

SDGs in action in agroforestry systems in Indonesia

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Abstract

Since the launch of the SDGs in 2015, Indonesia has been one of the early actors in integrating the goals and associated targets into national development planning. Part of this has included close collaboration with private sector actors in order to identify how climate and poverty objectives – among others – can be met jointly. Asia Pulp & Paper (APP) has been working in close collaboration with the Government and a range of other stakeholders to develop an Integrated Forestry and Farming Systems program designed to address the drivers of deforestation by empowering communities – particularly women – to develop climate friendly livelihoods. APP has committed USD 10 million over 5 years to work in 500 villages at building integrated forestry and farming systems (IFFS).

The program is now in its third year of implementation and early indications show promising results for many of the SDGs including human rights, poverty, food security, climate change, women's empowerment, biodiversity, and many others.

Key words

Sustainable Development Goals, agroforestry, poverty, smallholders

Introduction

For many years, a lack of integrated decision-making globally led to programs and policies often working at cross purposes with funding spread across multiple objectives. The Sustainable Development Goals were developed to be interlinked and to address some of the siloed activities and approaches of the past, while directing more targeted funding to a set list of priorities. The gamble was whether this would play out in practice, or whether the goals would remain integrated in name but that government and the private sector would still engage in one-off activities. Enough time has passed since the adoption of the goals in 2015 to assess progress made and where challenges remain. It's easiest to do this through concrete examples.

The Indonesian context provides a useful backdrop against which to assess progress on integrated decision-making as they have been an early actor in linking most of the SDG targets with national development planning and priorities – or NawaCita in Bahasa. Indonesia is also interesting as an example in the way that it has managed to find a middle ground in achieving multiple objectives at the same time. Indonesia has cut poverty by more than half since 1999, while achieving considerable economic growth. However, more than 25 percent still live below the poverty line and another 20 percent are 'vulnerable' to falling into poverty.¹

Those most exposed are rural smallholders. Indonesia's agriculture sector is dominated by small-scale subsistence farming with average farm size of less than 1 ha. Of over 3 million hectares of smallholder plantation in Indonesia, 2.5 million are located in Sumatra and 0.4

¹ The World Bank in Indonesia, 2019. ([here](#))

million in Kalimantan in which smallholders most commonly produce palm oil, rice, corn, fruits and vegetables.² Poor access to equipment and materials, economic instability, and environmental issues such as droughts and pests form persistent barriers for smallholders in these areas to improving both productivity and sustainability in agriculture.

Climate change presents considerable risk to Indonesians in the form of floods (affecting 33.6 percent of the population) and wildfires made more prevalent by drought (14 percent).³ Slash and burn agriculture has long been the traditional method for land clearing by smallholders which has had tangible effects on the land with surface subsidence, soil erosion and flooding. As the world's largest archipelago, rising sea levels pose a significant threat to the livelihoods of many and it has been estimated that 2,000 islands and 42 million homes are calculated to be submerged before 2050 if business as usual practices persist.⁴

Indonesia's forests and peatland had been in steady decline for the last 30 years, but the national government of Indonesia has enacted a range of supportive policies – many of which support natural climate solutions-in order to halt forest loss and prevent further degradation of peatlands. Data released by Global Forest Watch in 2017 found there had been a 60 percent drop in tree cover loss in primary forests compared with 2016.⁵Indonesia has an obvious role to play in identifying how to pursue economic growth alongside net zero ambitions, particularly in how natural climate solutions can be advanced in a way that meets poverty reduction goals.

Natural climate solutions

- Improved forestry
- Blue carbon
- Avoiding habitat conversion
- Fire management
- Soil health
- Reducing food waste
- **Agro-forestry**

One particular approach which has been found to deliver on both climate and poverty reduction is agro-forestry. Agro-forestry is defined as agriculture incorporating the cultivation of trees. Research has pointed to the broad spectrum of SDG's that agroforestry positively contributes toward achieving. Of the 9 out of the seventeen SDGs it is seen to positively impact, agroforestry is seen to have the strongest impact on poverty reduction (SDG 1) and hunger alleviation (SDG 2), as well as on climate action (SDG 13), and biodiversity conservation and sustainable land management (SDG 15).⁶The Government of Indonesia has sought to foster the development of agroforestry through social forestry policy which mandates stipulates that 20 percent of forest concessions should be used to support co-managed agro-forestry systems.⁷

However, beyond charity or CSR like schemes, there was little uptake and a lack of the widescale adoption hoped for as a result of a number of factors. These include the short-term economic benefits of high input, intensive agriculture and limited incentives to invest in

²IPOC, Indonesian Oil Palm Statistics and Directorate General of Plantations, Department of Agriculture, 200931, 2010 ([here](#))

³ 'Indonesia Disaster and Risk Profile', UNDDR PreventionWeb, 2019 ([here](#));

⁴ Ibid.

⁵ '2017 was the second-worst year on record for tropical tree cover loss', Global Forest Watch, 2018 ([here](#)).

⁶'Achieving the Global Goals through agroforestry', Agroforestry Network and Vi-skogen, 2018 ([here](#)).

⁷PermenLHK 12/2015.

ecosystem services; poorly developed value chains for non-timber products; a lack of local and national market incentives (such as higher transaction costs related to diversified production); barriers to women engaging in these systems; and insufficient access to technical or financial support.

This paper seeks to explore how these barriers can be addressed and agroforestry can be advanced in Indonesia, through the review of an initiative led by the Asia Pulp & Paper (APP) launched in 2015.

APP's Integrated Farming and Forestry System program

Asia Pulp & Paper (APP) is an integrated pulp and paper producer which includes industrial forest plantations and pulp and paper mills across five provinces in Indonesia. APP launched its Forest Conservation Policy (FCP) in 2013, upon which it undertook an extensive review of its operations to determine how to achieve a deforestation free supply chain. It was clear that the greatest challenge would not be inside APP's own concessions, but the impact of actions taken outside of APP's concessions. Risks outside of concessions identified included land conflict, forest encroachment, and fires for agricultural land clearing. These issues are closely linked to poverty and economic development opportunities.

APP designed the Integrated Farming and Forestry System (IFFS) - or *Desa Makmur Peduli Api (DMPA)* in Bahasa Indonesia- with the idea that only by addressing poverty at its very roots would APP be able to combat the risks to the forest it had committed to protect. APP made an initial commitment of US\$10 million over 5 years to roll-out the IFFS approach in 500 villages located around APP's concessions. From the outset, APP knew that reaching its objective of thriving communities in just 5 years would be difficult, particularly given the variety of conditions and issues faced in each village. Each village brings with it unique cultural and geographic characteristics which have influenced how people have engaged with the forest long before APP or its suppliers were present in these regions. For example, some of the villages include 200 households and others 8,000. Some of the villages are near water and engage in fishing, where others have been engaged in agriculture like rice paddies or palm oil.

Participating villages in the IFFS program were identified based on whether they are:

- Located within concession areas or within 3km from the concession border;
- Interact closely with forest resources found in concession areas;
- Have a history of forest and or bush fires in the last three years;
- Have been involved in illegal logging or deforestation.

In order to tackle the complexity of conditions and issues unique to each target village while developing a scalable approach, six key components were defined -

1. *Improving Forest Management & Livelihoods*: Integrating the use of forest resources and agricultural crops to help improve the forest environment and develop the village's social economy potential
2. *Participatory Mapping of Resources & Borders*: Working collaboratively to map out village boundaries and adjacent forest areas
3. *Transferring Technology & Knowledge*: A two-way sharing of methods and know-how, including local wisdoms, to discover the best solution to ensure a healthy, sustainable environment and village economy
4. *Partnering in Product Marketing*: Guiding villagers in applying marketing techniques to expand existing markets and creating new markets for commodities produced through agroforestry (farming, fisheries, husbandry, forestry production).

5. *Protecting & Maintaining Forest Areas:* Establishing roles, improving awareness and heightening active participation of villagers in using forest resources responsibly and productively as a way to prevent fires and to maintain better means of income.
6. *Resolving and Preventing Local Conflicts:* Fostering harmonious and constructive means of communication between village beneficiaries and APP suppliers to mitigate the potential for misunderstandings, miscommunications and conflicts. Encouraging cooperation and discussions among village communities to resolve longstanding issues or alleviate ingrained negative dynamics.

The IFFS program is founded on the principle of active participation and coordination among all stakeholders: villagers, village administrations, partnering village institutions, non-governmental organizations, academics, APP, and its suppliers who manage local concession areas. A collaborative partnership with village-level institutions was established to implement the IFFS program. The program provides special attention and reinforcement to cooperatives and Village-Owned Enterprises (BUMDES). If the IFFS target village has no such entities, the IFFS program may seek partnership with farmers' groups or Joint Farmers' Group (Gapoktan). In this case, the Gapoktan will be directed to establish a cooperative and/or BUMDES. This is done so that capital allocated within the IFFS program can be managed so that it will benefit all villagers, not just the members of the farmers group.

As part of the program APP has sought to prioritise 'change agents' – or those in a good position to influence others in the community. This follows the concept of 'train the trainers' where in each community APP trained a few farmers on climate smart agricultural practices and agro-forestry techniques who can then adapt them to their own context and with APP's support facilitate training for the larger community. Programs range from the development of new crops, such as herbs, fruit, horticulture and rice; and animal husbandry in the way of fisheries, pigs, goats, chickens and cattle. APP provides direct financial support for each community for them to determine how to use, along with the provision of machinery and tools to support climate smart agriculture practices. As the program is rolled out, APP will also work with communities to improve market access for the products they produce by facilitating relationships and agreements with offtakers.

Impact achieved to date

With the project ongoing, the real impact of these schemes is expected to be seen over the longer term in socio-economic and ecological benefits such as more resilient livelihoods, lower greenhouse gas emissions, and better social inclusion. Preliminary results indicate improvement in incomes (SDG 1), better food security (SDG 2), reduction in fire incidents (SDG 13 and 15), and progress in integrating women into more productive livelihoods (SDG 5).

As of December 2018, the IFFS program has been implemented in 284 villages, benefitting 16,807 households. Initial results indicate:

- *Improvement in income:* The project aims to increase incomes from 50 – 75 percent against a baseline by the third year of the program. Following four years of implementation, the program has resulted in some success stories in villagers significantly increasing their income. The roll-out of the program has been gradual so those that joined earlier have seen greater results. Progress achieved through the program has included efficient and optimal land use by the villages for more productive and lucrative activities, which include animal husbandry, fish farming and agriculture. For example, a farmer who engaged in a goat and duck breeding program has gone from 40 to 130 goats, of which he can sell individually for Rp1.5 – 2.5 million.

- *Fire incidence in vicinity:* Out of 78 villages that have joined the IFFS program since 2016, around 85 percent are able to reduce fire incidences in their area or maintain zero fire.⁸
- *Forest protection:* Only around 0.2 percent of the total forest areas (dry-land, swamp and mangrove) located in the vicinity of the 78 villages who have taken part in the program for 3+ years experienced land cover change.⁹
- *Relationship with the communities:* the IFFS program has helped to improve trust between company and communities, foster better relationship and as such, significantly reduce the risk of disputes.
- *Women engaged:* The program has succeeded in engaging women, with 64 women's groups involved in the program in 2018, up from 16 in 2016. This includes a partnership with the Martha Tilaar Group to develop female employment opportunities.

APP is currently working with the Center for International Forestry Research (CIFOR) and the World Agroforestry Center (ICRAF) to assess the social, economic and environmental impact of the IFFS program. Preliminary research has found that progress and outcomes of IFFS implementation in each village has varied, ranging from progression with high potential to succeed to low potential to succeed.

This has been attributed to a range of factors, such as i) the engagement of the village facilitators and the quality of the facilitation; (ii) the level of support from the APP supplier companies; and (iii) the support from APP Sustainability Division. Alongside external factors, including (i) the leaderships in the villages to embrace the farmers to inclusively identify the types of IFFS activities suiting the socio-economic-ecological contexts of the village; (ii) the social cohesion and skills in implementing the IFFS activities collectively and individually; (iii) the community's access to capitals (equipment, financial and land) needed for implementing the IFFS activities.

Case studies:

Suryono – a global model of horticulture: Suryono is a farmer and member of IFFS social economy program in Pinang Sebatang Barat Village, Siak Regency, Riau Province. The village is located inside one of APP's suppliers' concession areas, PT. Arara Abadi. This 4,248 hectare village is home to 1,567 families, of which the majority comes from the Malay Tribe. People rely on plantations, with palm as the main crop, to cultivate horticultural crops. Suryono used to cultivate oil palm, however due to a lack of knowledge on growing palm, results were not optimal. In 2013, after meeting and having several discussions with PT. Arara Abadi, who offered assistance on community development programs, he then planted his 2 hectare of plantation with horticultural crops. Suryono used to earn an income between IDR 2-3 million per month. Today, he earns up to IDR 15 million every month from harvesting a 4 hectare plot of vegetables and tending to livestock. Suryono also able to employ his fellow villagers to work in his fields. His transformation from oil palm grower to horticultural farmer has brought him abroad to Marrakech, Morocco, where he spoke at the United Nations Climate Change Conference (COP 22), held from November 7 - 18, 2016. In addition, Suryono was invited to speak at a session themed "Putting People at the Centre: Climate Friendly Forest-Based Livelihoods" in the Indonesian Pavilion at Bab Ighli in Marrakech. "It is a dream to speak here and inspire other farmers. I want to stress that land management through proper cultivation is more profitable than what I did before," Suryono said.

⁸Based on internal monitoring data by Asia Pulp & Paper.

⁹Based on internal monitoring data by Asia Pulp & Paper.

Jamin - MajuTani Group, Bukit Batu Village: Jamin is a leader of the MajuTani Group of Bukit Batu Village that consists of 24 farmers. The Bukit Batu Village is located in Air Sugihan District, Ogan Komering Ilir Regency, South Sumatra Province, and consists of 802 families who relied on oil palm and rubber. This village is located near PT. Bumi Andalas Permai, one of APP's pulpwood suppliers. After becoming one of the beneficiaries of IFFS program, the Maju Tani Group was able to work on a 24 hectare corn field inside the 910 hectare livelihood plantation area. The land has been distributed so that each farmer of the group owns 1 hectare. Jamin leads the farmers' collective to take advantage of this golden opportunity. Several facilities the group receives through the IFFS program are the provisions of quality corn seeds, fertilizers, and insecticides. The farmers sowed around 15 kilograms of corn seeds per 1 hectare of land on livelihood plantations, cultivating their crop using hand tractors and irrigation canals. The corn seeds were planted on May 2016 and by September 2016, the farmers harvested around 2.4 tons of corn per hectare. Currently, Jamin is able to employ other farmers to work on his corn farm. During the harvesting season, he employs around 10 people to help him. Pak Jamin's corn field is harvested three times per year.

Rita Ayuwandari – Mekar Wangi Women Farmer Group, Dataran Kempas Village : Rita used to be a housewife whose goal is to help her husband raise their family economic condition. Upon hearing of the IFFS program in her village, Dataran Kempas, in Jambi province, she took the initiative to apply the Mekar Wangi Women Farmer Group as a beneficiary of the IFFS program. Rita and the women in Mekar Wangi group chose to cultivate red ginger since it is easy to cultivate and have a good market value. The group work on a one-hectare land, with a total potential harvest estimated at 8 tons of red ginger. The ginger is then processed into herbal drinks and traditional snacks, which the women sell in the village. The program has been able to provide additional income for Rita and the women farmers in the Mekar Wangi group, empowering the women as well as providing better welfare to their family. The women group now also participate in the program initiated by APP and Martha Tilaar Group, a leading beauty company in Indonesia, which aims to empower 1,000 women in rural areas in and around APP's operation. By enrolling in a course to process herbs into traditional drinks and snacks, Rita and her group hope to diversify the herbs that they cultivate in their land, and generate more income from selling more value-added products.

Jeni - Barokah Sri Rezeki Group, Banyu Biru Village: Jeni is a leader of the Barokah Sri Rezeki Group which consists of 25 farmers. This group is located in the Banyu Biru Village, Air Sugihan District, OganKomeringIlir Regency, South Sumatra Province. The Banyu Biru Village is home to 658 families who are mostly Javanese, as well as a few Malays who work on rice and plantation crops (oil palm and rubber plantations). The farmers rely on the rainy season for the availability of water for their land. They utilize the land for only 6 to 7 months per year, from September to March. Land preparation, held from July to August, is done by burning the land; which triggered forest and land fires. Burning the land is a method communities use for land preparation, named Sonor. Water management is the main obstacle stopping people from using the land throughout the year, so for almost 5 to 6 months in the dry season, the farmers abandon the land and then burn it in preparation to plant rice. The months of July and August became the months of high risk for forest fires, as seen in 2015 when fires occurred in the Simpang Heran area, an area of PT. Bumi Andalas Permai, one of APP's suppliers, which borders the Banyu Biru Village. Since early 2016, Banyu Biru Village has been an IFFS beneficiary. The farmers in the group are planting rice and corn on a 25 hectare area inside of 782 hectare livelihood plantation area managed by PT. Bumi Andalas Permai. Through the IFFS program, the farmers are required prepare the land without using traditional methods of burning. The IFFS program provides herbicide and tractors as alternatives for land preparation. The IFFS program in Banyu Biru Village will

become the pilot program for intensive farming system in increasing land productivity. To optimize this, the IFFS program also provides the necessary infrastructure, such as canals for water management that will make the land usable throughout the year, and will allow farmers to plant other horticultural plants after harvesting their rice fields. After increasing the villagers' participation in the IFFS program, an institution was established to coordinate and implement effort for land and forest fire prevention, including socialization and early education for students. Together with Manggala Agni dan Fire Organization Management from PT. Bumi Andalas Permai, socialisation on fire was conducted with various communities, students, youths, farmers, and others. Since becoming a beneficiary of the IFFS program, there have been no land and forest fires in Banyu Biru Village. The change in land preparation methods is not the only measure necessary to prevent fires, but minimising the chances of fires happening in the future.

Key challenges and lessons learned

Through the roll-out of the program APP has encountered a number of challenges and each year has tried to incorporate learning from previous experience into the subsequent roll-out in new villages. These lessons may also apply to agro-forestry programs in other countries and/or the thinking around how to scale up nature-based climate solutions.

Involvement of government institutions (SDG 17)

After beginning the initial rollout of the program, it was clear that some villages had greater management and coordination capacity. Part of the APP program was around creating local empowerment and ownership of the program long term so it was necessary to focus on how to strengthen local institutions so that the project wouldn't risk falling apart if APP were not heavily engaged. In 2017 APP signed an MoU with the Ministry of Villages, Underdeveloped Regions and Transmigration on collaborating to strengthen village-based institutions. The fact that it is the government providing support and training to local institutions also helps to build trust with communities on longer term engagement.

Identification of local partners (SDG 17)

In addition to the government as a partner, it was clear that due to the sheer scale of the initiative and the variety of local circumstances that it would be very important to have a local – or many- partners that not only had the respect and trust of villagers, but also could help to advise APP on how to best target initiatives for long-term success in each community. Where possible, APP also sought to work with institutions that were working across a number of villages to further build synergies and knowledge-transfer.

Dedicated focus to women's empowerment (SDG 5)

At the outset of the IFFS program women's groups were established as a way for women to feel more empowered in decision-making in a 'safe' environment. Through also partnering with organizations dedicated to women's empowerment APP has been able to ensure that this remains a key pillar of the program and not a side aspect.

The importance of having strong baseline data to attribute the impact of the program

APP was eager to begin the roll-out of the program and as a result began project implementation before data from all villages could be obtained on the baseline conditions. Without this baseline data, it makes it nearly impossible to assess the impact of APP's initiative. Even more challenging, is the ability to attribute impact to the initiative itself and not

based on other factors. For this reason it is necessary to have a 'control' scenario in order to compare progress against.

Balancing community interests with commercial scalability (SDG 1, SDG 12)

A core component of this program is community empowerment, rather than a top down approach. APP has established a fund for each village to use, but how it is used is up to each village and even single farmer. APP has aimed to support farmers in this decision by providing access to information about crop yield, demand, and current prices for various products. However, many farmers have chosen agricultural products/activities that may not be successful/scalable at a commercial level but work well for them in how they want to manage their livelihood.

Identifying co-funding/commercial funding (SDG 17)

Agriculture will remain a key strategic sector for the Government of Indonesia. Indonesian farmers remain largely excluded from formal financial services, which provides a persistent barrier for improving agricultural efficiency. Only 8.78 percent of lending goes to agriculture (livestock, forestry, and fishery), despite the sector contributing 14.43 percent of the national GDP.¹⁰ Of this lending available, the majority is funnelled into larger, state-owned or private entities and access to formal loans for smallholders in agriculture remains low. Though formal institutions remain reluctant to engage with smallholders, smallholders themselves are also wary of involving themselves with banks. Research by the European Microfinance platform found 39.77 percent of Indonesian cocoa farmers are unwilling to approach formal institutions for loans.¹¹

Conclusion

The initial results from the rollout of APP's Integrated Farming and Forestry Systems program provide important lessons about the role of the private sector in working towards the SDGs, and specific learning on how agroforestry systems in Indonesia, but also more broadly can be effective at advancing progress on a range of SDGs.

This paper has aimed to highlight not only on how important it is to get the design right, but also the importance of partnership, as well as built in monitoring to scientifically measure impacts that can be attributed to the initiative.

The paper also further emphasizes the suitability of agroforestry in tackling several issues in Indonesia, and as such, has a huge potential for scalability to national level with the right multi-stakeholder partnership as well as support from the national and sub-national government.

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