying this model to different contexts, the processes must be adapted to the socio-cultural conditions and realities on the ground. The following messages offer some guidance on approaching this task.

Key message #1: Technologies don't travel naturally! We need to devise appropriate mechanisms that stimulate knowledge sharing among farmer groups.

In promoting SLM technologies, it is important to acknowledge that technologies do not travel naturally and that socio-cultural factors hinder knowledge sharing between project beneficiaries and the rest of the community[9]. Facilitating exchange about these barriers among farmers will build confidence among farmer-trainers and community-members and validate their involvement in knowledge diffusion.

Ensuring that pre-existing learning channels and farmers' social networks are integrated into SLM technology diffusion mechanisms reinforces ownership and helps to account for ethnic diversity and heterogeneity issues at the village level.

In promoting SLM best practices, extension agents tend to focus on technical operations and give little time to farmers' self-reflection on promoted technologies and innovation capacities. As a result, there is a clear need to revise the work packages of extension agents in order to integrate trainings on facilitation and empowering farmer representatives to lead technology adoption and diffusion.

9 Baba, 2017: concept notes of the farmer-led SLM technology diffusion model. Submitted to ProSOL–GIZ on December 2017

Key message #2: Promoting women's leadership in technology diffusion reduces gender inequalities among farmer-learners.

Various patterns of exclusion can hinder the effective transfer of knowledge from farmer-trainers to other farmers, especially if gender and other socio-cultural differences are not accounted for in the selection of farmer-trainers.

Male farmer-trainers tend to select male trainees, while female trainers tend to give priority to women when selecting their learners. Facilitating the selection of female farmer-trainers and giving them a clear role and responsibilities in technology diffusion is instrumental to reaching more female learners among SLM project beneficiaries.

Key message #3: Farmer-to-farmer extension requires room for reflection, capacity-building, and accountability mechanisms between model farmers and the community.

In order to achieve the sustained uptake of SLM technologies, the decision by farmers to apply and adopt technologies must be a conscious one rather than being driven by project performance indicators and other incentives.

Giving farmers the opportunity to reflect on the promoted technologies and their own capacities during the implementation phase of the project is a crucial step in addressing the challenges of technology diffusion and post-project sustainability issues. Reflecting on the promoted technologies not only builds ownership among participating farmers but also reinforces accountability among trainers and trainees. Ultimately, this reflection process unlocks innovative capacities and supports the collaborative development of practical alternatives and context-specific solutions to SLM implementation challenges.

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TMG – Think Tank for Sustainability
TMG Research gGmbH
EUREF-Campus 6-9
10829 Berlin, GERMANY

Telephone: (+49) 30 92 10 74 07_00
Email: info@tmg-thinktank.com
Website: www.tmg-thinktank.com
www.soilmates.org

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