



FACTSHEET

Digitalization Helps to Accelerate

Economic and Environmental Resilience

Project Introduction

The GRASS (Greening Agricultural Smallholder Supply Chains) project is funded by the German Federal Ministry for Economic Cooperation and Development (BMZ) and is implemented by GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit) together with the Directorate General of Estate Crops of the Indonesian Ministry of Agriculture from 2023 to 2025 (3 years).

The project objective is to improve the economic and environmental resilience of smallholder farmers at the base of global supply chains. This is done by training smallholder farmers in a range of sustainable and regenerative agricultural practices tailored to local conditions. Physical (offline) capacity building measures are complemented with digital online tools and platforms for education and blended learning contents that combine digital and traditional in-person methods for a comprehensive learning experience. Digital training measures are increasingly gaining importance, as they cost-effectively facilitate remote and independent learning.

The Project Region and Digital Infrastructure

The project region Kapuas Hulu, a remote district in the “Heart of Borneo” has a population of about 265.000 people and an area of about 31.000 km² (roughly the size of Belgium). This district is home to two national parks and 75% of its area is covered in forest. In 2019, the district in its entirety was declared a UNESCO Biosphere Reserve.



For further details about the GRASS project, please scan the QR code above.

The remoteness and size of the project region constitute significant challenges for the provision of digital training measures. Digital literacy gaps mean smallholder farmers often need initial training on how to use digital tools. Training programs must be tailored to local needs, requiring localized content creation. Additionally, limited internet connectivity and inadequate digital infrastructure hinder access to online materials. Power supply issues further complicate the use of available devices. Overcoming these challenges requires infrastructure investment and community engagement to build trust and improve digital literacy.

To provide access to digital contents in areas without network connectivity, the GRASS project procured Beekee offline learning solution devices. These devices enable online learning experiences anywhere, without the need for the internet or electricity, and allow the same online learning experience to be delivered completely offline.



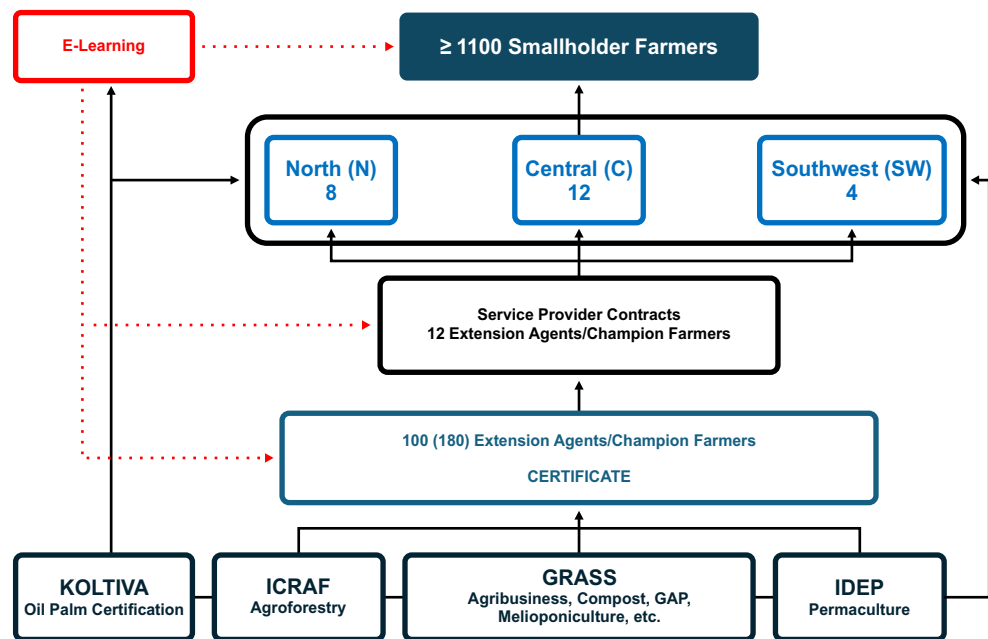
Farmers can gather at their plantations and access learning materials about sustainable agricultural practices or agricultural business either independently or together with extension agents.

How Does GRASS Strengthen the Resilience of Smallholders?

Sustainable Practices

Digital applications and e-learning formats are applied to support improvements in the smallholder capacities for the adoption of resilient and climate-smart agricultural practices and better marketing options. The provision of digital content is integrated into GRASS multiplier training strategy, where at least 100 agricultural candidates (champion farmers, extension staff, Polytechnic graduates) are trained in sustainable agricultural practices as trainers/extension agents, both directly and through project partners. The best performing of these trained agricultural extension agents will be awarded local contracts to train and provide extension services to at least 1,100 smallholder farmers (the GRASS target value).

In addition to physical training measures, all supported smallholder farmers will be supported to complement their learning experience with independent learning. GRASS has been developing tailor-made training content on sustainable agricultural practices for the commodities palm oil,



natural rubber, cocoa, and coffee, as well as on sustainable farmer groups and agri-business. Smallholder farmers can access these contents through ‘atingi’, the free digital platform commissioned by the German Federal Ministry for Economic Cooperation and Development (BMZ) and implemented by GIZ. GRASS has produced the first-ever agricultural training content in the Indonesian language for atingi. These learning materials are presented in a combination of text, images, and interactive videos, to make them interesting and easily digestible for farmers.

“I found that the rubber training with video content is interesting to follow, especially for the rubber clones. The language is easy to understand, and I am interested in following the next training,” said Ibu Happy.

Through atingi, smallholder farmers can learn about sustainable practices independent of location and time. Their newly acquired knowledge can be put directly into practice. The farmer's learning progress is synchronized by the above-mentioned Beekee devices to the atingi server. Upon completion of courses, certificates are issued. GRASS targets a minimum of 500 agricultural actors using digital applications, e-learning and field-tested approaches to increase their resilience.



Ibu Happy, one of the GRASS project farmer beneficiaries in Kapuas Hulu, has completed a GAP course on atingi.

Market access

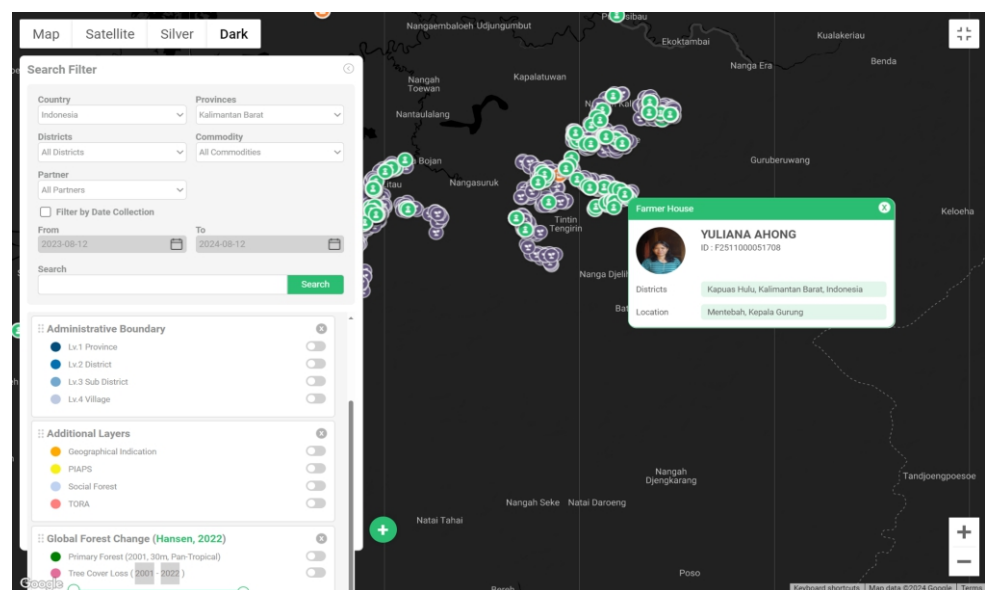
Digital tools enable smallholder farmers to leverage digital marketing to reach a broader audience by using social media and online marketplaces. This allows them to promote their products, connect directly with consumers, and build brand awareness. Digital marketing helps farmers optimize sales, engage with customers, and compete in an increasingly digital marketplace.

GRASS trains the smallholder farmer groups (women and men) on how to add value to their agricultural produce by post-harvest processing, by packaging that appeals to customers, and by using the Kapuas Hulu Biosphere Reserve brand in their digital marketing efforts on various platforms.

Traceability

Besides the delivery of training contents and market access, digitalization also plays an important role in GRASS regarding traceability. Traceability of the supply chain ensures transparency from the farm to the table. By using digital technology, the origin, production, and distribution of agricultural products can be seamlessly tracked. For the commodities oil palm and natural rubber, the supply chain is mapped through the provider Koltiva.

This consists of two major parts, a socioeconomic baseline questionnaire and the mapping of each farmer's plot by GPS. When all the collected baseline data is fed into the cloud-based digital traceability system, a multitude of information becomes available at a mouse-click and each kg of the agricultural product can be traced from the farmer/plot all the way to the processing company. Through this, smallholder farmers become compliant with regulatory requirements (European Union Deforestation Regulation) and market demands for transparency for preferred market access.



Spatial planning

GRASS supports participatory spatial planning in pilot villages that focuses on balancing development with environmental conservation. GRASS trains villagers in the use of GPS (Global Positioning System) and mapping skills. This involves the delineation of village boundaries and the optimization of land use. The spatial analysis clarifies which farms lie fully within the agricultural zone and which extend partly or fully into the state forest zone. Finally, the spatial planning helps to identify and protect natural resources (High Conservation Value and High Carbon Stock areas), and ensures that infrastructure supports long-term community needs. This approach promotes eco-friendly growth, enhances the residents' quality of life, and preserves cultural and natural heritage for future generations.

Conclusion

In combination, the digital tools employed by GRASS aim to empower smallholder farmers to adapt to changing environmental and market conditions, ensuring long-term sustainability and economic viability. The most successful approaches will be upscaled to a wider range of agricultural actors, inside the intervention area and beyond.

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To see GRASS target area map, please scan the QR code above (ID only).