
Towards sustainable rural community: the lessons learned from a pilot intervention at an Akha tribal community (Mae Chan Tai Village) in Northern Thailand

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Abstract As a part of global efforts to pursue SDG Localization, a pilot project “Community based Sustainable Livelihood Development in Mae Chan Tai Village” was formulated and implemented (2018-2025) at Akha tribal village in Northern Thailand, with a focus to SDG 1 (poverty), SDG 2 (hunger, sustainable agriculture) and SDG 10 (inequality). The pilot project achieved good progress. Mae Chan Tai village community established a community organization (Community Enterprise) which played a key role in bringing all villagers to help each other and working together to pursue their common objectives. The village community has successfully built-up community revolving fund (one of the most important key indicators to measure the sustainability of community-centered self-help effort) with a total of 127,617 baht (approximately 4,000 US dollars) in one year during 2024 which was used for various community activities. Estimated average annual net income of villagers doubled during 2018-2025, reflecting largely significant increase of the farm gate price of Mae Chan Tai arabica coffee beans, which corresponded to sharp appreciation of international coffee markets price, and increased recognition of the quality, taste and value of Mae Chan Tai arabica coffee that draw local buyers to pay higher prices for their superior quality. The living conditions of villagers improved significantly during the period.

Keywords: SDG localization, Akha tribe, Mae Chan Tai village, Arabica coffee

Introduction

Rural communities express the community need, local traditions, cultural values, integrating societal objectives for planning and managing initiatives for sustainable rural development (Robinson, 2008). Graham (1998) reported that the connections between the cultural turn in social theory, and the emergence of new models in local and regional development revealed importance for sustainable rural development. The working on regional development which concern the role of social networks and institution that trust as preconditions for success. These condition of institutions revealed similarities to traditional social characters of rural areas, and explain the failed strategies of rural development towards integrated approaches. The social community systems can be enabling individual, groups

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and organisations as the actors to communicate and share resources, and to improve their life (Fesenmaier and Contractor, 2001).

The knowledge management helps community development which the knowledge help to drive a value rura economies, driving collaboration and managing knowledge transfer to move a social and economic growth of rural communities (Mardsen *et al.*, 2001). Knowledge management shows the firm of knowledge system to generate information (Sporleder and Peterson, 2003). Communities can act as a gate-keeper to implicit and explicit the knowledge to the group of stakeholders which contribute to share and create communities (Wiltshier and Edwards, 2014). Collective action supports effective rural development to develop the sources of knowledge which practices for the process of value creation (Meinzen-Dick *et al.*, 2004). Social exchange, cooperation and interaction can contribute to shape and form new knowledge collection (Hecker, 2012). Rural development help to encourage knowledge sharing in rural welfares and agricultural knowledge (Girard, 2015).

The implementation of the 2030 Agenda; Sustainable Development Goals (SDGs) has faced serious challenges in rent past. United Nations 'document "Accelerating Progress on the 2030 Agenda from Local to Global Levels: The Critical Importance of SDG Localization" published in 2024 by UN stated that by empowering communities and citizens to take ownership of the SDGs, we unlock a transformative force for change. Local actors have invaluable knowledge, resources and the ability to address unique challenges and tailor solutions that resonate (United Nations (2024). This paper is presented an example of the SDG localization; a pilot project at Akha tribal community: Mae Chan Tai Village in Northern Thailand, in building up a self-reliant rural community through inclusive, bottom-up and self-help approaches towards sustainable development.

Mae Chan Tai village and arabica coffee production

Mae Chan Tai village is located about 150 kilometers north of Chiang Mai City and in the western part of Mae Suai District of Chiang Rai Province. The village is consisted of 42 Akha tribe families with a total of 229 population (as of May 2025). It is nestled on the top of steep mountains at an altitude of 1,400 meters above sea level. The village was founded in 1981 when several Akha families, unable to accept conversion to Christianity, left their original Akha community in search of a place where they could practice their traditional beliefs (Animism) freely and where they could find abundant and delicious water supply. Since coffee production started in early 2000th, coffee farming became a staple in the village and shares 70-80 % of the total family income. Yet, the village remained underserved by public services. As of September 2025, there was no public electricity supply, unreliable telecommunication network, lack of school, bad roads (only 4WD vehicles can reach the village) and limited water supply. Despite these hardships,

today, Mae Chan Tai village produces nearly 600 tons of Arabica coffee cherry annually. Advantaged by the high altitude, fertile soil and good weather conditions suitable for arabica coffee production, Mae Chan Tai village is known among coffee specialists as a home of producing high quality and tasty arabica coffee. On the other hand, the producer prices of coffee beans became increasingly volatile, heavily influenced by the international coffee market. Most recently, there was a sharp decline in international market price of arabica coffee by 35% in 2018 from that of 2014, which negatively affected proportionally the price in local market and the farm gate price at village level (estimate decline of coffee green beans farm gate price by 38% from 220 baht/kg in 2014 to 160 baht/kg in 2018). This resulted in sharp decline in farmer's income and created a sense of great uncertainty among village farmers on their future life.

Materials and methods

Literature review: annual project progress reports, statistical records and other literatures were used for the literature reviews.

Field studies: field studies took place in Mae Chan Tai village 3 times/year (January, March, August) during the project period 2018-2025 (except COVID-19 pandemic period).

Interview: intensive interviews were carried out with selected villages, officials of the Royal Project Foundation and the Inter Mountain Peoples Education and Culture in Thailand (IMPECT).

Data collection and analysis

Soil and coffee compost samples were collected from the Mae Chan Tai village, Chiang Rai Province of Thailand for analysis on their nutrient content, pH, Electrical conductivity (EC), etc., which were analyzed at the Soli Science Laboratory of the King Mongkut's Institute Technology Ladkrabang, Thailand.

Results

The pilot project

Against these backgrounds, a pilot project "Community based Sustainable Livelihood Development in Mae Chan Tai Village" was formulated and implemented (2018-2025) as a part of global efforts to pursue SDG localization with a focus to SDG 1 (poverty), SDG 2 (hunger, sustainable agriculture) and SDG 10 (inequality). The project was initially

requested by the village community and was formulated jointly by the General Incorporated Association for the Promotion of Self-reliance in Asia (GIAPSA, Japan based international NGO), together with the village community, in consultation with the Inter Mountain Peoples Education and Culture in Thailand (IMPECT) and the Asia Indigenous Peoples Pact (AIPP). The basic principles applied on the project are sustainable (economic, social and environmental), needs based, bottom-up, participatory, self-sustainable, environmentally sound, gender sensitive, people and community-centered, inclusive, adhering local wisdom, practices and cultural sensitivity, and building up experience for emerging a replicable model. Taking into consideration of these principles, the project is aimed at building a self-help capacity of a hill tribe community for self-reliance and sustainable development.

More specifically, the project focused on assisting the village community in 1) promoting the production, productivity and quality of Mae Chan Tai coffee and improve farmers' income and living conditions, 2) establishing a village organization (community enterprise) with a participation of all village households, 3) creating a mechanism for participatory decision making and progress monitoring, including the establishment of project steering committee and project implementation committee, 4) promoting cost-sharing approach (between village community and GIAPSA) and user-pay (by villagers) systems to enhance the sense of self-help and self-reliance, 5) establishing and operationalizing “ Community Revolving Fund” which are generated from service fees charged to the users (village farmers, etc.) against the use of coffee grinding and roasting machines (donated by GIAPSA), 6)enhancing the income generation activities of the village community by organizing home-stay programme and cultural events during study tours, 7)promoting recycling of coffee residues and waste for organic compost making and organic coffee production, 8) implementing community-centered social, economic and environmental activities using the “Community Revolving Fund” such as road and water pipe repair works ,construction of forest fire protection belts and organization of community cultural events, 9) promoting the market value and popularity of Mae Chan Tai coffee through branding and marketing, including the opening of an Anthena Coffee Shop in Bangkok (as a joint venture social business) and expanding coffee beans sales to local and export markets. Fifty (50%) of the net revenue of the coffee shop was returned to the Mae Chan Tai village for community activities.

Productivity and quality of Mae Chan Tai coffee have been upgraded through the introduction of superior varieties and cut of edge technologies in coffee production and processing. As a result, arabica coffee beans produced at Mae Chan Tai village won 3rd,5th,6th and 8th place at the Thai National Specialty Coffee Competition in 2023. The farm gate price of Mae Chan Tai coffee green beans increased considerably from 160 baht/1kg in 2018 to 295

baht/1kg in 2025 (about 84 % increase in 7 years). This resulted from the recognition of higher market value of Mae Chan Tai coffee that draw local buyers to pay higher price for its superior quality, and significant appreciation of coffee beans price in international and local coffee trade markets.

As a result, the estimated average net income of village families increased sharply (doubled) from 150,000 baht/year /family in 2018 to 300,000 baht/year/family in 2024. There was identical improvement in living conditions of villagers during this period.

Table 1. Estimated arabica coffee green beans farm gate price at Mae Chan Tai village

Year	Farm gate price (Thai baht) of green beans/1kg
2014	220
2018	160
2019-21	180
2022	230
2023	300
2024	280
2025	295

Note: these figures are based on the annual report submitted by the village leader and interviews

Under the strong leadership of the village leader, villagers were united closely to create a community-based organization. As a result, the village was registered formally as “Community Enterprise” (with all 42 village families joined as members) under the government law in November 2018. It has 8 committees and sub-committees to share responsibilities in various activities (3 of committee /sub-committee members were women). This enabled all villagers to collaborate with each other and work together under a strong coordination and management mechanism (Table 1). The Steering Committee, as the highest decision-making and monitoring body of the project, was established with multi-stakeholder participation. The Project Implementation Committee which was responsible for the implementation of the project activities, was also established under the chairmanship of the village leader. These committees facilitated the involvement of supporting organizations and community ownership in project implementation, respectively.

The construction of community coffee processing center was funded evenly by GIAPSA and the Village community on cost-sharing basis. Service fees for the use of grinding and roasting machines were charged to users (village farmers). The revenues from these charges were credited into the community revolving fund and were used for community social and environmental activities, and partly for the operation and maintenance of the machines. Remaining balance was accumulated in the community revolving fund for future use.

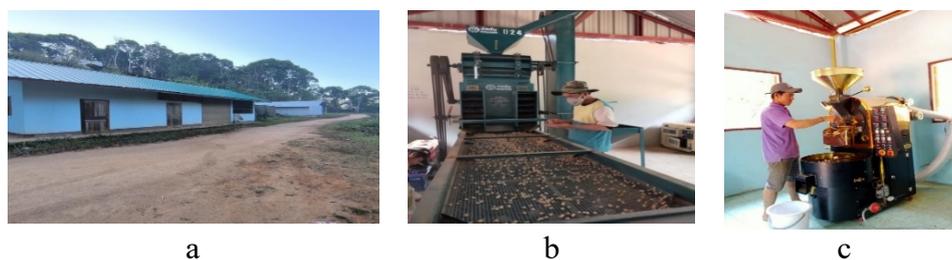


Figure 1. Processing center, coffeew grinder and coffee roaster

The village community has successfully accumulated community revolving funds (generated from the user fees charged to the users of coffee grinding and roasting machines) as seen in Figure 1. The total amount generated in 2024 was 127,617 baht (approximately 4,000 US dollars at exchange rate of 1 US \$=32.0 baht). The village community utilized the revolving fund for community purposes.

Table 2. The total amount of community revolving fund generated/year by Mae Chan Tai community

Year	Total amount (baht) generated in one year
2022	127,989 baht
2023	57,725 baht #
2024	127,617 baht

Note: many farmers opted to sell fresh cherry coffee and did not use coffee grinder or roaster, as the market price of fresh cherry coffee was exceptionally high and more profitable in 2023. Hence, the revenue generated from the user fees from the use of grinder and roaster declined in 2023 (Table 2).

The community has organized eco-tourism and income generating activities. The most typical one was hosting study tours combined with home-stay programme with support from GIAPSA. Every year between 2022 and 2024, an annual average of 50 study tour participants from Bangkok and abroad visited the village and stayed overnight with Akha families.



Figure 2. Eco-tourism (study tour in January 2025 at Mae Chan Tai Village)

The village community, jointly with GIAPSA initiated a field trial on the effective utilization of coffee residues and wastes for organic compost production in early 2025 with technical advice from Prof. Dr. Kasem Soyong, President of AATSEA. This trial was also supported technically by the King Mongkut's Institute of Technology Ladkrabang, Thailand and the Ryukoku University, Japan. The raw materials (coffee cherry residues, coffee husks, cow dung, limestone with bio-decomposer) was mixed monthly and moisturized periodically under plastic sheet covers. The compost production started on 24 February 2025 and the 1st sample was collected on 15 June 2025 (after nearly 3.5 months) for laboratory analysis at the Soil Science Laboratory of the King Mongkut's Institute of Technology, Ladkrabang Thailand. The analysis showed that the pH. was very high at 9.25 and EC (Electrical Conductivity) was also high at 1.44. The 2nd sample was collected on 24 August 2025 which showed pH 7.9 and EC 0.60. These results showed that compost seemed matured sufficiently for field use nearly 6 months after initial roading of raw materials. It is necessary to continue and repeat similar tests in next season (with and without lime stones) to optimize the test results (Figures 2 and 3).

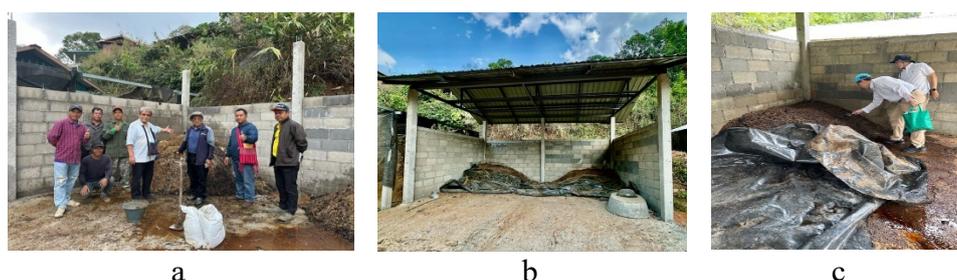


Figure 3. Compost house making (February 2025 with Prof. Dr. Kasem Soyong), compost house, and compost sampling by Ryukoku University Team (June 2025)

During 2023-2024, the village community utilized the community revolving fund for community purposes such as community roads repair works, forestry fire protection belt construction, community owned coffee kiosk/hat construction, community water supply system repair works, and organization of cultural events.

As an effort to promote marketing and branding of Mae Chan Tai coffee, the village community, jointly with GIAPSA opened a coffee shop named “Akha Mae Chan Tai Coffee Shop” in Sathorn, Bangkok as a joint venture social business. The coffee shop receives an average of 100-120 customers daily and starts to make little profits. About 100 kg of Mae Chan Tai coffee beans were exported to several coffee shops in Japan in 2024 (Figure 4).



Figure 4. Akha Mae Chan Tai Coffee Shop in Sathorn, Bangkok

Constraints

Villager's income was very much influenced by the volatile international coffee market price, as 70-80% of their income comes from coffee sales. It would be necessary to diversify villagers' income sources by promoting different crops such as tea, avocado and other temperate fruits which have a good market demand and can be harvested during the season when villagers' work would not overlap with coffee harvesting and processing. Promoting eco-tourism including study tours and home-stay programme is another option to diversify villagers' income (this effort can be accelerated when public electricity and good road access to the village are granted during 2026-2027). The community revolving funds is playing an important role in promoting self-help community-led initiatives to cope with a lack of sufficient public support. Yet, the record keeping and accounting practices are not at the desired level. There is a need to establish clear and transparent accounting systems to manage the community revolving fund.

Majority of arabica coffee trees were planted in early 2000th. They would reach the age of 25 years, and their productivity would start to decline near future. It is necessary to speed up the selection of new superior arabica coffee varieties and initiate new planting of coffee seedlings to replace old ones. Introduction and expansion of new superior varieties such as Gesha, and reduction of the share of Catimor variety (which has less market value than other arabica varieties) should be taken into consideration.

Due to the lack of FDA (and/or HACCAP) food safety certificate on coffee processing facilities and coffee products, there was a limitation in expanding coffee markets, especially at supermarkets and department stores, and overseas markets through export. The FDA registration and certification process started in September 2025. However, it requires further effort to speed up the action.

The villagers were granted temporary (or informal) permission by the government to grow coffee trees in protected national forests. Therefore, there is no land registration and hence, no land security. This requires close attention and follow up by village leaders in line with the implementation of the draft Act on the Protection and Promotion of Indigenous People's Right which was approved by the Thai Parliament in August 2025.

Villager's effort for recycling coffee waste (especially recycling the waste of coffee cherry and coffee husks) for organic compost production, has been slow. As the field trial on the production of organic compost using coffee residues, was successful and gained valuable experience and know-how in 2025, it is a time to harness the knowledge and expand the compost making at various farm sites in 2026.

There is a lack of public support to conserve Akha tribal culture including its language. Children are taught Akha language only from their parent without learning at schools. It is recommended the village community should take an active role in conserving Akha culture and Akha languages, which may include the promotion of existing community school to serve to the purposes.

Discussion

The pilot project achieved good progress during the implementation 2018-2025. The Me Chan Tai village community established a community organization (Mae Chan Tai Community Enterprise) which played a key role in bringing all villagers to help each other and working together to pursue their common objectives. Romannelli (2023) stated that the rural communities in the future relies in the knowledge management to transfer and share towards sustainable rural development. The sources of knowledge and management support the organisation to move a social development, and open rural communities. Rural communities may offer a knowledge-driven pathway for sustainable rural development. The rural stakeholders and actors contribute to rural communities with knowledge management potential, transfer and sharing to communities (Mae Chan Tai Community Enterprise MCT-CE, 2024, 2025). The frameworks of regulation help collaboration in rural communities that benefit of knowledge management practices. Management of knowledge supports the development of local community which help to drive rural economy and economic growth of rural communities (Mardsen *et al.*, 2001).

One of the most important key indicators to measure the sustainability and success of community-centered self-help approach is the level of accumulation of community revolving funds and its sustainable utilization. The village community has accumulated a total of 127,617 baht (approximately 4,000 US dollars) in the community revolving fund in one year during 2024 which was used for various community activities. Unused balance of 74,504 baht was reserved for future use in 2025. Gardeazabal, *et al.* (2021) stated that knowledge management to receive innovation for agrifood systems toward sustainable development in rural areas serve beneficial to local community.

Estimated average annual net income of villagers doubled during 2018-2025, reflecting largely significant increase of the farm gate price of Mae Chan Tai coffee beans which corresponded to sharp appreciation of international coffee markets price, and increased recognition of the quality, taste and value of Mae Chan Tai coffee beans that draw local buyers to pay higher prices for their superior quality. The living conditions of villagers improved significantly during the period. Rural development help to encourage knowledge sharing in rural welfares, life quality in rural community and agricultural knowledge and innovation (Girard, 2015).

Further efforts are needed to ensure sustainable coffee production through planting of new superior quality seedlings to replace old trees, diversify villager's income sources, promote organic agriculture and environmentally sound coffee production, including expanded use of organic compost using coffee residues, up-grade the management of community revolving fund, improve community coffee processing facility to meet national and global food safety and hygiene standards, promote further the marketing and branding of Mae Chan Tai Coffee through Athena coffee shop in Bangkok and using social media and other means, and enhance community led initiatives to conserve cultural heritage of Akha tribal community.

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Conflicts of interest

The authors declare no conflict of interest.

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