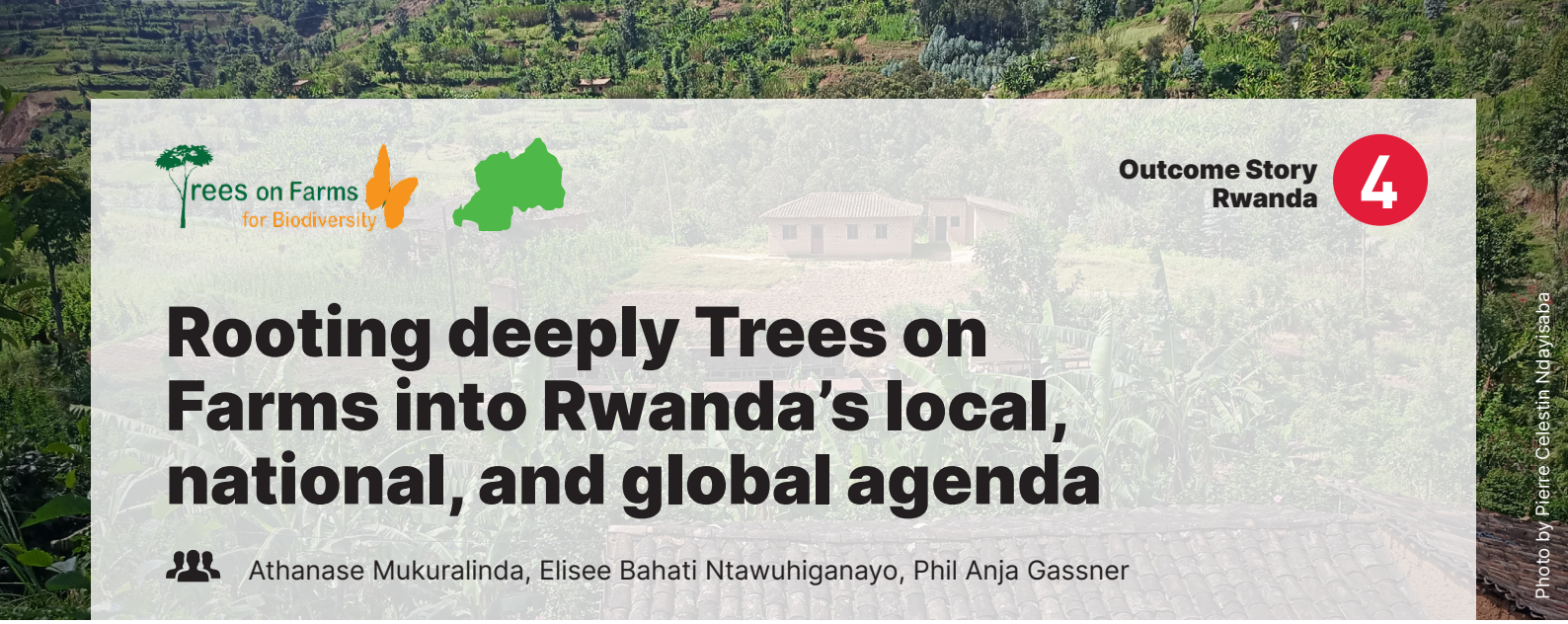

Trees on Farms for Biodiversity

Outcome Story Rwanda 4

Rooting deeply Trees on Farms into Rwanda's local, national, and global agenda

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Photo by Pierre Celestin Ndayisaba

Agricultural productivity and biodiversity conservation are inseparable

For the success of the post-2020 global biodiversity framework, it will no longer be sufficient to seek to limit biodiversity loss through agriculture. Instead, agriculture must become an integral element of sustainable landscapes a force for conserving biodiversity and providing vital ecosystem services to local populations and securing livelihoods.

Trees on Farms (TonF) play a critical role in contributing to biodiversity conservation in agricultural landscapes through in-situ conservation, by connecting fragmented wild habitats and providing stepping-stones between protected area networks and conserving soil biodiversity and agrobiodiversity. TonF are one of the key nature-based solutions to the conservation and food production challenges we face as they also play a critical role in achieving sustainable, biodiversity friendly agricultural landscapes.

To date, TonF are still invisible in most National Biodiversity Strategies and Action Plans (NBSAPs).

The 'Trees on Farms for Biodiversity' project

Funded by the International Climate Initiative (IKI), the IKI-TonF project was a joint programme implemented between 2018 and 2021 at the global level and in five countries: Honduras, Peru, Uganda, Rwanda, and Indonesia. It aimed to influence decision making and action on the ground to scale up the use of Trees on Farms (TonF). The project demonstrated how ecological, financial, and societal benefits of TonF can contribute to improving human wellbeing hand in hand with biodiversity outcomes, as well as countries' abilities to meet the Aichi Biodiversity Target 7 (Sustainably Managed Agricultural Areas).

Led by World Agroforestry (**ICRAF**), the project was implemented in Rwanda by ICRAF in close collaboration with the Ministry of Environment (**MoE**), Ministry of Agriculture and Animal Resources (**MINAGRI**), the Rwanda Environment Management Authority (**REMA**), Rwanda Agriculture and Animal Resources Development Board (**RAB**), Rwanda Forestry Authority (**RFA**), Rwanda Water Resources Board (**RWB**), International Union for Nature Conservation (**IUCN**), World Vision Rwanda and the **IMBARAGA** farmers' organization. During the implementation, strategic partners included Trócaire Rwanda and the Centre of Excellence in Biodiversity and Natural Resources Management (**CoEB**).

Key achievements

- **Increased community engagement in restoration of indigenous tree species in agricultural landscapes:** Farming communities and extension agents in the Gishwati Mukura National Park area committed to planting useful indigenous tree species.
- **Full engagement of the scientific community in championing the TonF agenda:** Centre of Excellence in Biodiversity and Natural Resources Management (CoEB) became an important strategic partner and champion for the TonFs approach helping to build professional and research capacity in the country.
- **Important collaborative partnerships established for promoting TonF partnerships:** The establishment of a multi-sectorial agroforestry task force supported by several ministries (MoE, MINAGRI) and agencies (RFA, RWB) helped to coordinate and enhance actions in the agroforestry sector and will continue to do so in the future. Close collaboration with partners such as Challenges Rwanda, Trócaire Rwanda and the Jersey Overseas Aid Commission (JOA) provided great momentum to the implementation of TonF projects.
- **Multi-sectoral financing systems for TonF implementation established:** Linking authorities with financial actors willing to co-fund investments greatly enhanced the development of TonF investment schemes and policy commitment to implementation.
- **Increased national level policy commitment with the inclusion of TonF in Rwanda's reporting the CBD and NDC:** A global indicator for biodiversity (the Farmland Biodiversity Score), based on the measurement of TonF and developed by the project team, was included in Rwanda's 6th National Report to the CBD, along with a case study from Rwanda. Rwanda's updated Nationally Determined Contributions (NDC) Report 2020, which now includes agroforestry as a critical adaptation approach.
- **Use of TonF and agroforestry promoted and mainstreamed at national level:** The project team and representatives from the government agency REMA held a dialogue on the benefits of TonF that was broadcasted by the television station TV10 and the Rwanda Broadcasting Agency (RBA) in June 2020.

INITIAL SITUATION

Rwanda is a relatively small (26 thousand km²), hilly and landlocked East African country with diverse habitats and ecosystems ranging from humid montane forests to savannahs, lakes, rivers, farmland and wetlands, all supporting a wide range of biodiversity. Between 1990 and 2016, more than 7000 km² (65%) forest and c. 1,715 km² (32%) grassland cover was lost in Rwanda, while croplands increased by c. 135% (c. 8,500 km²). As articulated in Rwanda's National Biodiversity Strategy and Action Plan 2016, one of the main drivers of biodiversity loss, especially in soil invertebrates and microorganisms, is the conversion of native ecosystems to agricultural land and intensification.

The country has the highest population density in Africa (470 people per km², World Bank, 2019), with c. 12.6 mil inhabitants in 2020 and an annual growth rate of 2.6% per year (NISR, 2014 and 2018). The high population density creates pressure on forests and agricultural land, leading to deforestation, severe soil erosion, loss of soil fertility and water pollution threatening both biodiversity conservation and livelihoods. The total agricultural land sums up to c. 68% of the country's total surface. Owing to the country's limited land area for afforestation, integration of more trees into farming systems is thus a vital approach to increase agricultural productivity and maintain environmental services. However, an ICRAF study from 2016 (Mukuralinda et al. 2016) showed that essentially all agricultural land in Rwanda was suitable for agroforestry and growing trees on farms was a widespread approach but that additional support was needed to further increase the effectiveness of tree-based systems.

WHAT DIFFERENCE DID THE IKI-TonF PROJECT MAKE?

Increased community engagement in restoration of indigenous tree species in agricultural landscapes

The IKI-TonF project demonstrated that even in areas where farm tree planting is dominated by exotic species, farmers and extension staff can be helped to understand the benefits of indigenous trees and change their preferences for trees to be planted. At the local level, the project worked at the Gishwati Mukura National Park, declared a UNESCO biosphere reserve in 2020, and one of the few remaining natural forests and biodiversity hotspots in the Congo-Nile Divide within the Albertine Rift region. Located in North-Western Rwanda at altitudes ranging from 2000 – 3000, the rich biodiversity includes the eastern chimpanzee, monkeys, serval, genet, civet, and many other species (e.g., 120 bird and 250 plant species).

The landscape in high altitude is dominated by two exotic tree species, *Eucalyptus sp.* and *Alnus acuminata*, which have limited conservation value compared to indigenous tree species. Indigenous species were conceived as slow growing by the farming communities, and knowledge and skills to domesticate them were lacking. The IKI-TonF project in Gishwati motivated and strengthened the capacity of the communities to grow indigenous trees, with the goal to increase tree diversity and landscape connectivity, improve soil conservation and water management, as well as increase fodder production and farm productivity. The importance of indigenous tree species for landscape restoration was elaborated in a series of participatory community workshops. In March 2020, farming communities as well as extension agents from Gishwati requested seedlings of indigenous tree species for the next tree planting season, as well as training on their domestication. Later in 2020, the farmers received the seedlings and planted trees in their farms and homegardens after the training by the IKI-TonF project staff.

Full engagement of the scientific community in championing the TonF agenda

Links with the scientific community internationally and locally have provided the evidence base for TonF activities in Rwanda. A protocol for assessing biodiversity on farms was developed by the IKI-TonF team and tested in Rwanda. The results clearly showed the value of tree cover, and indigenous trees in particular, for conserving biodiversity. Further collaboration with the University of Edinburgh led to the development of a "Farmland Biodiversity Score" which has been adopted by the Government of Rwanda in reporting to the CBD and used by Trocaire in its projects.

Important scientific partnerships have been developed in Rwanda also. For example, the IKI-TonF project collaborated with the Centre of Excellence in Biodiversity and Natural Resources Management (CoEB) established by the Rwandan Government under the University of Rwanda. CoEB provides services to build professional and research capacity in the country and therefore was an important strategic partner and champion for TonF. The project shared information on farm-related biodiversity metrics and offered to provide input to training sessions and other events. In 2020, CoEB organized a research seminar where ICRAF Rwanda presented two essential products of the project: i) the TonF Biodiversity Assessment Tool applied, e.g., for tree and species inventories on agricultural landscapes, woodlots and natural forests, and ii) the key messages developed for decision makers towards the post 2020 biodiversity framework.

Important collaborative partnerships established for promoting TonF partnerships

The IKI-TonF project successfully helped several stakeholders including authorities, non-profit, financial, and private actors change their behavior through direct dialogue and through strengthening their interconnectedness and interdependence using the project's "Innovation Platforms". For example, a significant outcome of numerous engagements with policy makers and other members of various innovations has been the successful launching of a fully functioning National Agroforestry Task Force. Rwanda has a national agroforestry policy but has historically lacked an effective mechanism for putting policy into action. A National Agroforestry Task Force had been set up earlier with assistance from the EU yet had not been functioning. The TonF project built on these

foundations and brought together task force members to fully launch its activities. The results have been very encouraging, with a range of actors fully participating, including MoE, MINAGR, RFA and RWB. Formal arrangements are in place for the management of the Task Force with ICRAF providing a Secretariat. This has provided a unique mechanism for mainstreaming TonF across ministries and other authorities.

The project also has collaborated with private actors, for example through their work with Challenges Rwanda, a management and development consultancy formed in 2017 that offers capacity building and business growth services to the growing private sector in Rwanda. In 2019, Challenges Rwanda signed a Memorandum of Understanding (MoU) with ICRAF on the integration of agroforestry tree species in coffee farms to improve soil health and coffee production. The soil health of coffee farms in Rwanda is often poor, leading to reduced coffee quality and quantity, which can be enhanced through increased above and below-ground biodiversity. In 2020, the IKI-TonF team showcased the contribution of biodiversity conservation to sustainable agricultural productivity taking the example of coffee. The project helped to reach out to coffee farming communities sensitizing farmers to integrate trees in their farms, who started to plant trees and shade their coffee.

The IKI-TonF team has also strengthened the collaboration with other farm tree-related projects. For example, they have assisted Trócaire Rwanda in the assessment of biodiversity in different land use systems in and around Nyungwe National Park, Nyamagabe and Nyaruguru districts, funded by JOA. Trócaire has worked in Rwanda since 1994 helping people earn better incomes and grow more food. They used the IKI-TonF biodiversity assessment tool as part of their new project on "*Community led planning and management for biodiversity protection and resilient communities in Southern Rwanda*". The IKI-TonF team contributed to the project proposal development and included biodiversity mapping as a key activity for achieving the project goals. Especially the engagement with the elderly farmers allowed to compile a comprehensive list of native species in the Nyamagabe and Nyaruguru districts. The findings of the research suggested a positive correlation between the number of trees in agricultural landscapes and the biodiversity of birds and insect, thus supporting the results of the project's pilot surveys in the Gishwati-Mukara area. The combined information provided reliable results and recommendations for the communities in Nyamaagabe and Nyaruguru on the benefits of TonF. Also, the MoE invited ICRAF to present the results of the research during the Senior Management Meeting. The research was seen as a reliable baseline and used to develop a global indicator (Farmland Biodiversity Score) that informs Rwanda's national level policy decisions, natural resource accounting, and reporting to the CBD (see below).

Multi-sectoral financing systems for TonF implementation established

Linking authorities with financial actors willing to co-fund investments greatly enhances the likelihood that policy makers will commit to TonF implementation. The IKI-TonF team also contributed to the development of the biodiversity finance plan for the Akagera Wetland Complex, a valuable inland ecosystem in Rwanda's Eastern Province. Led by the Biodiversity Finance Initiative (BIOFIN), the study was commissioned, and the report published by the Rwanda Environment Management Authority (REMA). The objective of the study was to understand the current drivers of ecological degradation, estimate the economic value of the stocks and flows of ecological services provided by the wetland. Based on the findings, a suite of possible finance solutions was proposed on how to improve the ecological status and management of this valuable ecosystem. Hence, the goals of BIOFIN and the IKI-TonF project to increase biodiversity outcomes through resource mobilization were well-aligned, and the report states that "*The Trees on Farms project offers an ideal launching pad to promote and incentivize the adoption of silvopastoral systems in the grasslands surrounding the Akagera Wetland Complex*." The IKI-TonF project provided recommendations for the study report and committed the technical support in the development of the joint study. A project is in preparation where natural farming based on the TonF approach combined with irrigation will be implemented by ICRAF and REMA.

Increased national level policy commitment with the inclusion of TonF in Rwanda's reporting the CBD and NDC

Building on the acknowledgement and trust developed during the IKI-TonF project and the recognition of TonF as a key resource for biodiversity conversation and human well-being, a key outcome of the project was achieved when TonF was included in Rwanda's global commitments on biodiversity and climate action. To align with the country's National Biodiversity Strategies and Action Plans (NBSAPs) and other policies, the project team worked closely with several ministries, agencies and associations, including REMA, the Ministry of Environment (MoE), the Rwanda Agriculture and Animal Resources Development Board (RAB), the Rwanda Forestry Authority, the Rwanda Water Resources Board, IMBARAGA farmers' federation. The IKI-TonF project developed the Farmland Biodiversity Score, a consistent global indicator for biodiversity based on the measurement of TonF, which was included in Rwanda's 6th National Report to Convention on Biological Diversity. The team also supported the drafting of the report by contributing to the evaluation of the Aichi Targets, developing a case study, that was included in the report, and reviewing the draft report. TonF are thus recognised by Rwanda as a national indicator to monitor and measure the biodiversity value of agriculture landscapes.

TonF was also embedded in Rwanda's updated Nationally Determined Contributions (NDC) Report 2020. The previous reports did not clearly state or budget for measures for agroforestry. After an exchange with the Director of Climate Change and International Obligations on the role of agroforestry for the achievement of NDCs, the project team was invited to support the development process. The report now contains clear goals and budgets for agroforestry, and it can be hoped that "*What Gets Measured Also Gets Done*".

Use of TonF and agroforestry promoted and mainstreamed at national level

Striving to reach out to a wide audience in Rwanda and mainstream the use of TonF and agroforestry, the project team and representatives from the government agency REMA held a dialogue on the benefits of TonF that was

broadcasted by the television station TV10 and the Rwanda Broadcasting Agency (RBA) in June 2020. RBA's discussion of TonF as a sustainable solution for biodiversity conservation may have attracted the interest in various audiences, including farming communities, authorities, and businesses. TV10 has nationwide coverage, with a high potential to enhance the visibility of TonF as a key to improving the standard of living in Rwanda's communities, especially those historically marginalized – and achieving national and global biodiversity targets.

CONCLUSIONS

One of the drivers that helped the TonF project was Rwanda's ambitious pledge to the Bonn Challenge in 2011, committing to restore 2 million ha of forest and agricultural land, thus establishing itself as a global leader in the restoration movement. This pledge corresponds to 76% of the country area. It is complemented by the Green Growth and Climate Resilience Strategy (2011), the Strategic Plan for Agricultural Transformation (2018), and the National Agroforestry Strategy 2018-2027, which set the policy framework towards a productive, green, and market-led agriculture sector and created an opening for the IKI-TonF project. Also, the TonF project could built on already implemented forest and land restoration projects. This led to tangible results, including the willingness of farming communities to adopt TonF and the increased understanding of and commitment to agroforestry among local and central policy makers. Nevertheless, there remain barriers to the adoption of the TonF approach. Despite the willingness of actors to grow trees on farms, the financial investment is often an obstacle. Access to quality planting material is also still a major challenge, the National Tree Seed Centre being the single reliable source with only one station in the country. Capacity is still lacking, for example technical skills to manage pests and diseases, so that tree products (e.g., fruits) are regularly lost. Continued collaborative efforts will be needed further scale out TonF and assist Rwanda's agroforestry task force to conserve ecosystem services as well as help rural farmers enhance their food, income, and energy security.

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