Protecting the Rainbow Cave: The Tham Luang Mae Sap Stewardship Model

Khun Khan National Park (Mae sap cave), Thailand
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Protected Areas (including public natural or cultural parks)
Nature & Environment

Summary of Good Practice Story
Tham Luang Mae Sap, a cave in Thailand's Khun Khan National Park famous for rare rainbow-coloured mineral walls, suffered graffiti, broken stalactites and unauthorised structures from uncontrolled visits, including unsupervised Buddhist Lent pilgrimages, while local communities received little benefit from tourism despite the state bearing conservation responsibility alone. The park and community built the Luang Mae Sap Cave Stewardship Model around six principles: recognising ecological fragility first, co-governance with community members serving as assistant park rangers, carrying-capacity limits (groups capped at 25-30 people for 30-45 minutes with trained guides, plus a full month's seasonal closure for ecological recovery), interpretive nature trails, a Young Nature Guide Program training ten local youths, and linking tourism to homestays, restaurants and handicraft sales. Annual visitors grew from 2,068 in 2022 to about 30,000, participating households earn 2,000-3,000 baht monthly in supplementary income, and community-based wildfire prevention cut hotspots by 97.4% (from 269 in 2024 to 7 in 2025). The lesson: fragile natural heritage can only be shared responsibly when conservation limits, community stewardship, education and shared economic benefit all work together — natural beauty alone cannot protect itself from damage.

Setting the Scene: Destination & context

Hidden within the mountains of Samoeng District, Chiang Mai Province, lies Tham Luang Mae Sap, a remarkable cave in Khun Khan National Park renowned for its “Rainbow Cave Walls.” Natural bands of grey, white, and yellow, formed by the accumulation of iron and manganese minerals over time, create a distinctive geological feature rarely found elsewhere.

Beyond its beauty, the cave serves as an eco-learning site where geology, biodiversity, forest ecology, local history, and community identity intersect. Inside are several unique chambers, including Tham Ubosot, Tham Morakot, and Tham Phet, each with its own character and natural formations.

The cave is part of a larger mountain forest ecosystem closely connected to local communities, whose livelihoods, agriculture, seasonal products, and way of life depend on the surrounding natural environment. For them, Tham Luang Mae Sap is not only a tourist attraction but also a valuable natural heritage.

However, the cave’s beauty is fragile. Geological formations that took thousands of years to develop can be damaged in moments through careless contact or disturbance. This delicate balance between tourism and conservation, accessibility and protection, lies at the heart of the Luang Mae Sap story.

The Turning Point: Why change was needed

Before Tham Luang Mae Sap became a managed eco-learning destination, it faced growing threats from uncontrolled use. According to Phra Athikan Noppharit Panyawachiro, abbot of Wat Mae Sap Nuea, concerns arose when pilgrimage monks entered the cave during Buddhist Lent without proper oversight, raising fears that the area could become an unmanaged gathering place and create wider social problems.

At the same time, the cave showed clear signs of damage. Graffiti appeared on the walls, some stalactites and stalagmites were broken, and visitors had touched sensitive formations, leaving impacts that could not easily be reversed. Unauthorized structures built inside the cave further reflected a lack of understanding of the cave’s fragility.

Meanwhile, local communities received few direct benefits from tourism, while conservation remained largely a state responsibility. Recognizing these challenges, stakeholders shifted their focus from simply protecting the cave to encouraging people to value, conserve, and benefit from it. This idea became the foundation of a collaborative approach between Khun Khan National Park and the local community.

The Vision: What you set out to do

Khun Khan National Park and the local community developed the Luang Mae Sap Cave Stewardship Model to transform Tham Luang Mae Sap into a protected eco-learning destination managed through shared responsibility. The goal was not unlimited tourism, but a balance between visitor experience, community benefits, and long-term conservation.

The model is built on six principles: recognizing ecological fragility before promotion; establishing co-governance with local community members as assistant park rangers; applying carrying-capacity and risk-management measures; providing nature interpretation through trained local youth guides; creating tourism benefits for local households; and extending conservation beyond the cave to include forest protection, wildfire prevention, and low-carbon management.

At its core is a simple belief: fragile natural heritage can be shared with visitors only when conservation limits, local stewardship, education, and community benefits work together.

The Journey: How change happened

The transformation of Tham Luang Mae Sap took place through a series of connected steps. First, Khun Khan National Park, local communities, and partner organizations worked together to establish sustainable tourism guidelines, with community members serving as local custodians and assistant park rangers.

Second, visitors were introduced to the cave through an interpretive nature trail, where educational signs explain the watershed forest ecosystem, local biodiversity, and the relationship between the forest and the cave. This helps visitors understand the cave as part of a living natural system before entering.

Third, infrastructure was improved using environmentally friendly materials. Motion-sensor LED lighting was installed inside the cave to reduce energy use and disturbance to wildlife, while solar power systems support visitor facilities and promote low-carbon tourism.

Fourth, strict conservation measures were introduced. Visitor groups are limited to 25–30 people, visits last only 30–45 minutes, trained guides accompany every group, and the cave closes for one month each rainy season to allow ecological recovery.

Fifth, the Young Nature Guide Program trained ten local youths in geology, biodiversity, local history, cultural heritage, communication, and nature interpretation. Through this program, young people became ambassadors who connect scientific knowledge, local identity, visitor learning, and conservation.

Finally, tourism was linked to local livelihoods, creating opportunities for homestays, restaurants, community guides, handicraft producers, souvenir vendors, and local agricultural products. As a result, conservation became closely connected to community pride, local income, visitor education, and the long-term health of the mountain ecosystem.

The Breakthrough: What you achieved

The success of Tham Luang Mae Sap is reflected not only in visitor numbers but also in improved conservation and community benefits. Visitor numbers increased from 2,068 in 2022 to approximately 30,000 per year, supported by a management system that includes limited group sizes, trained guides, controlled visit durations, and an annual one-month seasonal closure for ecosystem recovery.

Tourism now generates supplementary income of around 2,000–3,000 Baht per month for participating households, benefiting homestays, restaurants, community guides, handicraft producers, souvenir vendors, and local agricultural producers. The Young Nature Guide Program has also strengthened local youth by providing knowledge, communication skills, income opportunities, and pride in their community.

The partnership between the national park and local communities has extended beyond tourism. Community-based wildfire prevention efforts helped reduce wildfire hotspots from 269 in 2024 to just 7 in 2025, representing a 97.4% decrease.

These outcomes demonstrate that Tham Luang Mae Sap has become more than a tourist destination. It has become a model of cooperation where conservation, community livelihoods, youth engagement, visitor education, and ecosystem protection support one another. Today, the cave's remarkable rainbow walls are protected not only by nature itself, but also by the people who understand and value them.

Reflections: What you learned and what others can learn

The story of Tham Luang Mae Sap highlights several important lessons for managing fragile natural destinations. First, natural beauty alone cannot protect a place from damage. Effective management is essential to prevent tourism from becoming a threat to the resources that attract visitors.

Second, conservation measures such as visitor limits, guided access, time restrictions, trail improvements, risk management, and seasonal closures are not obstacles to tourism but key elements of sustainable visitor experiences. Third, people are more likely to protect nature when they understand its value, making interpretation and environmental education essential.

Fourth, involving local youth helps ensure long-term conservation by transferring knowledge, building skills, and fostering pride in local heritage. Fifth, linking community benefits with conservation responsibilities encourages local people to actively protect natural resources.

Together, these lessons form the foundation of the Luang Mae Sap Cave Stewardship Model: protect fragile resources first, build understanding through interpretation, share benefits fairly with local communities, and extend conservation from a single site to the wider landscape that supports it.

The Ripple Effect: Lasting impact

The impact of Tham Luang Mae Sap extends beyond the cave itself. What began as protecting a fragile natural attraction has become a model for conservation and community collaboration across Khun Khan National Park.

The cave demonstrates effective practices in visitor management, conservation, environmental education, and low-carbon tourism, while strengthening local trust by showing that conservation can generate income, pride, and community participation.

This cooperation has supported broader initiatives, including human-forest coexistence under Section 64 of the National Park Act, environmentally friendly agriculture, waste management, wildfire prevention, and low-carbon tourism development.

Today, Tham Luang Mae Sap is more than a tourist destination. It is a model of coexistence between people and nature, reflecting SDG 17 (Partnerships for the Goals) and demonstrating how trust and collaboration can create lasting positive change across an entire landscape.

Awards or Certifications

- G-Green (Green National Park Award): Excellent Level (2023–2026)
- Thailand Tourism Awards (Kinnari Awards): Outstanding Award (2023–2024)
- Sustainable Tourism Acceleration Rating (STAR): 5-Star Rating (2025–2027)
- Thailand Tourism Standard (Elephant Raising Trunk Award): Very Good Level (2024–2026)
- Thailand Tourism Awards: Award of Excellence for Organization Supporting and Promoting Sustainable Tourism (2025–2026)
- Thailand Tourism Awards - Sustainability Award: A new award category introduced for 2025–2026
- Carbon Neutral Tourism Route Certification: For the "Chiang Mai Organic Route @ Bo Kaeo" itinerary (2025–2027)

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Quotes or Testimonials
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