Trees on Farms for Biodiversity

Mainstreaming biodiversity and livelihood through Trees on Farms and agroforestry in Indonesia

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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 the World Agroforestry (**ICRAF**), the IKI-TonF project was implemented in Indonesia by the Center for International Forestry Research (**CIFOR**) in collaboration with the Tanjungpura University (**UNTAN**) in West Kalimantan. Main stakeholders involved in the process include, at national level the Ministry of Environment and Forestry (**MOEF**), mainly through its Directorate of Social Forestry and Environmental Partnership (**DG SFEP-MOEF**) and Directorate General of Natural Resources and Ecosystem Conservation (**DG NREC**), the Ministry of Agriculture, the National Development Planning Agency (**Bappenas**) and the Indonesian National Science Institute (*Lembaga Ilmu Pengetahuan Indonesia*, **LIPI**). At provincial level, the project worked mainly with the Watershed and Protection Forest Management Institute (*Balai Pengelolaan Daerah Aliran Sungai dan Hutan Lindung* - **BPDASHL**), the Forum for Watershed and Environmental Protection (Forum *Daerah Aliran Sungai*, **DAS**), and the Indonesian Green Financial and Investment Institute (**TIGFII**).

Key achievements

- **Successful community engagement in TonF and agroforestry practices enhanced the realization of the governments' land rehabilitation programme:** The IKI-TonF project succeeded to engage communities in TonF activities and improve their capacity to self-organize collective actions towards developing sustainable farming systems.

- **Knowledge successfully shared across community, provincial and national level:** Improved knowledge and skills of expert groups from academia, research institutions and NGOs helped to empower communities and practitioners and fostered cross-sectoral dialogue and collaboration on TonF and agroforestry.

- **Increased visibility and multi-stakeholder engagement enhanced the development of TonF investment schemes in West Kalimantan:** The project successfully attracted the interest of key financial actors and other management units that develop natural resources investment schemes in Indonesia, an important pillar in scaling out TonF in the country.

- **Increased awareness of TonF and agroforestry for biodiversity and livelihoods in provincial and national policy makers:** With evidence from the field and support from a strong multi-stakeholder network for advocacy, the project succeeded to capture the attention of policy makers at provincial and national levels and generated commitment to integrate TonF as an important strategy in their land rehabilitation program (such as the Social Forestry Development Program of DG SFEP-MOEF.

INTRODUCTION

Indonesia's rainforests contain 10% of the world's known plant species, 12% of mammal species – including endangered orangutans and critically endangered Sumatran tigers and rhinos – and 17% of all known bird species. Unfortunately, Indonesia also leads the world in the number of threatened mammals, 135 species, that is almost a third of the country's native mammals. The fragmentation of habitats through expansion of agriculture and extensive monoculture plantations are the leading causes of alteration of ecosystem services and species extinction (Koh and Wilcove 2008).

Addressing these problems requires that land is sustainably managed and that biodiversity in managed landscapes is conserved. Protected areas and managed forests alone will not be sufficient to fulfil the goals of the revised Aichi Target 7 (sustainable agriculture, aquaculture, forestry) and the implementation of the post-2020 Global Biodiversity Framework, nor the Sustainable Development Goal 15 (Life on Land). The key to this is the agricultural matrix and its tree cover. Trees are an essential component of a sustainable agricultural system. In addition to wood, fruit, nuts, medicine, fiber, and other products, TonF can provide many ecosystem benefits, including enhancing soil fertility, reducing soil erosion, and creating habitat for pollinators and the natural enemies of pests.

In 2015, the government of Indonesia notably adopted the Essential Ecosystem Area concept (Kawasan Ekosistem Esensial, KEE), aiming at biodiversity protection outside forests. Further, in the Indonesian National Biodiversity Strategy and Action Plan (NBSAP) 2015-2020, the importance of biodiversity outside the forest is acknowledged, especially in fragmented landscapes, although no indicators were proposed to assess the role of TonF in contributing to the Aichi Target 7. Still, the 2015–2019 National Medium-Term Development Plan targeted 12.7 million ha of Forest State land for the community through social forestry programs, with agroforestry as the main intervention. Efforts to engage the community in forest land rehabilitation are thus an integral part of the government's Social Forestry Development Program.

However, farmers often lack knowledge and capital to plant more tree species and have little information on accessing the government's financial support. Barriers such as low market availability for new commodities and insufficient support by the relevant extension agencies further reduce the chances of success. Although they do not cover transport, some government programs distribute tree seedlings for free. Yet, experience and realities in the field show that there is weak community participation and even when trees are planted by the farmers, the new tree plantations frequently are not maintained, and few trees survive. Farmers' perceptions and strategies in tree planting don't necessarily align with government objectives. Therefore, a better understanding of farmers' motivations, views, risks and investment strategies on tree planting and options on how to deal with their socio-cultural context are crucial in improving the effectiveness of any land rehabilitation or tree farming intervention.

WHAT DIFFERENCE DID THE IKI-TonF PROJECT MAKE?

Successful community engagement in TonF and agroforestry practices enhanced the realization of the governments' land rehabilitation programme

In 2016, the MOEF designated c. 20,000 ha of forestland in Mempawah, Kubu Raya, and Landak regencies in West Kalimantan province to be managed as "Special Purpose Forest Areas" (Kawasan Hutan Dengan Tujuan Khusus, KHDTK) by the Faculty of Forestry of the University Tanjungpura (UNTAN), to be used as an area for forestry and agroforestry research, mainly for the protection of germplasm. KHDTKs offer a unique opportunity for potential synergies and collaboration with other stakeholders involved in forestry, agriculture, conservation, land management, and as a research laboratory to educate students. This provided a good entry point for the IKI-TonF project: a formal collaboration was established with the Faculty of Forestry of UNTAN. The joint program addressed land use planning, agricultural land management and monitoring, trends in smallholder oil palm development, mangrove and peat swamp management, working especially in three regencies in the West Kalimantan Province: Sanggau and Singkawang.

In the Sanggau regency, the IKI-TonF project and UNTAN collaborated with the Bokal Kumuo Farmers Group at the Ngalok village, who are the rights holders of a community forestry (Hutan Kemasyarakatan/HKm, c. 700 ha) that is part of the MOEF Social Forestry Development Program. Through meetings and focus group discussions in 2018, the IKI-TonF project contributed to obtaining a better understanding of community perceptions on TonF and their strategies on tree planting investments. In 2019, together with the local NGO "Yayasan Perhutanan Sosial Bumi Khatulistiwa" (YPSBK), the project organized a Competitive Award Scheme (CAS) to stimulate action on developing agroforestry practices. Since then, the collective actions in developing their farming system have improved significantly. The farmers group took the initiative and by themselves set up trial models of cocoa, rubber, and coffee-based agroforestry farming. In total, they developed and submitted 10 proposals to the IKI-TonF project, involving almost all of the 83 households in the community. Also, the farmers group became much more actively engaged in the management of their community forest.

In the Singkawang regency, there was a series of meetings with the Setapuk village community and the local government to develop an increased understanding of the farmers' needs and views. It became clear that there was already a general awareness of the benefits of TonF for economic gains and environmental functions (e.g., maintaining water resources), yet information on where to obtain tree seedlings was missing. Starting in 2020, the IKI-TonF project collaborated with the Watershed Management and Environmental Protection Institute (Balai Pengelolaan Daerah Aliran Sungai

dan Hutan Lindung, BPDASHL Kapuas) in Pontianak. BPDASHL Kapuas provided 11,500 seedlings from 14 tree species to 114 farmers in Setapuk village, who were interested in investing in tree planting. The IKI-TonF project financed the distribution of the seedlings and provided nursery training to some of the farmers to strengthen their capacity for successful tree growing.

The most significant achievement of this work at the village level was the improved capacity of communities to organize collective actions towards developing sustainable farming system by adopting agroforestry practices. The experiences in the two communities show that farmers actively engage in tree planting and land rehabilitation when they i) see the relevance and benefits of the TonF and agroforestry to their livelihood objectives, and ii) have access to seedlings, training, and financial support. These are important insights for local partners such as BPDASHL who aim to engage communities in tree planting activities for better landscape management.

Knowledge successfully shared across community, provincial and national level

The improved knowledge and skills of expert groups from academia, research institutions and NGOs were an important further outcome of the IKI-TonF project. These are key actors who, with strengthened capacity, can now help to empower communities and practitioners, as well as collaborate on TonF and agroforestry research and advice policy makers. As part of the partnership with the Faculty of Forestry of UNTAN, the team facilitated TonF research and data collection and provided training for staff and students. The knowledge was integrated into the university's academic curriculum, promising the sustainability of the new learnings, approaches and methods acquired through the IKI-TonF project. This will create a crucial work force of intermediaries facilitating the dialogue between the local, provincial, and national levels, thus helping to mainstreaming the TonF approach in Indonesia.

Also, early in the project the IKI-TonF project shared evidence on the benefits of TonF for biodiversity conversation and human well-being with the Indonesia Scientific Institute (LIPI). As a governmental authority for science and research consisting of 47 research centers in the field, LIPI was seen as an important ally in facilitating a cross-sectoral dialogue at local and national levels. LIPI endorsed the TonF approach and became a strong partner to the project helping to advocate for agroforestry and TonF.

Increased visibility and multi-stakeholder engagement enhanced the development of TonF investment schemes in West Kalimantan

The project successfully attracted the interest of key financial actors and other management units that develop natural resources investment schemes in Indonesia, an important pillar in scaling up TonF in the country. Since 2019, the team engaged the Institute of Green Financial and Investment Institute (TIGFII), a national leading consultancy involved in green financing, in some of the activities in West Kalimantan holding a series of workshops and meetings. TIGFII recognized the importance of TonF and the role of community investments in supporting biodiversity and worked with the project to develop financing scheme models for community-based forest management in West Kalimantan. With TIGFII's good connections to both government and non-government financial institutions in the country, it has the potential to influence and attract further financial donors and agencies to support community-based forestry businesses (e.g., the DG SFEP-MOEF, as well as financial providers under the Ministry of Finance, Badan Layanan Umum, BLU).

Another excellent platform in West Kalimantan for reaching out to multiple stakeholders and raising awareness of the need for increased investments for TonF was the Forum for Watershed and Environmental Protection (Daerah Aliran Sungai, or Forum DAS). Since 2019, the IKI-TonF project facilitated dialogue among the forum members aiming to improve coordination and collaboration in preventing forest and land degradation. The forum achieved a consensus to synergize their respective agendas in forest and land rehabilitation efforts and acknowledged the importance of TonF for this. Through this work, the forum became more visible in the province, and it has been instrumental in integrating TonF development work plans and investment portfolios into government's rehabilitation and restoration programs.

Increased awareness of TonF / agroforestry for biodiversity and livelihoods in provincial and national policy makers

With evidence from the field demonstrating the practicability and benefits of TonF / agroforestry, and the support of a strong multi-stakeholder network for advocacy, the project succeeded to capture the attention of policy makers at provincial and national levels.

The Watershed and Protection Forest Management Institute, BPDASHL Kapuas in West Kalimantan was mentioned above as a disseminator of seedlings to the communities in Singkawang regency. It is one of MOEF's implementing units, tasked with realizing a forest and land rehabilitation program in the Kapuas River basin and watersheds in West Kalimantan. BPDASHL Kapuas has an annual budget for the dissemination of tree seedlings, yet their attempts to promote TonF were hampered by logistic. Through the collaboration with the IKI-TonF project, BPDASHL Kapuas has now a new set of strategies to engage community members more effectively and thus enhance their rehabilitation programs.

At the national level, evidence for the MOEF's acknowledgement of TonF became evident when the Deputy Director of the DG SFEP-MOEF was appointed as resource person for a workshop organized by the project in 2020. The DG SFEP-MOEF is the central government institution responsible for implementing and developing the Social Forestry Development Program in the country. The institution sets policies, programs, and provides government budget and other assistance to develop community-based sustainable forest management. With limited available resources but a very ambitious target to develop around 13 million ha of state forests under social forestry schemes, the General Directorate SFEP that already recognized TonF as an important strategy in their Social Forestry Development Program, has now access to new knowledge, skills, and approaches to implement their program more efficiently.

A major challenge is that institutional responsibilities at the government level for addressing biodiversity in managing tree cover in agricultural areas are still largely unclear. Their respective contribution to the CBD post-2020 Global Biodiversity Framework remains complex. Engaging frequently with key stakeholders on the national level, the project together with LIPI provided scientific evidence on the role of trees and agroforestry for people welfare and biodiversity conservation in fragmented forest and agriculture landscapes. However, while it was generally acknowledged that trees outside forests should be considered in the NBSAP, they were seen to relate more to the Aichi Targets 11, 14, and 15, rather than 7, and hence there were no indicators for TonF contributing to Aichi Target 7 integrated in the 6th National Report to the CBD in 2019.

CONCLUSIONS

The IKI-TonF project achieved outcomes at different scales. At the village level, the project enhanced community capacity in practicing sustainable farming for biodiversity conservation and human-wellbeing. Linking local, provincial, and national levels led to strengthened collaborations among multiple stakeholders and synergizing efforts to mainstreaming TonF for biodiversity in the agricultural matrix. For example, there was a strong cooperation between government, finance, and research institutions in the West Kalimantan Province, that resulted in an improved roadmap for forest, TonF, and land rehabilitation program. At the national level a vital outcome was the insight that Indonesia's national policies have to better support farmers in investing in TonF and that improved coordination is needed to both implement respective programs and inform natural capital accounting and reporting.

However, since the start of the pandemic, the Indonesian government has revised its national budget and programs to prioritize countermeasures, resulting in a reduction of support for forest and land rehabilitation. In December 2020, a new policy to support national food security was launched that supports the development of 'food estates' by allocating areas under production and protection forest status. This puts further pressure on biodiversity, and the challenge will increase to find a land-use management system that can maintain the balance between food security and biodiversity conservation. MOEF continues to accelerate its Social-Forestry Program, with significant progress in area granted to communities (at December 2020, about 4 million ha of the planned 12.7 million have been allocated). The target is still very high and improving the quality of forest landscape management under the permits remains a substantial challenge. The well-established collaboration between international, national, and local actors will continue to strengthen community capacity helping farmers to contribute their part to achieve the targets. A prerequisite for this is a continued high political commitment to find synergies in reforming national policies and to translate these into action on the ground, ensuring a sustainable use of Indonesia's natural resources.

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