



Mae Fah Luang Foundation under Royal Patronage

Sustainability Report 2023



มูลนิธิแม่ฟ้าหลวง ในพระบรมราชูปถัมภ์
Mae Fah Luang Foundation under Royal Patronage

Sustainability Report 2023

This Sustainability Report summarizes the activity and outcomes of Mae Fah Luang Foundation under Royal Patronage from 1 October 2022 -30 September 2023.

ISBN (e-book) 978-616-7681-88-7

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Published by: Mae Fah Luang Foundation under Royal Patronage

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Vision

The Mae Fah Luang Foundation under Royal Patronage aims to develop communities, society, environment and cultures following the work of the Princess Mother in order to create happiness, sustainability, and stability.



Mission

To catalyse the growth of sustainable economic, social, cultural and environmental development by implementing integrated development, cooperation, consultation, and training. To establish the Foundation's approach as Thailand's principal development model.

Message from the CEO

Amidst global volatility and the intensity of climate change, the Mae Fah Luang Foundation under Royal Patronage has undertaken significant direction setting by building on its core belief in the potential of 'people.' The focus involves developing collaborative mechanisms between communities, the government, and private sector to achieve sustainability in the Doi Tung Development Project and other provinces nationwide.



The Foundation's work emphasizes meaningful outcomes in community development, livelihood security, value optimization of local resources, and environmental conservation, as the world continues to face challenges from climate change and emerging nature-based risks. The Foundation, as a driver of sustainable development and social enterprise, is committed to ensuring that its work remains sustainable. This commitment aligns with its goals of becoming a net-zero organization and achieving a net positive impact on nature.

The tangible results of these sustainability efforts include expansion into the third phase of the Carbon Credit from Community Forests for Sustainable Development Project, now covering a total of 22,909 hectares of community forests. The fourth phase of the project, targeting 24,000 hectares, is currently under exploration. Additionally, the waste management project aimed at preventing waste from reaching landfills has expanded its collaboration with the Mae Fah Luang Subdistrict Administrative Organization, successfully ensuring the management of waste from 24 villages to not end up in landfills.

The Foundation has also joined the ranks of 320 global organizations as part of the TNFD Early Adopter program, preparing to disclose key nature-related issues. This will aid the Foundation in planning for climate and environmental changes that could impact its development work and social enterprises.

In its management of social enterprises, the DoiTung brand promotes sustainability, particularly in fostering a mutually sustainable relationship between people and the environment. The Foundation has adopted nature-based solutions to drive its business, begun evaluating the circular economy potential of each business unit, increased the use of renewable resources and energy, selected environmentally friendly raw materials and partners, and managed waste treatment through nature-assisted methods.

The Foundation remains committed to being a model organization for sustainability, with the Doi Tung Development Project serving as a flagship project to foster learning and share development lessons while collaborating with a diverse network of stakeholders, including government, private sector, civil society, and international organizations. The aim is to leverage each entity's expertise to empower communities and society at large.

On behalf of the Mae Fah Luang Foundation under Royal Patronage, we believe that the knowledge and experience accumulated through the Mae Fah Luang Development Model, combined with the dedication of all the Foundation's staff and the cooperation of communities and partner networks, are crucial forces that will propel the Foundation to become a leader in sustainable development, create opportunities for people, and prepare society to face future changes.

M.L. Dispanadda Diskul

Chief Executive Officer, Mae Fah Luang Foundation under Royal Patronage

Executive Summary

The Mae Fah Luang Foundation under Royal Patronage has been continuously implementing sustainable alternative livelihood development projects in various communities for 50 years. The Foundation is committed to creating positive societal change by addressing fundamental problems holistically, covering economic, social, and environmental aspects based on the needs of the communities. The Foundation's work is modeled on the Doi Tung Development Project and continues to operate 6 other projects in 2023.

The Foundation operates through two key mechanisms: implementing community development projects and operating social enterprises. The primary stakeholders include the communities in the development projects, the Foundation's employees and board members, customers and partners of the social enterprise, and networks in the government, private sector, and civil society. The Foundation's current drive towards sustainable development is built on the knowledge and experience to create synergy between people, society, and the environment, leading to sustainability goals.

The Foundation's core approach focuses on **community development**, emphasizing the improvement of people's quality of life, particularly by building readiness, enhancing knowledge, and developing skills and mindsets of the youth within the development project areas. This aims to help them grow and thrive in an ever-changing society. In **social enterprise**, the Foundation uses business mechanisms to increase social returns and fosters community entrepreneurs who not only achieve economic returns but also create social and environmental impacts. Our **environmental development** aligns with the global objective of achieving net-zero and nature positive goals. The Foundation also contributes to **building a strong society** by collaborating with relevant sectors to prevent and address drug issues. In **knowledge management**, the Foundation creates platforms for knowledge exchange and helps networks of development practitioners apply its principles for broader benefits.

In 2023, the Foundation continued activities that benefit communities and initiated new projects to create broader positive impacts. The main focus of the Foundation's ongoing activities is improving the quality of life of communities, enabling them to generate income from agriculture, livestock, handicrafts, and tourism livelihoods that suit the geo-social contexts of local communities. Alongside this, the Foundation develops youth capacity, enhances classroom management skills for teachers and promotes extracurricular activities focused on resource use. Additionally, the Foundation has expanded waste management efforts to prevent landfills in 24 villages and has begun applying the circular economy concept to enhance the positive environmental impact of its social enterprise under the DoiTung brand. The Carbon Credit from Community Forests for Sustainable Development Project, now in its third year, plays a vital role in addressing rising temperatures. The Foundation has also been recognized as one of 320 global organizations participating in the TNFD Early Adopter program, utilizing the Taskforce on Nature-related Financial Disclosures Framework as a key tool for identifying and managing nature-related issues to create positive impacts on nature. Furthermore, the Foundation has shared its development knowledge with the government, private sector, and international organizations, fostering continuous knowledge development and creating a network of development practitioners driving sustainability together.

The Foundation's development achievements, particularly in the areas of quality of life improvement, environmental development, and knowledge dissemination, align with the principles of the Mae Fah Luang Development Model, which emphasizes sustainable co-existence between people and nature. The Foundation's major challenge is to continue developing and expanding sustainable development amidst climate change, which affects the environment, geo-social realities, and local communities. The Foundation remains confident that the working principles of the Princess Mother, combined with over 50 years of experience and development knowledge based on the Mae Fah Luang Development Model, will continue to drive and expand its work, providing solutions for society towards sustainability.

Sustainability Highlight

Quality of Life

Income generation



Direct income from livelihood promotion within the project sites

฿531M



Agriculture
฿239M



Livestock
฿18M



Employment
฿244M



Tourism and other services
฿30M

Number of pigs as part of livestock promotion between 2018-2023

1,374



Totaling

฿20.4M

Boar 119, Sow 931, Porker 324

Vanilla beans from test plot have met quality standard. Creating opportunity for farmers to earn 21,000-27,000 baht per 0.04-hectare plot.



Opportunity creation

Youths receiving age-appropriate teaching and learning development in



9 schools

in the Doi Tung Development Project



607 youths

participated in youth development activities at Faidee Center

65

scholarship recipients



2,339 youths

participated in the children and youth development project to build a network for drug prevention



98 youths

participated in the "Asa Tham Dee" [Volunteer for Good] volunteer program (a total of 591 participants up to the present)

Environment

Forest care



Total forest areas in the Foundation's project sites

68K hectares

Plants



16 new species discovered

Total plants identified 1,379 species

Birds



10 rare species discovered

Total birds identified 268 species

6 types of 30 mammals identified



Shannon-Wiener relative diversity index in the Doi Tung Development Project

Conservation forest



Hill evergreen forest
3.56



Pine forest
3.24



Teak-mixed deciduous forest
2.72



Bamboo-mixed deciduous forest
2.49

Economic forest



Pine forest with economic crops
1.53

Sustenance forest



Sustenance bamboo-mixed deciduous forest
2.89

Promotion of circular economy



Waste from Mae Fah Luang Foundation

125,120 kg
Did not go to landfill

Organization circularity index



The complete circular system has the index value at 1.0



Macadamia facilities

OMCI*

0.575

OECI*

0.590



Coffee factory

0.345

0.180



Mulberry paper factory

0.332

0.296

*OMCI - Organization Material Circularity Index

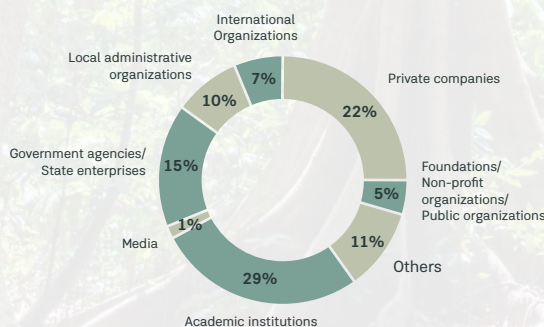
*OECI - Organization Energy Circularity Index

Dissemination



Number of participants in trainings and study visits

4,909



25

Curricula developed in collaboration with leading academic institutions

Advocacy for sustainable development in drug-related context in various forums including:



- 7th Brandenburg Forum
- 66th session of the Commission on Narcotic Drugs (CND)
- Annual meeting of the Schwab Foundation for Social Entrepreneurship



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Background

The Mae Fah Luang Foundation under Royal Patronage, originally named the Thai Hill Craft Foundation under the Patronage of H.R.H. Princess Mother, was established in 1972 by Her Royal Highness Princess Srinagarindra, the Princess Mother. The Foundation's mission is to improve the well-being of the people by adhering to the principles of sustainable livelihood development, adopting an integrated approach, and placing people at the center of development.

The Foundation works within underprivileged community areas, focusing on issues stemming from three root causes: **illness, poverty, and ignorance**. The Foundation strives to help community members break free from the vicious cycle. Believing in the potential of people, the Foundation operates under the core belief of **"helping people to help themselves."** Consequently, community members play a crucial role in the Foundation's development work. Ensuring the health of community members, developing livelihoods for stable income, and advancing education are all fundamental issues that must be addressed seriously and continuously to build strong communities with skills, knowledge, confidence, and ownership of development activities. Moreover, the Foundation emphasizes the promotion of social entrepreneurship and community enterprises, which are vital mechanisms for enhancing economic and social development within communities. Regarding the environment, the Foundation prioritizes creating a balance with nature through the restoration and preservation of forests and natural resources to ensure their richness and diversity. The core principle is to enable people and the environment to coexist sustainably, utilizing and conserving natural resources in a balanced manner.

The knowledge gained from our development projects has also been adapted to other contexts to drive new development models, such as carbon credit management. Additionally, the Foundation provides consultation and advice to organizations focused on creating sustainability. Currently, the Foundation is headquartered in Bangkok and implements seven key development projects in Thailand and Myanmar.

01

Doi Tung Development Project

Commenced in 1988
in Mae Fah Luang and Mae Sai Districts,
Chiang Rai Province

Doi Tung Development Project is the Foundation's flagship project, based on the royal initiative of Her Royal Highness Princess Srinagarindra, the Princess Mother. Her goal was to reforest Doi Tung and improve the quality of life of local people suffering from poverty and lack of opportunities, which were the root causes of their issues. The project is a prime example of how the Foundation applied the King Rama IX's development principles and the Mae Fah Luang Development Model, to practical implementation. This led to the extension of development and knowledge, which has since been adapted and expanded to address the social and geographical conditions of local communities, resulting in widespread impact.



02

Tea Oil and Other Oilseed Crops Research and Development Project

Commenced in 2005
in Mae Fah Luang District, Chiang Rai Province

Under the royal initiative of Her Royal Highness Princess Maha Chakri Sirindhorn, the project aims to alleviate poverty and provide alternative livelihoods for the local community. This is achieved by generating stable income for the community through the cultivation of tea oil trees, which have health benefits and are used in the medical and wellness industries. The tea oil trees also hold high economic value and are suitable for the local geographic conditions. Additionally, the project seeks to restore ecological balance to the area by preserving the forest ecosystem through both assisted and natural forest regeneration, allowing the forest to restore its richness. This is combined with promoting other alternative livelihood options for the community.



03

Roi Jai Rak Project

Commenced in 2018
in Mae Ai District, Chiang Mai Province

The project aims to support government measures and policies in preventing and addressing the issue of synthetic drugs, while also strengthening national security by empowering local communities. This is the Foundation's first project in a semi-urban social context. It follows a sustainable livelihood development approach, with different stages of development: survival, sufficiency, and sustainability. The project covers all aspects of development, including economic, social, and environmental dimensions, to enhance community capacity and enable them to drive their own development independently.



04

Thai-Myanmar Sustainable Alternative Livelihood Development Project

Commenced in 2018
in Naungtayar Subtownship,
Republic of the Union of Myanmar

The project aims to address the drug problem by creating alternative livelihoods for the local communities, ensuring they have stable income sources to replace earnings from cultivating, trading, and transporting opium. It also promotes the development of this initiative as a model for integrated area-based development, emphasizing community participation. This allows the Myanmar government to extend the development to other areas in the country.



05

Nan Economic Crop Processing Project

Commenced in 2020
in Chalermprakiat District, Nan Province.

The project is an extension of the Nan Reforestation Project. The Nan Economic Crop Processing Project follows the Doi Tung Model in land management to enhance sustainable natural resource management while improving the quality of life for local residents. It operates under a set of regulations established by the community itself, focusing on processing economic crops such as coffee, bananas, makhwaen, and perilla. Additionally, the project promotes raising chickens and pigs to alleviate poverty and uplift the living standards of the community.



06

Carbon Credit from Community Forests for Sustainability Project

Commenced in 2020

in Chiang Rai, Chiang Mai, Payao, Nan, Lampang, Mae Hong Sorn, Kampaengetch, Uthai Thani, Amnatcharoen, Yasothorn, and Krabi Province.

This project aims to support communities in generating income from forest carbon credits, which result from the community's collective efforts in preserving and protecting community forests, including registering the community forests under the Thailand Voluntary Emission Reduction Programme (T-VER). The Foundation provides consultancy and develops the project together with the local communities, helping them set up systems to measure and evaluate carbon dioxide absorption. The Foundation also supports the establishment of a forest protection fund and community development fund, which are key mechanisms for addressing environmental issues and improving the quality of life for local communities in a sustainable manner.



07

Mae Fah Luang Art and Cultural Park

Commenced in 1973

in Mueng District, Chiang Rai Province

The park originally served as the office of the Thai Hill Craft Foundation. It was a place for nurturing ethnic minority youths, who received scholarships and were empowered to further their knowledge in both professional skills and life skills. As schools expanded to reach local communities, the facility was transformed into a center for collecting and disseminating knowledge about Lanna art and culture. Today, it is the largest repository, archive, and exhibition center for Lanna art in the region.



Value Chain and Stakeholders

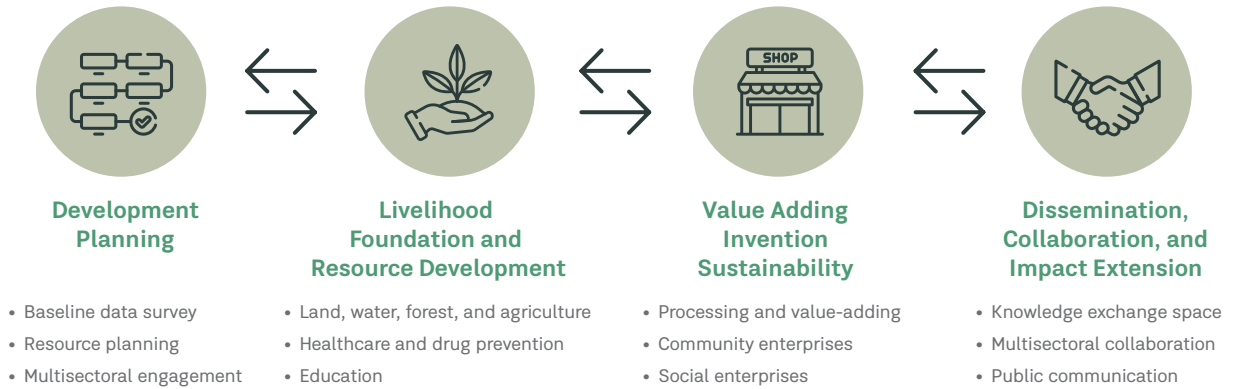


The Mae Fah Luang Foundation is committed to sustainable development through implementing people-centric development in various project areas. The Foundation works within three levels of development according to community readiness: **survival, sufficiency, and sustainability**. We leverage our experience from various project areas to refine and offer practical development implementation approaches, applicable to frontliners as well as policymakers.

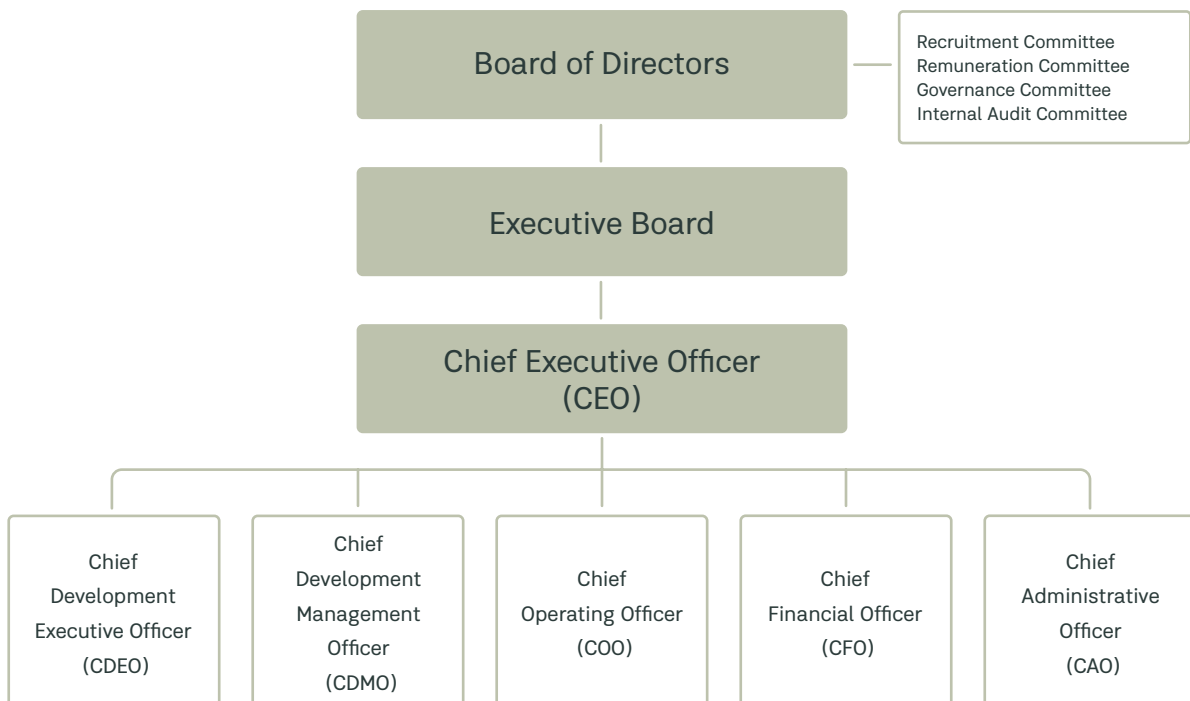
The development project begins with field visits to conduct a baseline survey with local community volunteers. This process helps in mutual learning and hands-on work, strengthening the relationship and understanding between the project and the community. It aims to understand the real problems, needs, thoughts, and sentiments of the community in the project area, as well as the area's potential. This understanding leads to community development across various aspects, allowing for the creation of livelihood and security according to local contexts, with the primary goal of achieving community sustainability and resilience.

In addition to our core role as a development practitioner, the Foundation applies business models to drive development. A social enterprise from the Doi Tung Development Project under the brand "DoiTung" has been set up as an engine to create jobs and generate stable income for all genders and ages, while also providing skills training and essential knowledge concerning quality, standards, and particularly management, which communities can apply for future entrepreneurship. The Mae Fah Luang Foundation disseminates the knowledge gained from development efforts to enhance our capacity as a learning organization. We foster innovation in the workplace, continuously exchanging and learning within the organization. The Foundation has also established the Living University as a space for knowledge exchange among visitors and local communities, integrating efforts to enhance development results. Moreover, we collaborate with various groups of stakeholders including government, private sector, and partners, ensuring understanding and participation at all levels—central, regional, and local—to plan and implement projects effectively and widely disseminate development results through online and offline media channels, providing information on development principles and social enterprise that take into account sustainable positive impacts.

The Foundation's Value Chain



Regarding management, the Mae Fah Luang Foundation operates under the resolutions approved by the Foundation's Board of Directors, which is appointed and terminated according to the Foundation's charter. The Board consists of no fewer than 5 members and no more than 17 members, serving a term of three years. A quorum for meetings requires at least half of the board members, and decisions are made by a majority vote. In 2023, the Foundation's Board had 12 members, with 7 appointed to the Executive Board. The Secretary-General serves as the Chairman of the Executive Board by position. The Executive Board is responsible for overseeing the regular operations, ensuring efficiency, and being accountable for setting and supervising operations in line with the annual goals and budget. For daily management activities, the Chief Executive Officer (CEO) is authorized to act on behalf of the Foundation. The CEO and the team present plans and operational results to the Executive Board on a monthly basis.





Stakeholder Engagement

Stakeholders

Engagement Process

Intended Impact

Local Communities in Development Projects

- Conducting of annual socio-economic surveys of all households
- Training of volunteers as local connectors
- Implementation of people-centric development activities

- Safety and security
- Life skills for livelihood security
- Good management of natural resources
- Access to basic infrastructure, education, and healthcare
- Community resilience
- Capable community leaders to drive development forward

Foundation Board Members

- Monthly Executive Board meetings
- Biannual Foundation Board meetings

- Efficient management
- Transparency
- The outcomes of development projects and the social enterprise benefit stakeholders in each project

Foundation Employees

- Monthly management meetings
- Departmental sub-meetings
- Feedback collection boxes
- Various staff engagement activities as part of being a learning organization

- Stable occupation
- A suitable working environment
- Continuous development of knowledge and skills
- Fair compensation
- Fair treatment according to law, the Foundation's policies, and human rights principles

Customers

- Online and offline communication channels
- Communication through sales representatives
- Fairs

- Quality products and services that are environmentally conscious and promote sustainable development

Partners from Government, Private Sector, and Civil Society

- Joint meetings to propose, plan, execute, monitor, and evaluate collaboration with various organizations

- Projects' objectives are met
- Projects are transparent and accountable
- Local communities benefit from the projects

Business Partners

- Visiting key and new business partners
- Training community members to register as Foundation's business partners

- Quality products or raw materials that are environmentally friendly
- Having local communities as quality and environmentally friendly business partners

Materiality Issues

After over 50 years of work, the Foundation's goals for development projects remain focused on sustainably improving the quality of life for people across economic, social, cultural, and environmental aspects. Emphasis is placed on creating stable income, providing educational and licit livelihood opportunities, and effectively allocating existing resources to strengthen community resilience against current global economic and social challenges. The Foundation prepares communities to use technology for economic opportunities and enhances community strength, particularly in addressing narcotic issues. Regarding the environment, the Foundation not only engages in forest area management but also includes the management of forest benefits, linking with global initiatives, including climate financing through carbon credits and nature regeneration. This approach serves as a model for addressing climate change. The Foundation also provides advice and recommendations based on the Mae Fah Luang Development Model framework to interested agencies.

Based on the Foundation's mission, goals and key activities along with the views and impacts on its stakeholders, the Foundation sees sustainability in three key strategic areas which are **improving quality of life; environmental development;** and **disseminating knowledge.**

It is crucial to ensure that people in the project areas have skills and stability in their livelihood. The Foundation improves quality of life by enabling employment to generate economic returns for the people and their communities; and preparing local youth with knowledge and skills for a dynamic future. In order to achieve this, the Foundation works on five development areas: community development; social enterprise; security; environmental development and knowledge dissemination. The *community development* approach enhances people's quality of life across economic, social, cultural, and environmental dimensions. It supports local youth in preparing for educational opportunities and fostering resilience for the modern world. In terms of *social enterprise*, the Foundation is committed to developing the DoiTung brand as a means to create stable income while also building skills and expanding opportunities to nurture community entrepreneurs. Regarding *security*, the Mae Fah Luang Foundation works to build strong society by collaborating with related agencies to address narcotic issues within development project areas and fostering resilience and the right mindset among community members, especially youth, to maintain integrity with resistance to negative influences.

Environmental development encompasses the management of various natural resources, with a strong emphasis on minimizing environmental impacts. This includes the organizational management aimed at achieving net-zero organization and creating positive impacts on nature. The Foundation implements projects that allow local communities to coexist harmoniously with nature, encouraging the participation of community and government in land use and forest management. Local communities are engaged in setting up a mechanism to manage the environment, for example the community-based forest protection fund generated from carbon credits and zero waste to landfill initiatives for 24 villages. In terms of the Foundation's operation, it has in place the management approach to responsibly utilize resources, optimizing positive and minimizing negative impacts. This includes greenhouse gas management, energy management, water management, waste management, and circular economy-based management.

With the knowledge and experiences the Foundation has built over 50 years, the Foundation has *disseminated knowledge* to present development principles and applications in various forums, both domestically and internationally. The main objective of this strategic area is to create a network and share principles that can be adapted in other areas and broader contexts. The foundation extracts insights from its development work to create a body of knowledge that can be applied across various contexts, including local educational curricula and higher education, as well as sustainable development in the private sector, making Doi Tung Development Project widely recognized for sustainable development and integrated environmental problem-solving, while instilling knowledge within the community and the younger generation.



Quality of Life

The operations of the Mae Fah Luang Foundation incorporate an understanding of the local geo-social context, natural and cultural capital of the area as essential components for promoting appropriate livelihoods. This includes developing high-value cash crops such as coffee, macadamia nuts, tea oil, vanilla and tea, and promoting livestock farming, such as black pigs and black chickens. It also involves leveraging local knowledge in weaving and sewing to create handicraft businesses that meet market demands. Developing the area into a tourist destination and the ongoing enhancement of various economic activities have generated employment both from the Foundation and within the community, further encouraging local entrepreneurship.

Social Development

The Mae Fah Luang Foundation's primary goal is to enhance skills and capabilities of local community for sustaining and engaging in licit livelihoods amidst changes in the social and environmental landscape. Therefore, the Foundation emphasizes sharing knowledge and lessons learned from its community development and business experiences with the community.

The income of the population in the **Doi Tung Development Project** comes from various sources, including direct income from activities promoted by the Mae Fah Luang Foundation, other employment opportunities, agricultural product sales, and additional income sources arising outside the project area. According to a survey conducted in 2023, the total income of the population in the Doi Tung Development Project amounted to 1,106 million baht, with an average income of 554,151 baht per household per year, and an average household debt of 171,905 baht.

Research on high-value crops is crucial for the Foundation to promote economically rewarding livelihoods in the community. Since 2017, the Foundation has conducted ongoing research and development on the cultivation and processing of vanilla. By 2023, the project was able to produce vanilla pods and develop processing methods that achieved standards for natural vanilla extract, which is used as an ingredient in food and beverages at the DoiTung café. The Foundation is preparing to transfer the knowledge and skills of growing vanilla for selected farmers. Cocoa is another high-value crop that the Foundation has started studying in collaboration with experts, including the Kad Kokoa Company Limited and the Innovation Center for Research and Development of Sustainable Thai Cacao (ISTC) under the School of Agricultural Resources at Chulalongkorn University. The goal is to improve production processes and cocoa quality throughout the value chain, thereby enabling farmers to cultivate and manage their fields more effectively and to connect them with markets.



The promotion of livestock livelihood continues to expand comprehensively. Currently, Doi Tung black pigs and black chickens have been certified by Thailand's Department of Livestock Development as local breeds. This recognition highlights the local identity of the community and aligns with the cultural beliefs of ethnic groups, showcasing their potential for high-value development. A 'Community Enterprise for Livestock Product Development' has been established in collaboration with the Mae Fah Luang Foundation to promote sustainable Doi Tung pig farming. The initiative supports local farmers from breeding and quality control to farm standard inspections and disease management. It has also received recognition from the Chiang Rai Provincial Livestock Office as a research and development center for Doi Tung black pigs, serving as a model for controlling African Swine Fever (ASF) outbreaks in the northern region of Thailand. The program has begun adding value to Doi Tung black pigs by processing them into various products, such as sausages, fermented pork (nam), and ham. These products are marketed under various brands and top-tier stores, including Bo.lan and Sloane, and are also distributed at the Colours of Doi Tung Festival. This initiative has generated over 6.23 million baht in income for the community.

In addition, the Mae Fah Luang Foundation promotes other alternative livelihoods to generate income for the community, such as raising poultry under bamboo forests, collecting bamboo shoots, and harvesting bamboo worms, as well as developing Assam tea and magenta plant.

In the **Tea Oil and Other Oilseed Crops Research and Development Project**, the key livelihood activities include agricultural product sales, handicrafts, and livestock. The total income generated from these promotions amounts to 28.26 million baht. The **Roi Jai Rak Project** primarily generates income from employment within the Foundation, other employment, agricultural product sales, handicrafts, and livestock, with a total income of 274.90 million baht. The average income per household is 0.24 million baht, with an average household debt of 92,381 baht. The **Thai-Myanmar Sustainable Alternative Livelihood Development Project** primarily generates income from activities in agricultural development and water systems. Key products include rice, field corn, processed Assam tea, coffee, and livestock, with a total income of 185.97 million baht. The **Nan Economic Crop Processing Project** has generated significant income through agriculture, focusing on coffee, cashew nuts, and bananas, resulting in 7.36 million baht. Last year, the project expanded into processing Caturra and Bourbon coffee varieties, which received a specialty coffee score of 87.63, ranking 11th in the Cup of Excellence Thailand competition.



Income Foundation directly-promoted activities by project (Baht)

Type	Doi Tung Development Project	Tea Oil and Other Oilseed Crops Research and Development Project	Roi Jai Rak Project	Thai-Myanmar Sustainable Alternative Livelihood Development Project	Nan Economic Crop Processing Project
Agriculture	17,559,223	4,624,354	31,427,197	183,277,500	2,174,705
Livestock	7,770,000	408,325	7,378,906	2,692,500	-
Employment within project areas	195,217,502	12,595,988	34,771,250	-	1,663,792
Handicrafts	-	711,611	762,799	-	-
Others	11,609,423	9,918,750	3,873,195	-	3,524,868
Total	232,156,148	28,259,028	78,213,347	185,970,000	7,363,365



Human Resource Development

Regarding employee in 2023, the Foundation conducted over 9,524 hours of training and development, averaging 6.47 hours per employee per year. The training curricula included skills in digital technology, foreign language proficiency, management, leadership development, personal data protection, human rights, and prevention of child labor and sexual harassment awareness. In terms of safety, the occupational safety committee is responsible for implementing safety policies, ensuring compliance with legal requirements, and conducting area inspections. They also welcome suggestions for improvements and preventive measures, including annual fire drill training and emergency evacuation procedures.

Security Development

The Foundation's projects are located in border areas, which are at risk of being used as routes for trans-boundary drug trafficking. Besides providing sustainable alternative livelihoods for local communities, the Foundation has also implemented the "Asa Tham Dee" [Volunteer for Good] volunteer program to bring willing drug users into a rehabilitation process and vocational training led by doctors and other relevant agencies. This initiative aims to foster understanding within the community, providing an opportunity for those struggling with drug addiction to reintegrate into society with dignity, gain acceptance from the community, and ensure continuous follow-up to create a community immunity against drug. In 2023, the Mae Fah Luang Foundation collaborated with partner agencies in the project areas of the Roi Jai Rak Project and the Doi Tung Development Project, organizing two volunteer cohorts, with a total of 98 participants in cohorts 9 and 10, bringing the total number of participants to 591 to date.

Regarding the issue of youth drug abuse in northern border areas, the Foundation has been implementing a youth development project since 2017 to build a network for drug prevention. This initiative aims to create immunity for youth by educating them about the harms and impacts of drugs through activities designed in collaboration with the Office of the Narcotics Control Board in the four provinces of Chiang Rai, Chiang Mai, Phayao, and Mae Hong Son, with a total of 40 sessions and 2,339 participants. Additionally, the Foundation has designed and developed educational materials such as "The Cursed School Game" for children aged 9-12 and "The Drug Outbreak Game" for youth aged 13-15, focusing on critical thinking and practical application to illustrate the tangible impacts of drug abuse. This knowledge is intended to be shared by the youth in their schools.

Youth Development

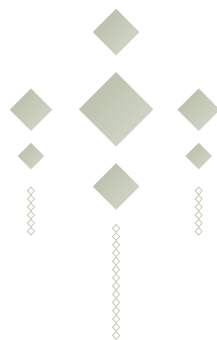
A new generation of youth is crucial for creating sustainable communities. The Foundation aims to respond to the global changes by enhancing knowledge and capacity while building immunity for young people. This approach encompasses both in-classroom initiatives and after school extracurricular activities in the Doi Tung Development Project, the Roi Jai Rak Project, and neighboring areas.



In terms of the **formal education** in 2023, the Foundation has started improvements in teaching management for differentiated instruction (DI). This includes enhancing reading and writing skills in Thai according to students' capabilities and developing a curriculum that promotes vocational skills relevant to the local context, starting from the first year of secondary education. This covers areas such as crafts from local materials, agriculture, and cooking. Additionally, the Foundation continues to implement the Fab Learn Lab curriculum for innovative learning by Darunsikkhalai School, adapting it to fit the needs of the students of Kha Yaeng Pattana School. This promotes the creation of inventions, allowing students to learn the fundamentals of using various tools and design programs. They can create projects based on their imagination, such as in design labs for programming and sewing, as well as in electrical workshops and 3D printing and laser cutting rooms.

The Foundation provided scholarships for 22 students at six educational institutions, including Rajabhat Chiang Rai University, Payap University, Mae Jo University, Mae Fah Luang University, Chiang Mai University, and Chiang Rai Technical College, in fields that meet local demands, such as accounting, teaching, environmental management, human resource development, and programming. Currently, there are a total of 65 scholarship recipients. In 2023, 18 students graduated with Foundation scholarships, and 20 scholarship recipients returned to work with the Foundation.

For **informal education**, the Foundation promoted creative learning environments for children and youth through the "Faidee Center," which serves as a nurturing ground for quality citizens. The learning environment aligns with the individual's potential and community context. The center offers programs aimed at enhancing the skills of children and youth, such as online sales, cooking, environmental studies, agriculture, beverage making, and interest-based clubs like music, dance, travel guiding, and café. The center currently has 607 members, and the youth receive continuous skill development, enabling them to gain real work experience at events like the Doi Tung Festival and various platforms in Chiang Rai Province.





Environment

The environmental initiatives of the Mae Fah Luang Foundation began with reforestation, managing land to allow people to coexist sustainably with nature, and collaborating with communities to conserve watersheds while minimizing the environmental impact of business operations through various projects and activities. It could be regarded that the Foundation's work aligns with current key global environmental goals, particularly addressing issues caused by rising temperatures due to excessive greenhouse gas emissions. In 2023, the Foundation has started to adopt an environmental management framework aimed at achieving the goals of becoming a net zero and a nature positive organization. This strategic focus is intended to streamline all environmental efforts to enhance positive impacts and reduce negative effects on the environment.

The Foundation operates under environmental management standards, including ISO 14001, and manages accommodation facilities to meet the Green Hotel criteria, while the Cottage Industry Centre and Outlet complies with Green Industry Standard Level 3 set by the Department of Environmental Quality Promotion. The Foundation also has a green procurement policy, currently encompassing 33 groups of existing products. We aim to ensure that 73% of these products are environmentally friendly. When comparing the value of environmentally friendly purchases to total procurement, this accounts for 4.58%, an increase from the previous year's 2.95%.

Key dimensions of the Foundation's environmental management include greenhouse gas management, energy management, water management, waste management, circular economy-based management, and management of forests and their benefits.

Greenhouse Gas Management

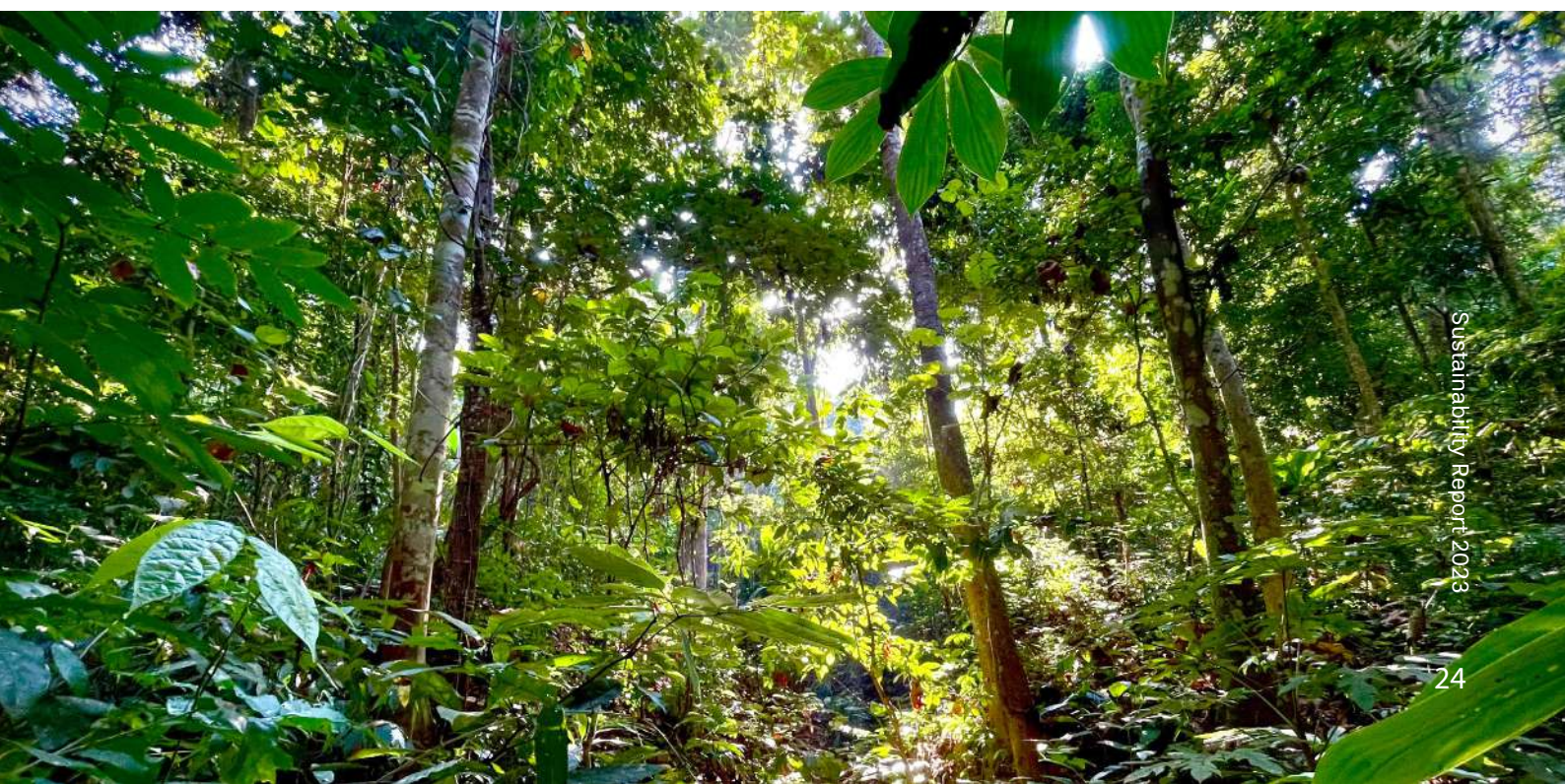
In 2023, the Mae Fah Luang Foundation emitted both direct and indirect greenhouse gases from its development projects, with a total greenhouse gas emission of **11,705.45** tons of carbon dioxide equivalent.

Scope	Emissions (ton CO2e)	Percentage when compared with Scopes 1 and 2	Percentage when compared with Scopes 1, 2, and 3
Scope 1	1,730	53.25	14.78
Scope 2	1,519	46.75	12.97
Scope 3	8,458	-	72.25
Others	68	-	-
Total for Scopes 1 and 2	3,249	100.00	-
Total for Scopes 1, 2, and 3	11,707	-	100.00

Carbon Intensity (tonCO2e/baht)

Carbon Intensity (Scopes 1 and 2) per net income	3.71
Carbon Intensity (Scopes 1, 2, and 3) per net income	13.38

The Foundation has begun studying high-emission sources of greenhouse gases, including electricity, oil, liquefied petroleum gas, and nitrate fertilizers. We have started planning strategies to reduce greenhouse gas emissions from these sources and are preparing to announce the goal of becoming a net zero organization by 2050.



Energy Management

Energy management is crucial in the pursuit of net-zero greenhouse gas emissions. The Mae Fah Luang Foundation employs alternative energy sources, such as solar panels to reduce electricity consumption from the grid, heat exchangers in macadamia processing plants, and syngas to reduce LPG usage. We also utilize thermal energy from biomass, such as waste materials from mulberry paper production and macadamia shells. Heat pumps are also used to provide hot water for washing units and accommodation at Doi Tung Lodge. Furthermore, there are campaigns to reduce electricity consumption, such as promoting the use of energy-saving bulbs and turning off lights when not in use.

Energy sources (Unit: toe)	2023
Electricity	257.33
Oil	245.71
LPG	179.34
Solar energy	22.26
Biomass	8.89
Percentage of alternative energy to total energy	4.37

toe : tonnes of oil equivalent



Water Management

The Foundation has implemented a water treatment system across all its operational areas, regularly monitoring the quality of treated water. The water treatment process in the Doi Tung Development Project comprises two systems: wastewater from the weaving factory, the mulberry paper factory, and the ceramic factory is treated with natural treatment systems such as elephant grass, reed beds, vetiver grass, canna lily, sedimentation, and aeration equipment, while wastewater from coffee processing is treated with a biogas system. Additionally, there are water recycling efforts, and in 2023, the Foundation was able to reuse 1.17% of the water discharged.



Waste Management

From the success of the Mae Fah Luang Foundation in managing waste in the Doi Tung Development Project, since October 2018, the Doi Tung Development Project area has not sent any waste to landfills. The Foundation continues to implement activities to ensure that all project areas remain landfill-free by focusing on education, fostering participation, and finding ways to maximize benefits from waste through source separation. Six types of waste bins have been provided: biodegradable waste, recyclable waste, general waste, energy waste, hazardous waste, and bathroom waste. Subsequently, these six categories of waste will be further sorted into 44 different categories based on their potential uses.

The Foundation shares our knowledge in successful waste management, with the Doi Tung Development Project as a study site for staff, community members, and interested individuals from various organizations to expand their knowledge in waste management, promote environmental awareness, and create positive impacts on nature. In 2023, the Foundation collaborated with the Mae Fah Luang Subdistrict Administrative Organization to ensure that waste from all eight schools and 24 villages in the Mae Fah Luang subdistrict is not sent to landfills.



2023	Doi Tung Development Project (DTDP)	Bangkok Office	Roi Jai Rak Project	Mae Fah Luang Art and Cultural Park	Communities and schools in the DTDP
	Waste (kg)	Waste (kg)	Waste (kg)	Waste (kg)	Waste (kg)
Sellable waste	16,923	2,720	13,606.5	184.2	616
Energy waste	5,323	1,755	1,710.6	40.7	23,888
Biodegradable waste	83,332	481	14,616	-	1,004
Toilet waste	16,164	0	1,404	145	46,718
Hazardous waste	242	0	441.7	-	16
General waste	3,028	757	701.2	201	59,678
Total	125,012	5,713	32,480	571	1,319,200

295.70 tons of waste did not go to landfill.

Circular Economy-based Management

In 2023, the Mae Fah Luang Foundation implemented a circular economy project, the development of a tool for result-based assessment of the organization’s circular economy performance. This involved using the organization circularity index framework to evaluate the flow diagrams of production, consumption, and waste management in terms of both materials and energy. An index value of 1.0 indicates the highest level of circularity, meaning that all materials and energy are fully recycled and circulated. This ongoing project is in collaboration with the Faculty of Engineering at Chulalongkorn University, where ten operational units within the Doi Tung Development Project area were selected as samples to study the Foundation’s circularity index. The results showed that the Foundation has the organization material circularity index (OMCI) of 0.29 and the organization energy circularity index (OECI) of 0.34. It was found that the physical and chemical properties of macadamia shells can further enhance the circularity index. Additionally, the Foundation has opportunities to improve its energy and material circularity based on these metrics.

The Foundation’s production practices at the Cottage Industry Center and Outlet are certified to be compliant with the Circular Economy Management System for Organizations (CEMS) standard. Furthermore, it underwent an evaluation of its effectiveness in applying circular economy principles through the Circular Economy Performance Assessment System (CEPAS). This ensures that the Foundation adheres to the necessary requirements and utilizes resources efficiently.



Circular economy-based materials using in Doi Tung brand

Materials	2023
Yarn from recycled plastic	3.89 tons
Fabrics from recycled plastic fibers	9,930 meters

Forest Management

The Foundation operates on a key principle that ensures harmonious coexistence between people and the environment. This is achieved through the careful management of land use to benefit both local communities and the environment, following the Doi Tung Model, which includes conservation forest, economic forest, sustenance forest, agricultural zone, and residential area.

In all project areas, the Foundation collaborates with communities to survey and delineate land use boundaries, fostering a sense of ownership that encourages communities to care for their land. As a result, the forest areas within the development projects have seen increased in protection and biodiversity. Additionally, the Foundation works with village committees and community representatives to establish fire prevention measures, including setting fire break and monitoring for forest fires, to ensure effective fire management.

In 2023, the Foundation continuously implemented the third phase of the Carbon Credit from Community Forests for Sustainable Development Project. This phase expands to cover 75 community forests under the Community Forests Act B.E. 2562 (2019), encompassing an area of 15,441.82 hectares across Chiang Rai, Chiang Mai, Yasothon, and Amnat Charoen province. The project received financial support from 14 corporates, with the Foundation developing, monitoring, and evaluating the project's implementation and the use of funds within each community. Training was provided in both conceptual and practical aspects, focusing on carbon sequestration in forests and carbon credit assessment. Sustainable capacity building for communities includes the development of a community business model canvas, accounting, asset management, and preparing project proposals for forest protection and community development funds. The goal is to enhance community understanding and enable them to continue such projects sustainably.



Land area and type of forest in each project phase

Land area and type of forest (ha)	Phase 1	Phase 2	Phase 3
Registered community forest areas	2,939.52	4,527.48	15,441.82
• Mixed deciduous forest	703.85	1,677.90	5,072.15
• Dry dipterocarpaceous forest	2,209.96	1,115.40	6,931.40
• Hill evergreen forest	25.71	361.88	466.57
• Dry evergreen forest	0.00	8.07	2,815.19
• Evergreen rainforest	0.00	692.72	0.00
• Mangrove forest	0.00	284.92	0.00
• Mixed deciduous-dipterocarpaceous forest	0.00	386.58	156.51

Demographics of the project's community forests

Demographics	Phase 1	Phase 2	Phase 3
Number of villages in the project (village)	15	37	75
Number of households in the project (household)	2,726	9,635	11,964
Number of people in the project (people)*	7,988	26,199	37,647

*Number of people residing in the project area

Wildfires in the project's community forests (ha)

Wildfire in each phase	2020 Wildfire	2021 Wildfire	2022 Wildfire	2023 Wildfire
Phase 1 (2021)	(Pre-project 2016-2020) 742.05	368.13	195.53	499.79
Phase 2 (2022)	-	(Pre-project 2017-2021) 936.79	12.67	106.36
Phase 2 (2023)	-	-	(Pre-project 2018-2022) 137.28	0.00
Phase 3 (2023)	-	-	-	(Pre-project 2019-2023) 1,819.68

Regarding the forest area in the Doi Tung Development Project, which has been reforested since 1988, various land use types have been allocated, and the management and monitoring of land use within the Doi Tung Development Project have been continuously monitored. An important indicator of forest restoration is the biodiversity metric.

In 2023, the Foundation conducted surveys to collect data on plant species and their distribution by selecting different land use areas. This data was processed according to the Shannon-Wiener biodiversity index, which indicates relative biodiversity level. It was found that in areas with different usage of forest, despite being in close proximity, the biodiversity varies. Conservation areas have higher biodiversity level than those where economic trees are planted. This survey serves as fundamental data for planning restoration and managing forest land use.

Shannon – Wiener diversity index

Type of forest area based on dominant tree species	Type of forest based on land use	Number of trees and species	Shannon – Wiener diversity index
Pine forest with economic crop plantations	Economic forest	270 trees 47 species	1.53
Hill evergreen forest	Conservation forest	4,073 trees 213 species	3.56
Pine forest	Conservation forest	2,645 trees 157 species	3.24
Bamboo-mixed deciduous forest	Conservation forest	2,100 trees 134 species	2.49
Teak-mixed deciduous forest	Conservation forest	2,632 trees 121 species	2.72
Sustenance bamboo-mixed deciduous forest	Sustenance forest	3,454 trees 144 species	2.89

The year 2023 saw a significantly higher amount of wildfires compared to previous years, due to burning after the harvest season combined with dry weather conditions. Efforts to restore forests have thus become a priority for the Foundation, alongside the maintenance and protection of existing forests. Research on natural forest restoration in reforested areas of three-needled pine revealed 202 species of plants, with a notable loss of pine trees primarily caused by storms (80%) and plant diseases (20%). It was found that the diversity of native species in reforested pine forest with cash crop plantations was lower than in other types of forest areas.

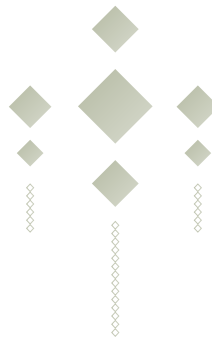
Therefore, the Foundation is striving to identify suitable native species for reforestation, including those for areas degraded in the project site. Examples of such native species are ko paen (*Castanopsis diversifolia*), cotton tree, baheda, Nepali hog plum, padauk, plub pla (*Microcos tomentosa* Sm.), mamuang pa (*Mangifera pentandra* Hook. f.), Indian gooseberry, soap nut tree, India gurjan, black rosewood. The introduction of more native species will enhance biodiversity and restore the forest areas to greater richness.

Wildfires in all the project sites

	2021	2022	2023
Forest area in the Foundation’s project sites (ha)	48,287.63	53,989.05	68,069.63
Wildfire area (ha)	394.49	208.28	6,340.36
Percentage of wildfire area to the total area	0.82	0.39	9.31

The goal of creating positive impacts on nature has become more important for the Foundation. At the recent World Economic Forum 2024, the Mae Fah Luang Foundation was announced as one of 320 organizations worldwide participating as a TNFD Early Adopter. This initiative utilizes the framework of the Taskforce on Nature-related Financial Disclosures as a crucial tool for its operations and environmental impact monitoring. The Foundation has begun planning to survey its operational data according to the Nature Framework to identify risks related to nature and develop strategies to manage those risks.

Additionally, the Foundation is promoting environmental awareness within the organization through various activities and projects, such as the “Meatless Monday,” encouraging staff to consume vegetarian meals once a month to reduce greenhouse gas emissions from the meat industry, and the “Bring Your Own Cup” initiative, which is a lucky draw to reward employees who bring their own water bottles or cups with free drinks each day. This is accompanied by waste segregation activities following the 5S principles (Sort, Set in order, Shine, Standardize, Sustain) and the Green Office Project, which seeks ways to save energy and foster participation in reducing environmental impacts within the organization.





Knowledge Dissemination

With over 50 years of experience in sustainable livelihood development, the Mae Fah Luang Foundation has been able to accumulate and manage knowledge, design and develop learning tools and space. We also provide consultation services for both public and private sectors on sustainable development, both domestically and internationally. The key principle of knowledge dissemination is to use the actual development project sites as learning space for those interested in sustainable development, social entrepreneurship, and sustainable environmental management. This facilitates knowledge exchange and inspiration to create a network of change leaders who will apply and expand the development principles and approach of the Mae Fah Luang Foundation to further develop society and the environment together.

The Foundation has developed 11 sustainability packages and 11 Doi Tung excursion packages in collaboration with the Black Lahu community in the Lahu Pa Kluay village to manage educational tourism. Additionally, in partnership with the Sasin Graduate Institute of Business Administration of Chulalongkorn University, the Foundation has developed three curricula related to carbon credits and greenhouse gas emission reductions for the private sector. In 2023, a total of 164 training sessions and study visits were conducted by the Foundation, attracting 4,909 participants.

The Mae Fah Luang Foundation has also implemented a project to give children and youth in urban areas opportunities to connect with nature and community culture. This is achieved through learning via "science" and "arts," following the living principles of the Princess Mother. The project uses various knowledge and environmental aspects from the Doi Tung Development Project as a medium for creating experiential learning outside the classroom, such as the Faidee Kids Camp and the Nature Camp, to learn about climate change and forest restoration within Doi Tung. Nature learning activities include water tracing, wind tracing, pollinators, bird watching, stargazing, and handicraft activities related to nature and the Doi Tung Development Project, with a total participation of 1,752 people.

Knowledge Dissemination

In addition to experiential learning activities, the Foundation has extracted knowledge regarding design and development of learning tools to enhance skills and experiences. This has led to the creation of knowledge products in various formats, such as the report of impact analysis of the Doi Tung Development Project and targeted areas, aimed at disseminating the principles of sustainable alternative livelihood development. Publications such as "Let's Play in Doi Tung" and "The Black Pig of Doi Tung: From Belief to Sustainability," along with knowledge boxes on 'How to (Know),' have been developed based on the assessment of community potential following the Mae Fah Luang Development Model into supportive tools for development practitioners to analyze and evaluate community capabilities in a short time. Additionally, videos showcasing the operations of various departments, such as termite mushroom cultivation and coffee sourcing, reflect the principles of living sustainably with nature, presented in a format that meets the broad audience's needs.

Moreover, the Foundation plays a significant role in advocating drug policies based on the sustainable alternative livelihood development principle both nationally and internationally. In 2023, the Foundation presented the Carbon Credit from Community Forests for Sustainable Development Project at the 66th session of the Commission on Narcotic Drugs (CND), exemplifying the application of sustainable development principles in environmental protection efforts towards achieving net-zero greenhouse gas emissions. This initiative also aims to enhance economic returns for communities and foster collaboration among government, private sector, and communities. During this meeting, the Foundation, in partnership with the Federal Republic of Germany and the Republic of Peru, promoted resolutions for enhancing cooperation between the state and various sectors, particularly in linking environmental concepts related to carbon credit management and ecosystem service payments in alternative development work. The resolutions received endorsement from 16 member countries. Additionally, the Foundation participated in various international forums, such as the 7th Brandenburg Forum and the annual meeting of the Schwab Foundation for Social Entrepreneurship, to present perspectives on development that apply alternative development principles, considering equity, allowing communities to participate in decision-making, and creating sustainability in environmental management alongside addressing drug issues.



Statements of Financial Position

For the years ended 30 September

Assets	2023 (baht)	2022 (baht)
Current assets		
Cash and cash equivalents	112,787,454	39,607,550
Current investments	1,553,220	1,547,032
Investments in securities	1,051,880,340	1,171,124,766
Trade accounts receivable	36,490,070	26,735,170
Other receivables	7,841,924	32,588,602
Inventories	262,337,639	207,272,380
Interest receivable	5,990,663	4,486,186
Other current assets	13,287,383	20,495,845
Total current assets	1,492,168,693	1,503,857,531
Non-current assets		
Investment in subsidiaries	15,353,091	16,532,000
Property, plant and equipment	226,437,114	247,076,885
Intangible asset	2,027,711	4,645,755
Other non-current assets	12,292,750	12,035,721
Total non-current assets	256,110,666	280,290,361
Total assets	1,748,279,359	1,784,147,892

Statements of Financial Position

For the years ended 30 September

Liabilities and fund balances	2023	2023
	(baht)	(baht)
Current liabilities		
Trade accounts payable and other payables	35,631,965	28,064,932
Unearned income	4,649,262	4,192,311
Accrued expenses	25,172,955	22,814,196
Other current liabilities	5,951,693	3,872,424
Total current liabilities	71,405,875	58,943,863
Total current assets	71,405,875	58,943,863
Specific purpose funds	169,096,371	139,764,317
<hr/>		
Fund balances		
Fund balances	1,323,516,401	1,400,136,121
Reserve for project support	184,260,712	185,303,591
Total fund balances	1,507,777,113	1,585,439,712
<hr/>		
Total liabilities and fund balances	1,748,279,359	1,784,147,892

Statements of Revenues and Expenses

For the years ended 30 September

	2023	2023
	(baht)	(baht)
Revenues		
Revenue from sale of goods and rendering of services	458,812,220	386,991,654
Revenue from donations	361,588,264	349,988,219
Investment income	29,448,598	22,881,425
Other income	25,016,350	25,485,756
Total income	874,865,432	785,347,054
<hr/>		
Expenses		
Cost of sale of goods and rendering of services	269,725,525	213,138,155
Selling and service expenses	161,653,107	164,576,799
Administrative expenses	507,663,235	488,850,461
Loss from investment	12,443,285	27,779,846
Total expenses	951,485,152	894,345,261
<hr/>		
Expenses over revenues	(76,619,720)	(108,998,207)

Performance Data

Income from activities promoted by the Foundation that directly benefit the communities in the projects (baht)

Doi Tung Development Project

Type	2021	2022	2023
Agriculture	18,948,401	5,581,874	16,985,498
Livestock	5,657,500	13,007,000	7,770,000
Employment within the project area	201,694,536	166,913,440	195,217,502
Others	6,166,773	8,439,278	11,609,423

Tea Oil and Other Oilseed Crops Research and Development Project

Type	2021	2022	2023
Agriculture	10,102,524	6,131,535	4,624,354
Livestock	341,500	261,896	408,325
Handicrafts	137,308	197,032	711,611
Employment within the project area	13,281,427	11,833,828	12,595,988
Others	10,230,000	10,230,000	9,918,750

Roi Jai Rak Project

Type	2021	2022	2023
Agriculture	22,533,082	21,566,937	31,427,197
Livestock	4,656,138	6,777,123	7,378,906
Handicrafts	359,867	458,047	762,799
Employment within the project area	36,446,235	32,358,539	34,771,249
Others	3,218,000	1,754,883	3,873,195

Livestock Promotion (pig) in the Projects

Promoted areas	No. of persons	No. of boars	No. of sows	No. of porkers	Total value
The DTDP's 29 villages	152	70	258	200	7,770,000
Roi Jai Rak Project	14	12	273	60	4,995,000
Pang Mahan	54	2	101	12	1,683,000
Puna	3	-	33	1	504,000
Hua Mae Khan	1	-	22	-	330,000
Outside the project area (Chiang Rai Province)	36	24	62	45	2,055,000
Other agencies	19	11	182	6	3,114,000
Total	279	119	931	324	20,451,000

Thai-Myanmar Sustainable Alternative Livelihood Development Project

Type	2021	2022	2023
Agriculture	3,153,770	2,278,050	2,174,705
Employment within the project area	9,382,463	7,221,850	1,663,792

Nan Economic Crop Processing Project

Type	2021	2022	2023
Agriculture	3,153,770	2,278,050	2,174,705
Employment within the project area	9,382,463	7,221,850	1,663,792
Others	635,000	639,000	3,524,868

Local Employment

Employment within the project area	2021	2022	2023
Doi Tung Development Project	201,694,536	166,913,440	195,217,502
Tea Oil and Other Oilseed Crops Research and Development Project	13,281,427	11,833,828	12,595,988
Roi Jai Rak Project	36,446,235	32,358,539	34,771,249
Nan Economic Crop Processing Project	9,382,463	7,221,850	1,663,792

Water Management

The Foundation's Water Withdrawal (m³)

Water sources	2021	2022	2023
Surface water			
Freshwater (≤ 1000 mg/L Total Dissolved Solids)	234,800.16	222,060.50	221,402.46
Other Water (> 1000 mg/L Total Dissolved Solids)	0.00	0.00	0.00
Groundwater			
Freshwater (≤ 1000 mg/L Total Dissolved Solids)	0.00	0.00	0.00
Other Water (> 1000 mg/L Total Dissolved Solids)	0.00	0.00	0.00
Tap water			
Freshwater (≤ 1000 mg/L Total Dissolved Solids)	10,861.00	6,909.00	6,909.00
Other Water (> 1000 mg/L Total Dissolved Solids)	0.00	0.00	0.00

The Foundation's Water Discharge and Recycled Water

Destination of discharged water	2021	2022	2023
Discharge to surface water			
Freshwater (≤ 1000 mg/L Total Dissolved Solids)	188,492.81	178,424.43	178,424.43
Other Water (> 1000 mg/L Total Dissolved Solids)	0.00	0.00	0.00
Amount of recycled water			
Freshwater (≤ 1000 mg/L Total Dissolved Solids)	8,036.12	4,751.17	2,685.08

The Foundation's Water Consumption

	2021	2022	2023
Amount of water consumed within the Foundation	57,168.35	57,168.35	48,728.17
Percentage of recycled water use	3.27%	3.27%	1.17%

Energy Management

Energy Consumption (toe)

Energy sources	2021	2022	2023
Electricity (toe)	306.98	285.56	257.33
Solar energy	17.49	15.30	22.26
Biomass	5.74	10.20	8.89
Oil (toe)	315.20	397.38	245.71
LPG (toe)	149.36	193.68	179.34
Percentage of alternative energy to total energy	2.92%	2.83%	4.37%

Energy Intensity (toe*/baht)

Energy Intensity (toe/baht)	2021	2022	2023
The Foundation's total income (million baht)	771.03	813.05	874.87
Total energy/income (toe/baht)	1.0007	1.0782	0.7800
Alternative energy/income (toe/baht)	0.0301	0.0314	0.0356

toe: tonnes of oil equivalent

Circularity Index

Business units	Circularity index (CI)*	
	OMCI*	OECI*
Macadamia facilities	0.575	0.590
Drinking water facilities	0.118	0.100
Weaving and dyeing factory	0.328	0.100
Ceramic factory	0.257	0.116
Mulberry paper factory	0.332	0.296
Coffee factory	0.340	0.180
Café DoiTung	0.310	0.100
Doi Tung Lodge	0.130	-
Restaurants	0.233	0.100
Office	0.280	0.100

*0 ≤ CI ≤ 1

*OMCI – Organization Material Circularity Index

*OECI – Organization Energy Circularity Index

Circular materials

Circular economy-based materials	2564	2022	2023
Yarn from recycled plastic (kg)	5,355.71	2,139.54	3,899.20
Fabrics from recycled plastic fibers (m)	14,836.27	25,345.45	9,929.72

Waste Management

Zero Landfill Waste from the Doi Tung Development Project (kg)

Type of waste	2021	2022	2023
Sellable waste	23,319	18,056	16,923
Energy waste	12,942	7,048	5,323
Biodegradable waste	94,073	138,931	83,332
Bathroom waste	6,498	11,938	16,164
Hazardous waste	309	288	242
General waste	2,700	3,539	3,028
Total (kg)	139,841	179,800	125,012

Achieved zero waste to landfill since October 2018

Zero Landfill Waste from the Roi Jai Rak Project (kg)

Type of waste	2021	2022	2023
Sellable waste	12,232	9,522	13,607
Energy waste	3,268	2,307	1,711
Biodegradable waste	24,912	14,285	14,616
Bathroom waste	2,335	1,853	1,404
Hazardous waste	241	363	442
General waste	626	680	701
Total (kg)	43,613	29,010	32,480

Achieved zero waste to landfill since August 2021

Zero Landfill Waste from the Mae Fah Luang Art and Cultural Park (kg)

Type of waste	2021	2022	2023
Sellable waste	9	162	184
Energy waste	-	16	41
Biodegradable waste	16	129	145
Bathroom waste	-	4	-
Hazardous waste	15	159	201
Total (kg)	40	469	571

Achieved zero waste to landfill since September 2021

Zero Landfill Waste from Communities and Schools in the DTDP (kg)

Type of waste	2021	2022	2023
Sellable waste	2,309	1,905	616
Energy waste	16,913	19,662	23,888
Biodegradable waste	7,967	5,001	1,004
Bathroom waste	41,929	44,606	46,718
Hazardous waste	57	919	16
General waste	32,048	46,265	59,678
Total (kg)	101,223	118,358	131,920

Achieved zero waste to landfill since May 2023

Zero Landfill Waste from the Bangkok Office (kg)

Type of waste	2022	2023
Sellable waste	959	2,720
Energy waste	N/A	1,755
Biodegradable waste	874	481
General waste	N/A	757
Total (kg)	1,833	5,713

Achieved zero waste to landfill since October 2023

RDF Energy Value

	Unit	2021	2022	2023
Energy waste	kg	29,855	26,710	32,717
Calorific value of energy waste	kcal	87,445,295	78,233,590	95,828,972
Coal substitute	kg	34,974.76	31,290.43	38,327.91
GHG emissions reduction from coal substitute-RDF	tonCO ₂ e	37.14	33.22	40.70

Greenhouse Gas Emissions

Greenhouse gas emissions

GHG emissions	Total GHG (tonCO ₂ e)		
	2021	2022	2023
Scope 1			
Direct Emission	3,011.41	3,913.28	1,729.82
Mobile Combustion	990.78	1,252.18	772.47
Stationary Combustion	406.70	522.47	485.82
Fugitive Emission	1,606.16	2,129.39	460.34
Process Emission	7.77	9.24	11.19
Scope 2			
Indirect Emission from Energy	1,800.98	1,675.30	1,518.55
Electricity Use	1,800.98	1,675.30	1,518.55
Scope 3			
Other Indirect Emissions*	1,120.38	9,991.63	8,457.08
Category 1	591.28	9,991.63	8,457.08
Category 3	529.10	Not statistically significant	Not statistically significant
Total GHG emissions	5,932.77	15,580.21	11,705.45
Other greenhouse gases reported	116.91	105.09	66.76

*Data in Category 2,4-10,12-15 are not statistically significant.

*Since 2022, the criteria for assessing the significance of Scope 3 emissions have been adjusted to align with the guidelines of the Thailand Greenhouse Gas Management Organization (Public Organization).

Carbon Emission intensity (toe/baht)

Energy Intensity (toe/baht)	2021	2022	2023
The Foundation's total income (million baht)	771.03	785.35	874.87
Carbon Intensity (Scope 1 and 2) per net income tonCO ₂ e/baht	6.24	7.12	3.71
Carbon Intensity (Scope 1, 2 and 3) per net income tonCO ₂ e/baht	7.69	19.84	13.38

1) Greenhouse gases considered:

1. Carbon dioxide (CO₂)
2. Methane (CH₄)
3. Nitrous oxide (N₂O)
4. Hydrofluorocarbons (HFCs)
5. Perfluorocarbons (PFCS)
6. Sulfur hexafluoride (SF₆)
7. Nitrogen trifluoride (NF₃)

2) Additional greenhouse gases considered:

1. HCFC-22
2. Carbon dioxide (CO₂)

3) The Global Warming Potential (GWP)
- IPCC Fifth Assessment Report (AR5)

Biodiversity

Biodiversity

Type	Number of species
Plant species*	1,379
Terrestrial and aquatic insects	850
Birds**	268
Reptiles	58
Amphibians	27
Fish	27
Mammals***	26

*16 species identified in Doi Tung

**10 rare bird species were identified, including green cochoa, purple cochoa, and black-breasted thrush, as well as 66 migratory bird species, such as wagtail, common buzzard, red-breasted flycatcher, and pale blue flycatcher.

*** From the survey with 30 camera traps, each stationed at every 2 square kilo meters, six groups of mammals totaling 26 species were found: 1) **Scandentia** (treeshrews) – northern treeshrew; 2) **Primates** – human, rhesus macaque, northern pig-tailed macaque, Assame macaque; 3) **Pholidota** (pangolins) – northern pangolin; 4) **Rodentia** (rodents) – hedgehog/ Asiatic brush-tailed porcupine, Sladen's rat, bamboo rat, red-cheeked squirrel, Malayan porcupine; 5) **Carnivora** (carnivores) – dog, crab-eating mongoose, ferret badger, masked palm civet, common palm civet, leopard cat, large Indian civet, hog badger, yellow-throated marten, binturong; 6) **Cetartiodactyla** (even-toed ungulates): buffalo, serow, Indian muntjac, wild boar, cattle.

Forest Resource Utilization

Utilization of Forest Resources by Communities in Doi Tung Development Project Area

Summary of the top 10 most utilized resources from 105 items of resources surveyed from 30% of households in each village.

Forest products	Quantity	Value
Firewood	19,021 m3	7,378,567 baht
Insects	3,888 kg	1,200,344 baht
Wild animals	4,234 kg	866,467 baht
Bamboo shoots	122,273 kg	560,487 baht
Food crop	23,187 kg	560,487 baht
Aquatic animals	3,490 kg	491,700 baht
Mushroom	5,003 kg	458,383 baht
Wood	1,773 trees	150,933 baht
Birds	1,257 birds	71,367 baht
Cogon grass	4,343 sheets	65,150 baht
Total value		12,077,621 baht

Land Use (ha)

Land (ha)	Conservation forest	Economic forest	Sustenance forest	Agricultural zone	Residential area	Total
Doi Tung Development Project	10,542.72	1,473.28	1,346.4	439.84	882.4	14,684.64
Tea Oil and Other Oilseed Crops Research and Development Project	5,094.56	554.24	321.44	1,986.56	101.76	8,058.56
Roi Jai Rak Project	3,163.2	-	232.32	2,331.2	212.32	5,939.04
Nan Economic Crop Processing Project	16,124.32	3,729.28	2,579.04	4,820.96	150.88	27,404.48
Total area of Thai-Myanmar Sustainable Alternative Livelihood Development Project						54,714.24
The total community forests registered under T-VER as of end of 2023 of the Carbon Credit from Community Forests for Sustainable Development Project						22,908.8
Total projects'areas						133,709.76

Wildfires

Wildfires by development project (ha)

Wildfires (ha)	2021	2022	2023
Doi Tung Development Project	1.12	0.08	281.12
Tea Oil and Other Oilseed Crops Research and Development Project	0.00	0.00	619.68
Roi Jai Rak Project	24.44	0.00	114.40
Nan Economic Crop Processing Project	0.80	0.00	4,716.00
Carbon Credit from Community Forests for Sustainability Project	368.00	208.16	609.16
Total	394.36	208.24	6,340.36

Wildfires from all development projects

Area (ha)	2021	2022	2023
Forest area in the Foundation's project sites	48,287.63	53,989.05	68,069.63
Wildfire area	394.49	208.28	6,340.36
Percentage of wildfire area to the total area	0.82	0.39	9.31

Accident

The Foundation's accident rate

Accident rate	2021	2022	2023
Number of work-related accidents	5	5	3
Work injury rate	5.38	5.38	3.27
Work injury rate with no more than 3 days of absence	2.15	3.23	2.18
Work injury rate with more than 3 days of absence	1.08	1.08	1.09
Work-related fatality rate	0.00	0.00	0.00

GRI Index

GRI Standard	Disclosure	Pages
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301-2	Recycled input materials used	27
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304-1	Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	27-30, 39-40
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305-1	Direct (Scope 1) GHG emissions	24, 38
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GRI Standard	Disclosure	Pages
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306-2	Management of significant waste-related impacts	26, 37
306-3	Waste generated	26, 37
306-4	Waste diverted from disposal	26, 37
306-5	Waste directed to disposal	26, 37
308-1	New suppliers that were screened using environmental criteria	23
403-1	Occupational health and safety management system	20
403-2	Hazard identification, risk assessment, and incident investigation	20, 40
403-4	Worker participation, consultation, and communication on occupational health and safety	20
403-5	Worker training on occupational health and safety	20
403-6	Promotion of worker health	20
403-9	Work-related injuries	20, 40
404-1	Average hours of training per year per employee	20
413-1a-iv	Local community development programs based on local communities' needs	17-22

It all started from one sow, and expanded to 150 pigs in three years, with a network of black pig producers in the community established. A website has been launched to reach a wide range of customers, transitioning from selling whole pigs to producing processed meat. In the future, there is a plan to open a black pork stall in the market and become one of the main producers of Doi Tung black piglets to supply community markets in northern Thailand.

“

What drives me is the happiness of my family who earns a better livelihood from raising livestock. For community entrepreneurs, I would like to tell them to start from what we love and enjoy. Be patient when problems arise, and we will be able to bring ourselves to achievement.

”



Nipathorn Ponnasakulpaisarn

Member of the Doi Tung black pig producer group and owner of Nok Hook Farm, a model farm for disease-free farm management that has received certification from the Department of Livestock Development.



มูลนิธิแม่ฟ้าหลวง ในพระบรมราชูปถัมภ์
Mae Fah Luang Foundation under Royal Patronage