



ADAPTATION FUND

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Adaptation Fund Board
Project and Programme Review Committee
Thirty-eighth Meeting
Bonn, Germany, 19-23 October 2026

PROPOSAL FOR THAILAND (1)



CONCEPT NOTE PROPOSAL FOR SINGLE COUNTRY

PART I: PROJECT/PROGRAMME INFORMATION

Title of Project/Programme: Building climate-resilient community-based tourism and sustainable supply chains in Chiang Rai, Thailand

Country: Thailand

Thematic Focal Area: Multisector Project

Type of Implementing Entity: Multilateral Implementing Entity

Implementing Entity: United Nations Industrial Development Organization (UNIDO)

Executing Entities: Designated Areas for Sustainable Tourism Administration (DASTA); Geo-Informatics and Space Technology Development Agency (GISTDA); United Nations Industrial Development Organization (UNIDO)

Amount of Financing Requested: 10,000,000 (in U.S Dollars Equivalent)

Project Formulation Grant Request (available to NIEs only): Yes ☒ No ☐

Amount of Requested financing for PFG: 150,000 (in U.S Dollars Equivalent)

Letter of Endorsement (LOE) signed: Yes ☒ No ☐

NOTE: LOEs should be signed by the Designated Authority (DA). The signatory DA must be on file with the Adaptation Fund. To find the DA currently on file check this page: <https://www.adaptation-fund.org/apply-funding/designated-authorities>

Stage of Submission:

- ☒ This concept has been submitted before
☐ This is the first submission ever of the concept proposal

In case of a resubmission, please indicate the last submission date: 2/9/2026

Please note that concept note documents should not exceed 50 pages, including annexes

Project/Programme Background and Context:

A1. Project summary

1. Thailand is among the world's most tourism-dependent economies¹ and also one of the most climate-vulnerable, ranking 30th on the Global Climate Risk Index². The tourism sector—particularly community-based tourism (CBT) and nature-dependent tourism—is increasingly exposed to floods, droughts, heatwaves, and landslides³, threatening infrastructure, livelihoods, and local economies. Recognizing these threats, Thailand's National Adaptation Plan (NAP 2024) now identifies tourism as a priority sector for climate adaptation. However, implementation capacity at the local level remains limited, and no large-scale initiative currently addresses these climate risks in tourism systems or supply chains⁴.
2. This project⁵ seeks to strengthen climate resilience in Thailand's tourism sector through four integrated components: localized climate risk intelligence, resilient CBT ecosystems, climate-smart MSMEs, and regional knowledge exchange. The project will directly benefit over 25,000 people and 250+ MSMEs in Chiang Saen, Mae Sai, Mae Chan, and Mae Fa Luang through risk-informed planning, community-based adaptation, resilient infrastructure, and climate-smart value chains. Its models will be consolidated into toolkits and strategies for replication across other DASTA zones, ensuring national impact through integration into Thailand's NAP 2024, Climate Change Master Plan, and tourism policies, while also informing regional knowledge-sharing and scaling in the Mekong. Co-benefits include ecosystem restoration, water and energy security, inclusive livelihoods for women, youth, and ethnic groups, and expanded market access for MSMEs.
3. Led by UNIDO in partnership with Thailand's DASTA⁶ and GISTDA⁷, the project is grounded in national frameworks including the NAP 2024, Climate Change Master Plan, SDGs, and local development plans. GISTDA will lead hazard mapping and IoT-integrated climate intelligence; DASTA will coordinate tourism adaptation planning and infrastructure interventions; and UNIDO will manage SME resilience programming and regional knowledge-sharing platforms including HP LIFE⁸ and the FairShare Academy.

This initiative links climate adaptation to sustainable tourism through data-driven planning, inclusive local action, ecosystem-based infrastructure, and value chain resilience. It aims to address adaptation finance gaps, strengthen climate governance, and position Thailand as a leader in climate-smart tourism under the AF's National Allocation Window.

A2. Background and project context

1. **Geography and country background:** Thailand is a Southeast Asian country located at the heart of the Indochinese Peninsula, covering an area of approximately 513,120 square kilometers⁹. It shares borders with Myanmar to the west and north, Laos to the northeast, Cambodia to the southeast, and Malaysia to the south. The country's topography is diverse, featuring the mountainous highlands of the north, the fertile Chao Phraya River basin in the central region, the Korat Plateau in the northeast, and coastal plains along the Gulf of Thailand and the Andaman Sea. These geographic zones contribute to varied land use patterns, including rice paddies, rubber and palm plantations, mangroves, upland forests, and rapidly expanding urban areas.
2. Thailand has a population of approximately 71.6 million as of 2024¹⁰, ranking as the 20th most populous country globally. The country has experienced a demographic transition with a steadily aging population and a median age of 40 years¹¹, making it one of the oldest societies in Southeast Asia. Nearly 50% of the population resides in urban areas, with Bangkok being the political, economic, and cultural capital. Northern provinces such as Chiang Rai—priority area for this project—are more rural, ethnically diverse, and highly dependent on nature-based sectors like agriculture, handicrafts, and eco-tourism.

¹ World Travel & Tourism Council. *Economic Impact Report 2023: Thailand*. 2023. https://assets-global.website-files.com/6329bc97af73223b575983ac/648b3a41df1214370817361d_EIR2023-Thailand.pdf

² Germanwatch. *Global Climate Risk Index 2025*. 2025. <https://www.germanwatch.org/sites/default/files/2025-02/Climate%20Risk%20Index%202025.pdf>

³ UNEP/GRID-Geneva. *Thailand Climate Change Country Profile*. 2023. <https://dicf.unepgrid.ch/thailand/climate-change>

⁴ Royal Thai Government. *National Adaptation Plan 2024*. 2024. https://unfccc.int/sites/default/files/resource/NAP_THAILAND_2024.pdf

⁵ One of UNIDO's three strategic priorities is to make supply chains work for people, planet and prosperity. To achieve this vision, the organization is implementing its global FairShare Programme combining various technical cooperation service offers to advance on three high-level goals i) Empowering sustainable and fair value creation for local and global businesses, ii) Skilling people with demand-driven and valuable abilities and promoting better jobs, iii) Advancing climate-resilient, biodiversity-positive technologies and the circular economy to eliminate harm to nature. As part of the FairShare Programme this proposal, - targets all three objectives advancing a holistic approach to supply chain sustainability.

⁶ Designated Areas for Sustainable Tourism Administration (DASTA). *About DASTA*. Accessed 8 June 2025. <https://www.dasta.or.th/en>

⁷ GISTDA. 'GISTDA Introduces IoT-Enabled Hazard Mapping for Climate Resilience.' News release, 15 May 2024. https://gistda.or.th/news_view.php?lang=EN&n_id=5935

⁸ UNIDO. 'UNIDO-HP LIFE Partnership for SME Resilience.' 2023. <https://www.unido.org/.../unido-hewlett-packard>

⁹ CIA. *The World Factbook – Thailand* (Geography section). 2024. <https://www.cia.gov/the-world-factbook/countries/thailand/>

¹⁰ World Population Review. *Thailand Population 2025*. 2025 (accessed 8 Jun 2025). <https://worldpopulationreview.com/countries/thailand>

¹¹ CIA. *The World Factbook – Thailand* (Median age). 2024. <https://www.cia.gov/the-world-factbook/about/archives/2022/countries/thailand>

3. Thailand is classified as an upper-middle-income country by the World Bank, with tourism contributing up to 22% of GDP (pre-COVID levels) and employing 8–11% of the workforce. However, rural communities remain vulnerable, particularly in mountainous regions where climate impacts such as landslides and flash floods exacerbate inequality and threaten livelihoods. These socio-economic dynamics make climate-resilient development in the tourism sector critical for inclusive and sustainable growth.



Figure 1 The map of Thailand displays six geographical regions (A) and major rivers (B). Source: [Research Gate \(2021\)](#)

4. **Economic structures and trends:** Thailand is an upper-middle-income country with a Gross National Income (GNI) per capita of approximately USD 7,230 in 2023 (World Bank), ranking among the more industrialized economies in Southeast Asia. Despite this status, regional inequalities remain stark—especially between urbanized central provinces and the more rural, climate-vulnerable north and northeast. Tourism has historically played a critical role in the country's economy, accounting for 20–22% of GDP and directly or indirectly employing up to 11% of the labor force prior to the COVID-19 pandemic.¹² While international arrivals have partially recovered post-pandemic, rural tourism-dependent communities continue to face climate-related disruptions to income and employment.
5. Thailand's Human Development Index (HDI) in 2022 was 0.8, placing it in the high human development category and ranking it 66th globally¹³. However, this national average masks significant disparities: the northern hill districts, including Chiang Rai—one of the project's focal areas—have poverty rates over 35%, far above the national average of 6.3%.¹⁴ These areas are also home to ethnic communities with limited access to climate information, basic services, and social protection.
6. Thailand's economy has diversified in recent decades, with strong manufacturing, export, and service sectors. However, rural economies remain heavily reliant on climate-sensitive sectors such as agriculture, nature-based tourism, and artisanal crafts. The increasing frequency and severity of floods, droughts, and landslides have disrupted both local economies and broader value chains. In tourism-linked supply chains (e.g. coffee, handicrafts, food services), micro-, small-, and medium-sized enterprises (MSMEs) struggle to adapt to these risks due to limited financial resilience, informality, and exclusion from mainstream development finance.
7. Given these economic vulnerabilities and structural challenges, the integration of climate adaptation into tourism offers a strategic pathway to safeguard livelihoods, diversify rural economies, and reduce the climate risk exposure of key value chains. Through targeted support for adaptation planning, infrastructure, and supply chain resilience, this project aims to create scalable and inclusive economic benefits for Thailand's most vulnerable tourism communities.
8. Tourism is an inherently cross-sectoral industry—intertwining with health, agriculture, and water resource management systems. As climate risks intensify, the sector faces mounting challenges. For instance, flash floods and landslides can have devastating consequences for people with disabilities and bedridden patients in tourism-dependent areas, underscoring the urgent need for inclusive disaster preparedness and responsive infrastructure. At the same time, prolonged heatwaves are diminishing the quality and quantity of climate-sensitive crops like organic vegetables and highland coffee—core to eco-tourism experiences in northern Thailand. Inadequate water resource management and fragile infrastructure further exacerbate flood and landslide risks, directly threatening tourism assets, natural attractions, and nearby communities.

¹² WTTC. *Travel & Tourism Economic Impact 2023 – Thailand*. 2023. https://assets-global.website-files.com/6329bc97af73223b575983ac/648b3a41df1214370817361d_EIR2023-Thailand.pdf

¹³ UNDP. *Human Development Index – Thailand (2022 data)*. 2023. countryeconomy.com

¹⁴ World Bank. *Global Poverty Monitoring Technical Note: Thailand*. 2024. databankfiles.worldbank.org

9. In this context, the proposed Chiang Rai Tourism Resilience Project emerges as a strategic lever for advancing Thailand's commitments under the Global Goal on Adaptation (GGA). By integrating localized climate risk intelligence tailored to tourism systems, investing in nature-based solutions (NbS), and empowering marginalized groups—particularly ethnic communities and women—the project strengthens adaptive capacity where it is most needed. Furthermore, it anchors systemic resilience by aligning with Thailand's NAP 2024 and fostering regional knowledge exchange through transboundary Mekong platforms. Together, these interventions deliver inclusive, scalable, and measurable outcomes aligned with the Paris Agreement's adaptation priorities.

A2a. Climate trends and projection

10. Chiang Rai is Thailand's northernmost province, characterized by highland landscapes and diverse communities¹⁵. Within Chiang Rai, the proposed target locations span four districts – **Chiang Saen, Mae Sai, Mae Chan, and Mae Fa Luang** – known for their mountainous terrain, rich cultural heritage, and growing sustainable tourism initiatives. These upland communities rely heavily on agriculture and healthy ecosystems yet are increasingly exposed to climate-related stresses¹⁶. This assessment provides a detailed overview of historical climate trends and future projections for the region (with a focus on the RCP4.5 and RCP8.5 scenarios) and evaluates the implications for key sectors linked to sustainable tourism, including agriculture, water, forests/biodiversity, cultural heritage, and community livelihoods. It also highlights regional vulnerabilities – from ecosystem and infrastructure impacts to risks faced by smallholder farmers, women, youth, and ethnic communities – providing an evidence base for climate adaptation planning in the four districts.

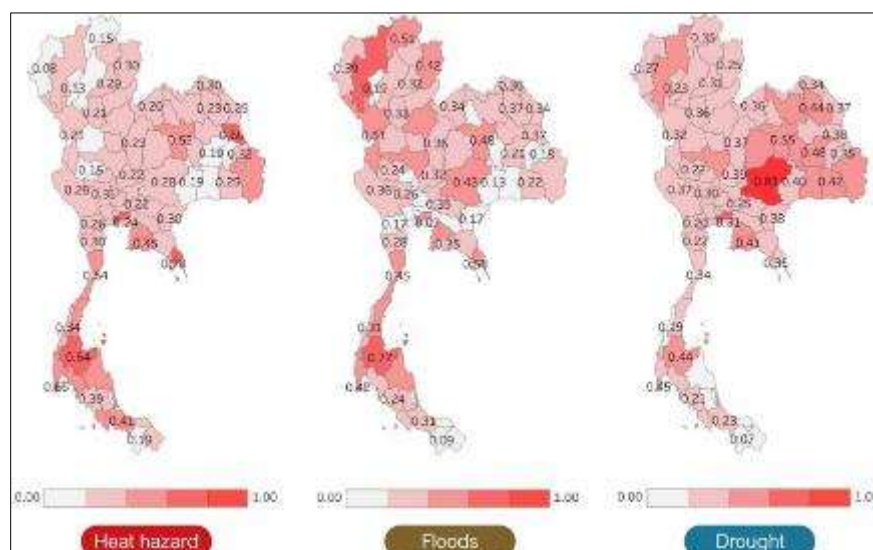


Figure 2 Risk areas for the tourism sector with a focus on heat hazard, floods, and drought areas shown in the country map during 2016-2035. *Source: Thailand's NAP 2024 UNFCCC*

Historical Climate Trends in Northern Thailand (Chiang Rai)

11. The historical climatic data from ERA5-Land reveals changes in Chiang Rai from 1980 to 2024. Annual precipitation indicates variability, with values ranging 1,200-2,400 mm. While only a slight decreasing trend is evident, the year-to-year fluctuations (Figure 6) reflect changing rainfall patterns, possibly linked to climate variability or regional shifts in monsoon dynamics. The largest decrease in precipitation is observed in the northern districts (Figure 3). The minimum temperature shows a clear upward trend, rising from the annual average of approximately 17°C in 1980 to around 22°C in 2024. This increase of around 5°C over 40 years highlights significant warming, which could have implications for agriculture, ecosystems, and tourism activities (Figure 4 and Figure 6). Similarly, the maximum temperature has increased from about 25°C in 1980 to nearly 31°C in 2020, a rise of approximately 6°C (Figure 5 and Figure 6). The rapidly increasing trend for both minimum and maximum temperature during the last decade is notable. This trend aligns with global warming patterns and suggests heightened heat stress risks for the region. Spatially, both minimum and maximum temperature rises prominently in the central lowland areas of the province.

¹⁵ griffith.edu.au

¹⁶ plca-p-001.sitecorecontenthub.cloud

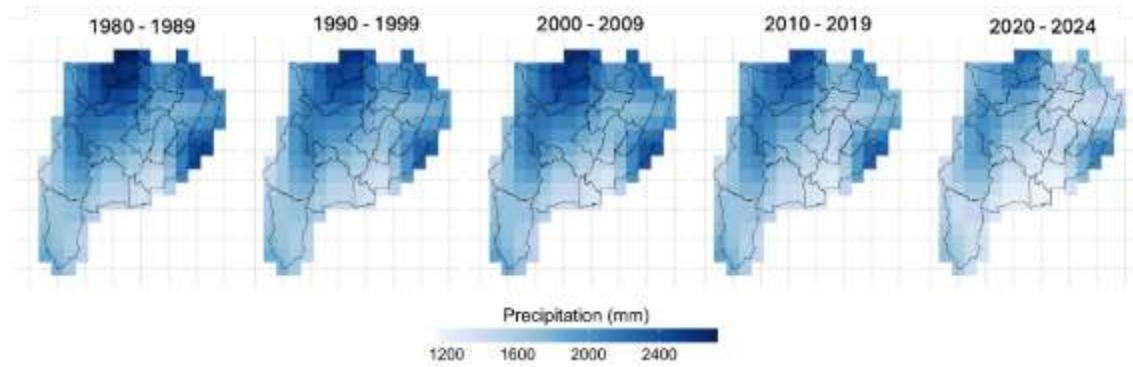


Figure 3 Historical average annual precipitation (mm) at decadal timesteps from 1980 to 2024

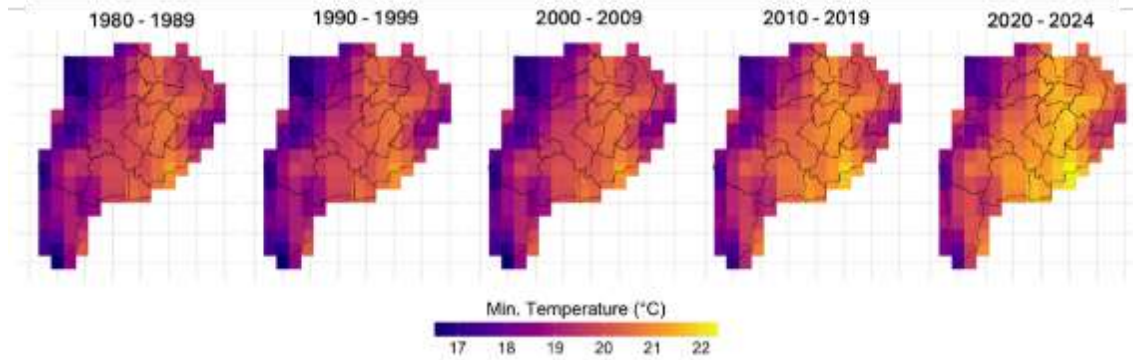


Figure 4 Historical average annual minimum temperature (Celsius) at decadal timesteps from 1980 to 2024

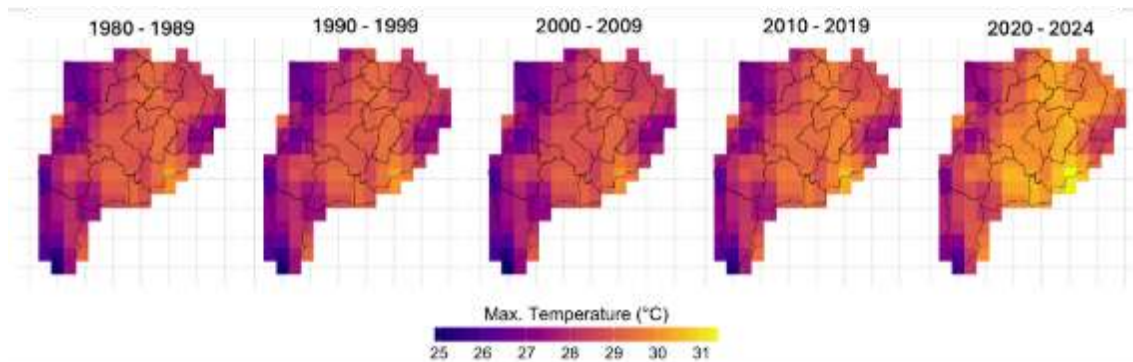


Figure 5 Historical average annual maximum temperature (Celsius) at decadal timesteps from 1980 to 2024

- 12.** The future climate projections (Figure 6) are based on NEX-GDDP-CMIP6 product under two scenarios, namely SSP2-4.5 and SSP5-8.5, using an ensemble mean of 12 global climate models (GCMs). The SSP2-4.5 is considered an intermediate emission pathway with moderate mitigation, while SSP5-8.5 is the high-end of the emission scenarios with limited climate policies. Both scenarios project future incremental increases in both minimum and maximum temperatures. Under SSP2-4.5, lower decadal increase is projected, with roughly 0.02°C change per decade. Under SSP5-8.5, warming is more pronounced with an approximate increase of 0.05°C per decade which can exacerbate heatwaves. This could impact crop yields, water availability, and heat-related public health. No clear changing annual trend for future precipitation under SSP2-4.5, while slight increase of 3.21 mm each decade under SSP5-8.5. Despite no clear annual changes in the future projected data, rainfall variability and extreme precipitation are to be expected, especially prominent under SSP5-8.5 scenario.

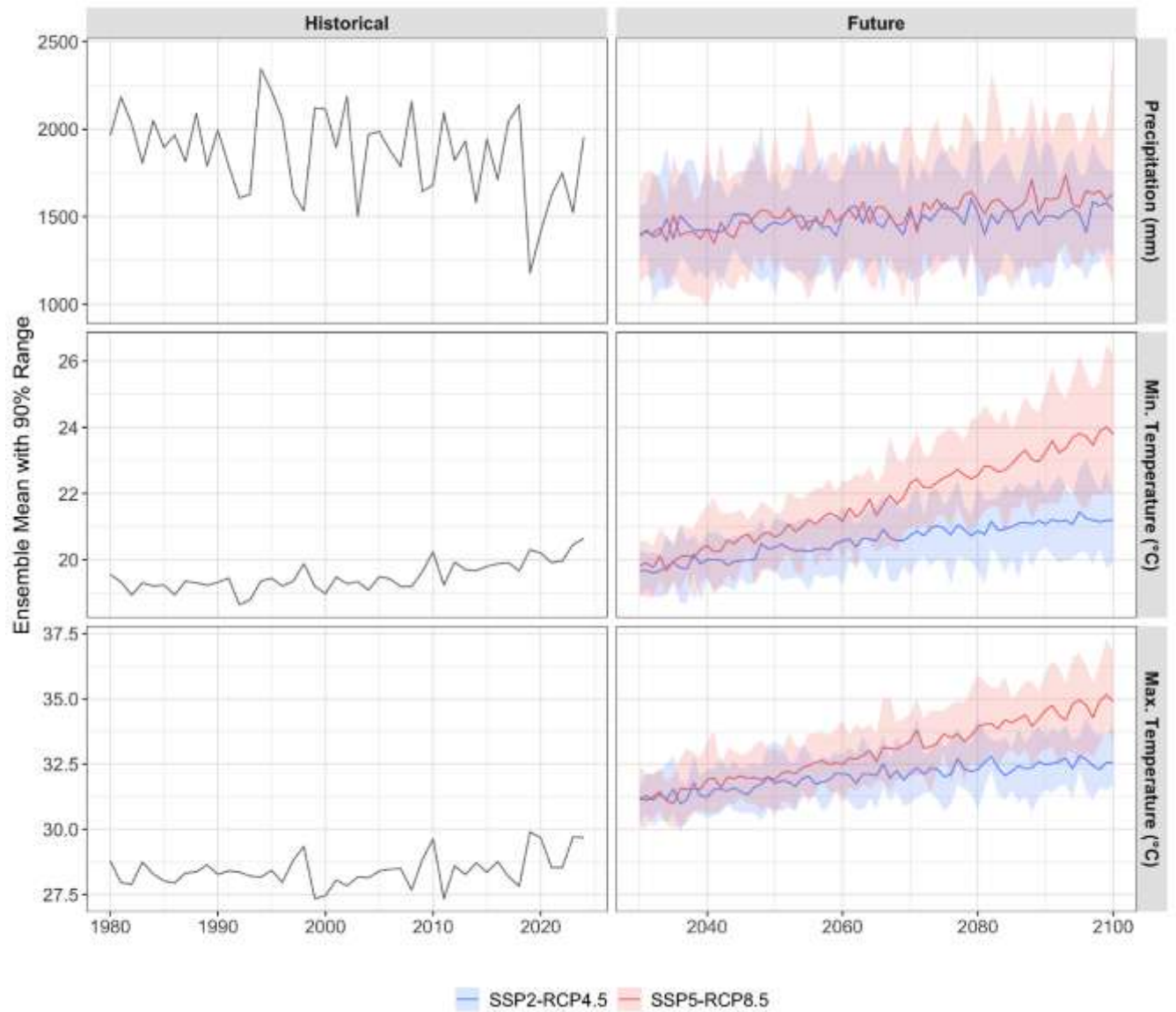


Figure 6 Historical (1980-2024) and future projected (2023-2100) annual average of precipitation, minimum temperature, and maximum temperature for Chiang Rai province

Natural Disaster: Flood & Drought

13. From 2011 to 2024, all 18 districts in Chiang Rai experienced at least one flooded year which was assessed by satellite-based interpretation. Chiang Saen and Mae Sai district had the highest flood recurrence, with flooding recorded in 8 years (Figure 7). The largest cumulative flooded areas (Table 1) over the years were Phan (402.19 km²). The other districts with large, affected areas were Thoeng (430.70 km²), Mueang Chiang Rai (311.61 km²), and Mae Sai (306.78 km²).

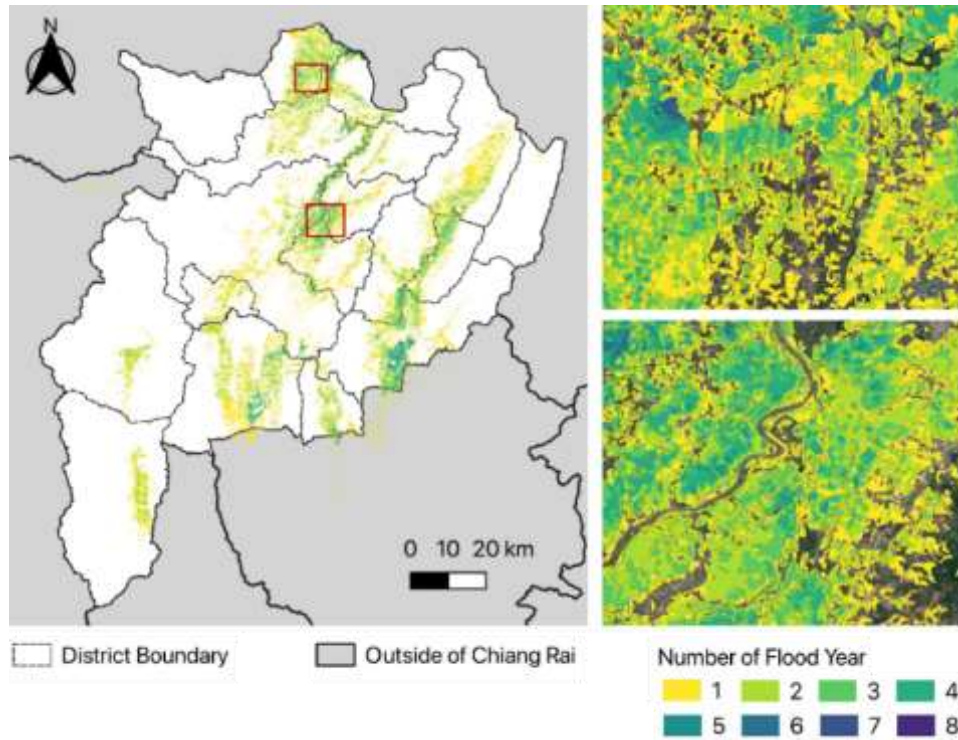


Figure 7 Map of repeated flood years using satellite-based assessment from 2011 to 2024 in Chiang Rai

Table 1 Number of repeated flood years and cumulative flooded areas (km²) by district in Chiang Rai

District	Flood Year	Cumulative Flooded Area (km ²)	District	Flood Year	Cumulative Flooded Area (km ²)
Chiang Saen	8	164.67	Chiang Khong	5	188.26
Mae Sai	8	306.78	Doi Luang	5	66.35
Mae Chan	7	215.53	Khun Tan	5	159.72
Thoeng	7	430.70	Wiang Chai	5	187.20
Mueang Chiang Rai	6	311.61	Mae Lao	2	47.41
Mueang Phayao	6	52.56	Mae Suai	2	57.55
Pa Daet	6	108.56	Wiang Pa Pao	2	89.74
Phan	6	402.19	Mae Ai	1	3.60
Phaya Mengrai	6	165.29	Mae Fa Luang	1	0.13
Wiang Chiang Rung	6	116.59	Wiang Kaen	1	1.03

14. The largest flood-affected areas were recorded in 2011, followed by 2024 and 2017, suggesting a recurring cycle of major flood events approximately every 5 to 7 years (Figure 8). Early and prolonged monsoon onsets, as observed in 2011 and 2024, may saturate soils, increasing runoff. Moreover, sudden monthly spikes in rainfall likely explain the rapid onset and expansion of floods in certain years, such as in 2024 shown in Figure 9. The high-intensity rainfall and early onset are hallmarks of climate change. Moreover, the increase in temperature, both minimum and maximum, can intensify short-duration rainfall events. Warm air enhances evaporation rates, leading to higher atmospheric moisture content. The increased moisture and the convective energy from heat elevates the likelihood of sudden, high-intensity precipitation.

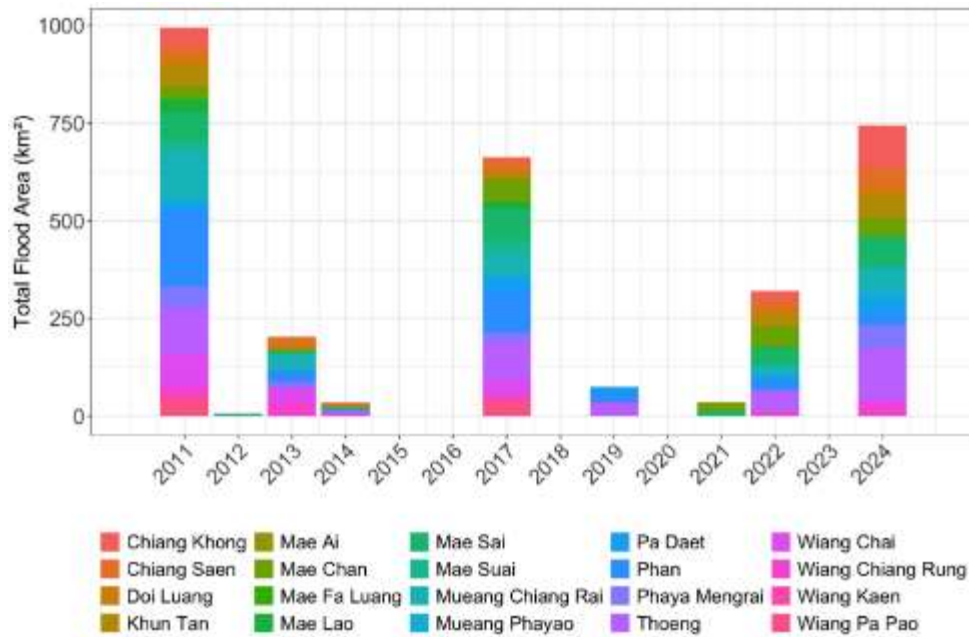


Figure 8 Total flooded areas (km²) from 2011 to 2024 by district in Chiang Rai

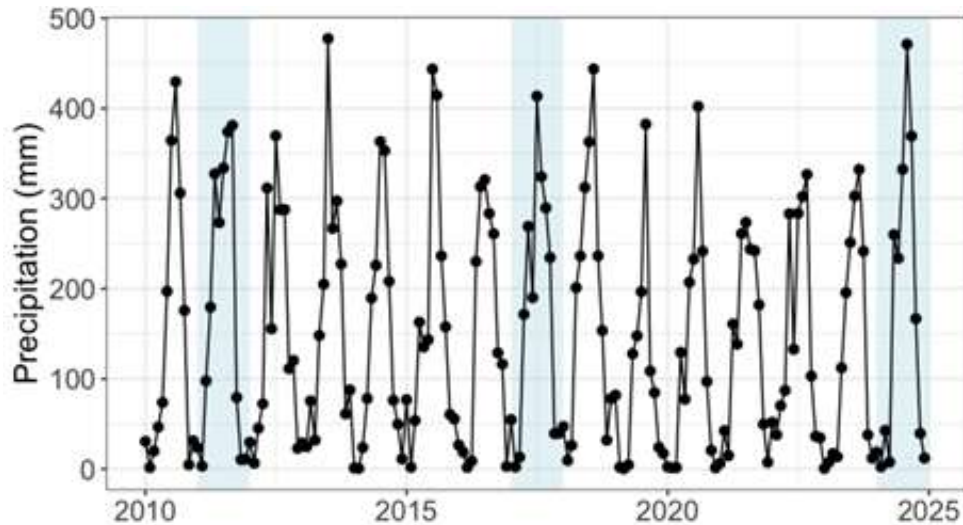


Figure 9 Monthly precipitation over Chiang Rai from 2011 to 2024

15. The Standardized Precipitation Index (SPI) is a widely used drought indicator that quantifies precipitation deficits over specific time scales. SPI-3 measures moisture conditions over 3-month periods which is suitable for monitoring short-term crop stress and seasonal water availability. The negative SPI value indicates dry condition. The SPI below -1 implies drought event and as the value becomes lower, the drought condition worsens. Conversely, the positive SPI value can also indicate wet conditions.
16. The time-series of SPI from 1980 reveals significant climatic variability over the past four decades (Figure 10). This analysis demonstrates more frequent and intense fluctuations between wet and dry conditions. The 1980s generally maintained near-neutral moisture conditions (SPI values around zero), with only occasional mild wet spells. However, the 1990s marked a transition toward greater variability, featuring the first moderate droughts (SPI of -1.3) alongside more pronounced wet periods (SPI up to 2.0). This further intensified in the 2000s and 2010s, with a prolonged period of drought in 2004 and 2010. The most striking changes were observed in the recent years from 2019. Prolonged and severe drought with SPI lower than -2.5 were detected multiple times. This analysis demonstrates a clear pattern of increasing climate volatility

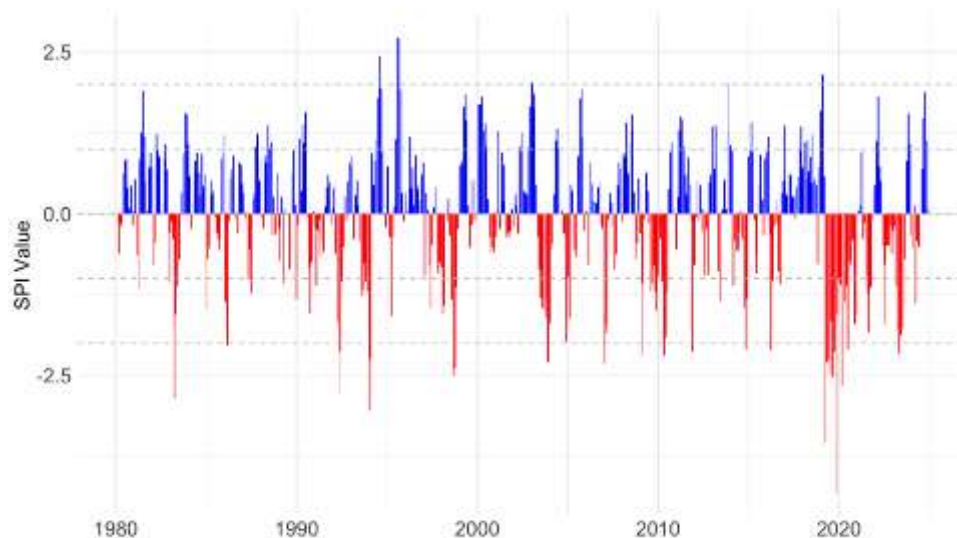


Figure 10 Standardized Precipitation Index over 3-month period (SPI-3) from 1980 to 2024 over Chiang Rai

Climate Change Projections (2030, 2050, 2100)

17. Future climate projections for Thailand and the Chiang Rai region indicate continued warming and increasingly unpredictable rainfall. Climate scenarios are typically described by Representative Concentration Pathways (RCPs). This assessment focuses on a **“medium” emissions scenario (RCP4.5)** – where global emissions stabilize mid-century – versus a **“high” emissions scenario (RCP8.5)** – where emissions continue to rise unchecked. Projections are considered for three-time horizons: near-term (~2030), mid-century (~2050), and end-century (~2100). All projections are relative to a late 20th-century baseline (1986–2005 or similar reference period).

Temperature Projections:

18. Warming is virtually certain under all scenarios, with the magnitude depending on global emissions. By the end of the 21st century, Thailand’s average temperature is projected to increase by roughly **+2°C under RCP4.5 and about +4°C under RCP8.5**¹⁷. By mid-century (around 2050), substantial warming is expected. **Mean annual temperatures are projected to be about 1.3–1.6°C higher by 2050** (the lower end for a stabilized-emissions future and the upper end for a high-emissions future). Table 2 summarizes the anticipated temperature changes. In the near term (2030s), models show around **+1.0°C of warming** in the region¹⁸, which means climate impacts are already emerging in the next decade. It is important to note that all regions see significant increases in extreme heat days¹⁹. Under RCP8.5, warming accelerates in the second half of the century: daily maximum temperatures currently around 32–33°C in Chiang Rai’s valleys could exceed 35–36°C regularly by 2100, and summer heatwaves would become more intense and frequent. In fact, compared to the baseline, the **number of very hot days (>35°C) is expected to increase by 19–22 days per year in the 2030s, and by 30+ days by mid-century**. Nights will also stay warmer, increasing the need for air conditioning. Overall, **by 2100 Chiang Rai’s climate could feel more like today’s central Thailand – significantly hotter year-round**. Even under RCP4.5 (with mitigation), the region faces at least ~2°C of warming by century’s end, so adaptation to higher temperatures is unavoidable.

Precipitation Projections:

19. Future rainfall patterns are more complex to project than temperature, with different models showing varying results – however, some robust trends emerge. Climate models **consistently suggest that rainfall events will become more extreme** (higher intensity), while changes in total annual rainfall are less certain. Notably, one-day maximum rainfall (a metric of extreme downpours) is projected to **increase in magnitude under climate change**. This implies greater risk of flash flooding from intense storms. At the same time, **some projections indicate a decrease in total annual precipitation in Thailand under both RCP4.5 and RCP8.5**. A multi-model ensemble suggests that future drought signals may dominate: fewer overall rain days could lead to reduced annual rainfall in many areas. In particular, the Northeast and Southern regions are identified as having higher drought risk from declining rainfall. Northern Thailand’s rainfall changes are less certain – some climate simulations actually show **Chiang Rai experiencing a slight increase in total precipitation** (one study of the Lower Mekong Basin found **northern Thailand might see one of the largest relative increases in rainfall** by late-century). However, other analyses, including Thailand’s official scenarios, lean toward a drying tendency in the north during the dry season. Seasonally, **wet-season (May–Oct) rainfall may either stay near current levels or increase modestly**, while **dry-season**

¹⁷ unfccc.int

¹⁸ apn-gcr.org

¹⁹ diict.unepgrid.ch

(Nov–Apr) rainfall is expected to remain low, potentially decreasing further in critical late-dry months. The monsoon might become slightly more intense but shorter, with longer dry spells. The **length of dry periods is projected to grow**, which raises the specter of more frequent droughts even if annual averages don't decline sharply. Importantly, **rainfall variability year-to-year will likely increase** – meaning the region must be prepared for both extreme wet years and extreme dry years in the future. Table 2 below synthesizes key projection data.

Table 2 Summary of projected climate changes for Chiang Rai's region under RCP4.5 and RCP8.5 scenarios, across three time horizons. Temperature projections are more robust than precipitation projections, which have greater uncertainty. All projections are relative to a 1986–2005 baseline (approximately current climate conditions). *Sources: IPCC AR5/AR6 projections downscaled for Thailand; World Bank Climate Portal data; Thailand's NAP 2024; APN SE Asia projections.*

Time Horizon	Projected Temperature Increase (Chiang Rai / Thailand)	Projected Rainfall Change
Near-Term (2030)	~+1.0°C above late-20 th century average (similar under RCP4.5 and RCP8.5)	Little change in total rainfall; however, rain is expected to fall in fewer days with higher intensity per event. Dry seasons may lengthen slightly.
Mid-Century (2050)	+1.3 to +1.6°C (RCP4.5 to RCP8.5) increase in annual mean temperature. Hot days >35°C increase by ~30 days/year.	Uncertain – models diverge. A slight increase in wet-season rainfall is possible, but overall dry periods longer and drought risk higher. Heavy downpours become more intense (flash flood risk rises).
End Century (2100)	+2.0°C (RCP4.5) to +4.0°C (RCP8.5) higher than baseline. Northern Thailand still slightly cooler than lowlands, but significantly warmer winters and summers.	Uncertain/variable – Some projections show overall decrease in annual rainfall under both RCP4.5 and RCP8.5 (drier climate), while others show a moderate increase in annual rain in the Mekong headwaters Consensus is more variable rainfall with more extreme events (both intense storms and severe droughts).

20. In summary, **Chiang Rai will become hotter in all seasons**, and residents can expect more frequent extreme heat days by mid-century. Nights will remain warmer as well, reducing natural cooling. **Rainfall will remain highly seasonal** but with an enhanced contrast between intense rainfall events and prolonged dry spells. **Flooding and landslide events may worsen** in the rainy season due to heavier downpours, even if total rain doesn't increase much. Meanwhile, **droughts in the late dry season (March–May)** could become more severe if the monsoon ends earlier or starts later. These projected changes pose multifaceted challenges for local agriculture, water management, ecosystems, infrastructure, and tourism activities, as detailed in the next sections.

A2b. Climate impacts and vulnerabilities

Sectoral Implications for Sustainable Tourism in Chiang Rai

21. The project focuses on Chiang Rai Province's border districts—Mae Fa Luang, Mae Chan, Mae Sai, and Chiang Saen—which face heightened exposure to transboundary climate risks, including heat stress, drought, and floods. GISTDA (2025)²⁰ confirms rising vulnerability due to climate extremes and shifting weather patterns. The 2024 drought, one of the worst in decades, triggered widespread water scarcity and impacted local agriculture and tourism-dependent livelihoods. These districts are home to ethnic communities such as Akha, Lahu, Lua, Lu Mien, Hmong, Dara-ahg, Li-shaw, Chinese Yunnan, Shan, Tai Yaun, Tai Lue, Tai Yha, Tai Yong, Tai Khun, whose well-being is closely tied to climate-sensitive sectors such as agriculture, handicrafts, and cultural tourism. The impacts of climate change on these interlinked sectors are outlined below:

Agriculture and Food Security

22. Agriculture underpins both local livelihoods and tourism experiences (e.g. agrotourism, local cuisine). However, climate variability is already disrupting yields. Modeling studies indicate a 5–7% reduction in rain-fed rice and maize yields in Chiang Rai by 2029 under high-emission scenarios, driven by heat stress, shortened growing seasons, and erratic rainfall (Chinvanno et al., 2019²¹; JICA, 2021²²). Smallholder farmers—especially those cultivating slopes—are vulnerable to both drought and flash floods, with limited access to irrigation and adaptive technologies. Increased

²⁰ GISTDA (2025) – Northern Thailand Climate and Drought Risk Maps <https://gistda.or.th/>

²¹ Chinvanno et al. (2019) – Regional Climate Report for Thailand https://climateportal.ccca.edu.kh/wp-content/uploads/2019/06/RA-Thai-Country-Report_FINAL.pdf

²² JICA (2021) – Climate Resilience in Agriculture, Northern Thailand https://openjicareport.jica.go.jp/pdf/12357617_01.pdf

intensity of rainfall has led to soil erosion, crop damage, and pest outbreaks. Warming temperatures may reduce the viability of highland crops such as Chiang Rai Tea (oolong tea and green tea) in Mae Fa Luang, Mae Chan, Mae, Chiang Saen, and Doi Mae Salong, unless adaptive measures are introduced (ONEP, 2023)²³.

Water Resources and Tourism Operations

23. Chiang Rai faces a dual challenge of dry-season water shortages and intense monsoon flooding. Seasonal rivers and upland springs are becoming less reliable. The Mae Sai River and Kok River overflowed multiple times in 2024, causing flooding that disrupted tourism and community services. As temperatures rise, evaporation increases, reducing water availability in April–May—the hottest months (GISTDA, 2025; ONEP, 2023).
24. Water scarcity impacts household needs, agriculture, and tourist accommodations, which require reliable water for hygiene, landscaping, and comfort. More frequent flash floods and landslides damage infrastructure (roads, irrigation canals, electrical and communication systems), further isolating communities and deterring visitors.

Forests, Biodiversity, and Ecosystem Services

25. Chiang Rai's forests support biodiversity, watershed stability, and eco-tourism, but face degradation from climate-induced shifts. Warmer, drier conditions are expected to reduce the extent of evergreen forests, with increased risk of wildfires and pest outbreaks (IPCC, 2022²⁴; ONEP, 2023). Wildlife and plant species may migrate upslope, but fragmented habitats and limited elevation range make this difficult. Certain plant and aquatic species have disappeared in Chiang Saen District due to climate change.
26. For communities, the decline of forest health threatens access to non-timber forest products and undermines the nature-based tourism economy, including birdwatching, trekking, and botanical gardens.

Cultural Heritage and Community Traditions

27. Chiang Rai's cultural sites such as temples, village shrines, and seasonal festivals—are increasingly at risk from extreme rainfall, floods, and landslides. Sites like Wat Phra That Doi Tung and the Chiang Saen Ancient City face erosion and weathering. Climate change also disrupts seasonal cultural festivals and rituals based on traditional calendars, reducing tourism income and cultural transmission (Plan International, 2023)²⁵. Ethnic knowledge and practices—often passed down through youth and elders—are under threat due to climate-related displacement and livelihood stress.

Livelihoods and Tourism Services

28. Most households in target districts rely on agriculture, handicrafts, or CBT. Climate shocks such as drought, floods, or forest fires can wipe out harvests and reduce tourist arrivals. This affects income, deepens poverty, and pushes youth and women into precarious employment or migration (NSO, 2022). Tourism operators, especially small homestays and local guides, are sensitive to fluctuations in visitor numbers due to climate conditions. Smoke from dry-season fires—intensified by drought—has already reduced tourist arrivals during Northern Thailand's "haze season." Climate change has impacted coffee and tea farm tours in several ways. Coffee flowers no longer bloom in season, making it impossible to organize coffee blossom festivals. Tea plants do not sprout new leaves, preventing tourists from participating in tea leaf picking activities. These changes affect employment opportunities, especially for women and the elderly who are typically hired for these seasonal tasks.

A2c. Identified Vulnerable Segments of the Population

29. The project will focus on Chiang Rai Province in northern Thailand, a region increasingly affected by extreme weather events, including floods, droughts, and rising temperatures. Recent assessments by GISTDA and Chiang Rai provincial authorities identify the border districts of Mae Fa Luang, Mae Chan, Mae Sai, and Chiang Saen as climate hotspots due to their exposure to transboundary climate risks, dependency on nature-based tourism, and the presence of ethnic communities.
30. The 2024 drought, one of the most severe in decades, led to acute water shortages, crop failures, and disruption of tourism-based livelihoods across upland and valley areas (GISTDA, 2025). GISTDA's geospatial maps confirm rising exposure to heat stress, flooding, and water-related hazards, particularly in highland settlements and low-lying agricultural zones.
31. These areas are vital to Chiang Rai's tourism economy and are home to ethnically diverse groups whose livelihoods are closely linked to agriculture, handicrafts, and cultural tourism—all sectors sensitive to climate impacts. The confluence of geographic exposure, socioeconomic vulnerability, and limited adaptive infrastructure makes these districts priority targets for community-based adaptation.

32. Key Vulnerable Groups:

- *Smallholder Farmers:* Predominant in Mae Chan and Chiang Saen, these farmers cultivate on marginal lands and face heightened risks from erratic rainfall and soil erosion. They often lack irrigation, capital buffers, and access to climate services, making them highly sensitive to both droughts and floods.

²³ ONEP (2023) – Thailand National Adaptation Plan (2023–2032) <https://climate.onep.go.th/nap/>

²⁴ IPCC (2022) – Sixth Assessment Report: Impacts, Adaptation & Vulnerability <https://www.ipcc.ch/report/ar6/wg2/>

²⁵ Plan International (2023) – Gender and Climate Vulnerability in Mae Fah Luang <https://plan-international.org/publications/>

- *Women and Ethnic Women:* Women in rural and ethnic households manage natural resources, engage in farming and tourism, and shoulder disproportionate caregiving burdens. Drought and resource stress amplify gender inequalities, particularly around water access, health, and income security.
 - *Youth:* Many young people in these districts work in agriculture and tourism. Climate disruptions threaten employment and may accelerate rural-urban migration. Yet, youth also represent a vital asset for innovation and green entrepreneurship, particularly in sustainable tourism and ecosystem services.
 - *Ethnic Communities:* The Akha, Lahu, Lua, Lu Mien, Hmong, Dara-ahg, Li-shaw, Chinese Yunnan, Shan, Tai Yaun, Tai Lue, Tai Yha, Tai Yong, and Tai Khun peoples maintain deep environmental knowledge, but face compounding vulnerabilities due to poverty, limited land rights, and marginal access to government services. Their traditional agricultural systems are at risk from erratic rainfall and degraded watershed conditions.
33. The project's adaptation measures will be tailored to empower these groups, protect their livelihoods and culture, and strengthen community-driven resilience systems.

A3. Opportunities for Climate-Resilient Livelihoods through Integrated Adaptation and Mitigation Co-benefits

34. This project presents a timely opportunity to foster climate-resilient livelihoods in Chiang Rai's vulnerable tourism-linked communities by integrating adaptation actions with mitigation co-benefits. By strengthening ecosystem-based tourism and climate-smart value chains, local populations can diversify income sources, reduce climate vulnerability, and enhance the sustainability of landscapes and cultural assets vital to the tourism economy.
35. Incorporating climate-resilient agriculture and handicraft production into tourism supply chains provides communities with alternative income during periods of climate stress while conserving ecosystems that support visitor experiences. This approach aligns with Thailand's NAP 2024²⁶, which emphasizes the need to diversify tourism activities in climate-sensitive areas to build resilience and reduce long-term risks.
36. Climate-smart infrastructure will also play a vital role. The project will promote water-saving tourism facilities, solar-powered homestays and backup power systems, and forest restoration as practical measures that protect against droughts and floods while simultaneously creating jobs in sustainable agriculture, eco-guiding, and clean energy services. These dual adaptation-mitigation measures are consistent with the IPCC's Sixth Assessment Report ²⁷(2022), which identifies such synergies as key to enhancing resilience while advancing inclusive green growth.
37. Forest conservation, for example, enhances slope stability and watershed health—critical adaptation benefits—while also increasing carbon sequestration. At the same time, expanding access to solar energy and electric transport for tourism operations reduces greenhouse gas emissions in line with Thailand's Updated Nationally Determined Contribution (NDC, 2020)²⁸, and lowers operating costs for rural enterprises. Together, these efforts contribute to both SDG 13 (Climate Action) and SDG 8 (Decent Work and Economic Growth) by fostering inclusive employment in low-carbon sectors.
38. The project also emphasizes social inclusion by ensuring that women, youth, and ethnic groups are not only beneficiaries but active leaders in adaptation. Women in rural tourism communities often bring traditional skills in handicrafts, hospitality, and natural resource stewardship. With tailored training and access to appropriate technologies, they will be supported in scaling climate-resilient micro-enterprises. Youth will gain practical skills in digital marketing, climate information use, and eco-tourism innovation, helping curb outmigration and building new pathways for green livelihoods. Ethnic ecological knowledge, such as forest management and herbal medicine, will be incorporated into eco-tourism offerings, further embedding cultural resilience into the adaptation strategy. This inclusive lens supports Thailand's participatory adaptation agenda and advances SDG 5 (Gender Equality).
39. The project builds on strong institutional foundations. UNIDO will contribute technical expertise in climate-resilient value chains and inclusive green entrepreneurship, while DASTA, Thailand's lead agency for sustainable tourism, will provide the policy platform and networks to scale successful models and embed sustainability across tourism planning. In parallel, GISTDA (Geo-Informatics and Space Technology Development Agency) will lead efforts on climate risk intelligence, applying geospatial tools, data visualization, and localized climate projections to inform tourism planning and adaptation. Together, these partners will ensure that community-driven innovations are grounded in science and sustained locally.

A3a. Sustainable Tourism, Value Chain Development, and Barrier Analysis in Thailand

40. Despite strong policy interest in sustainable tourism, Thailand faces persistent structural and systemic barriers that constrain the transition toward climate-resilient, inclusive tourism value chains—particularly in vulnerable areas such

²⁶ Thailand NAP. 2023–2032. *Thailand's National Adaptation Plan*. Office of Natural Resources and Environmental Policy and Planning (ONEP).

<https://climate.onep.go.th/nap/>

²⁷ IPCC. 2022. *Sixth Assessment Report (AR6), Working Group II: Climate Change 2022 – Impacts, Adaptation, and Vulnerability*. Intergovernmental Panel on Climate Change. <https://www.ipcc.ch/report/ar6/wg2/>

²⁸ Thailand NDC. 2020. *Thailand's Updated Nationally Determined Contribution*. Ministry of Natural Resources and Environment.

<https://unfccc.int/sites/default/files/NDC/2022-06/Thailand%20Updated%20NDC.pdf>

as Chiang Rai. Tourism contributed nearly 20% to GDP before the COVID-19 pandemic and remains a key sector in Thailand's NAP (NAP), which identifies tourism as one of six priority sectors for climate action²⁹

- **Financial Barriers:** Access to finance remains a major obstacle, especially for small and CBT enterprises. Many lack collateral or formal credit histories and thus face difficulties in accessing capital for climate-resilient infrastructure, such as flood-proofing, water efficiency upgrades, or renewable energy systems. Although green finance instruments exist, the uptake among tourism MSMEs is low. The Bank of Thailand has reported that more than 70% of MSMEs face financing constraints, particularly in rural sectors like community tourism³⁰. Affordable climate insurance options are also limited, leaving operators exposed to revenue shocks.
- **Policy and Institutional Barriers:** While Thailand has enacted progressive policies like the “7 Greens” strategy and established agencies such as DASTA to support sustainable tourism, implementation remains inconsistent. The NAP notes a lack of effective cross-sectoral coordination, particularly between tourism, disaster management, environment, and agricultural institutions. Enforcement of environmental regulations is also uneven; in some cases, unsustainable tourism practices persist due to unclear incentives or insufficient penalties for non-compliance³¹.
- **Capacity and Knowledge Barriers:** CBT operators often lack access to localized climate data and adaptation training. While traditional knowledge plays an important role, it is insufficient to cope with the increasing frequency and intensity of climate extremes. Stakeholder consultations in Chiang Rai (April 2025) revealed gaps in areas such as drought preparedness, sustainable farming practices, and climate-smart business operations. The IPCC has highlighted limited awareness and institutional capacity as key barriers to adaptation, particularly at the local level³². Thailand's NAP similarly points to low adaptation capacity and limited availability of tailored climate information at the subnational level.
- **Market and Value Chain Barriers:** Rural communities face challenges in accessing high-value tourism markets. These include limited branding, lack of certifications, quality inconsistency, and poor logistics. Products such as organic teas, traditional textiles, or eco-experiences are often perceived as niche or unreliable by larger market actors. The Thailand Green Economy Report 2023 underscores that sustainable tourism value chains remain underdeveloped outside of major urban areas³³. MSMEs in tourism often lack digital skills and support to market their offerings or engage with formal supply chains.
- **Perception and Behavioral Barriers:** Short-termism among both tourism enterprises and local governments limits investment in climate adaptation. Many stakeholders prioritize economic recovery and tourist arrivals over long-term resilience building. Climate risks are often seen as distant or external threats. The IPCC AR6 report identifies such behavioral and psychological barriers—including low risk perception and delayed action due to uncertainty—as significant challenges for effective adaptation. This aligns with national experience, where reactive responses (e.g., rebuilding in flood-prone areas) often take precedence over anticipatory planning and nature-based solutions.

A4. Problem Statement

45. Climate change poses an escalating threat to the tourism-dependent communities of Chiang Rai, undermining local livelihoods, cultural identity, and sustainable development. Northern Thailand is experiencing increasingly frequent and intense climate events, with Chiang Rai among the most affected provinces due to its geography, ecological sensitivity, and reliance on nature-based tourism and agriculture. Between 2000 and 2019, Thailand ranked 9th globally in the Global Climate Risk Index, with 137 extreme weather events and over USD 52 billion in losses³⁴. These national trends are acutely felt in Chiang Rai, where climate-sensitive sectors like agriculture and tourism are critical to rural economies.
46. Seasonal extremes have intensified. In late 2024, Chiang Rai was hit by its worst flooding in 80 years, affecting 14 of its 18 districts and causing massive economic losses, prompting the government to allocate over USD 33 million in compensation to affected residents and more than USD 92 million for infrastructure repair and recovery. Over 60,000 households were impacted, 14 lives were lost, and public infrastructure—including roads, bridges, electrical and communication systems, and water supply systems—was damaged or destroyed³⁵. The disaster disrupted access to tourist destinations such as trekking trails and homestays, leading to cancelled visits and income loss for local guides, hospitality providers, and artisans. According to GISTDA's geospatial flood mapping, Chiang Rai is now among the most

²⁹ Office of Natural Resources and Environmental Policy and Planning (ONEP), *Thailand National Adaptation Plan (2023–2032)*, 2023. https://climate.onep.go.th/wp-content/uploads/2023/04/NAP-Final_TH_EN_2023.pdf

³⁰ Bank of Thailand, *MSME Credit Conditions Report Q3 2023*, 2023. <https://www.bot.or.th/English/MonetaryPolicy/EconomicConditions/MSME/Pages/default.aspx>

³¹ Ministry of Tourism and Sports (Thailand), *Tourism Development Strategies*, 2022. https://www.mots.go.th/more_news_new.php?cid=293

³² Intergovernmental Panel on Climate Change (IPCC), *Sixth Assessment Report – Working Group II: Impacts, Adaptation and Vulnerability*, 2022. <https://www.ipcc.ch/report/ar6/wg2/>

³³ Office of the National Economic and Social Development Council (NESDC), *Thailand Green Economy Report 2023*, 2023. https://www.nesdc.go.th/ewt_dl_link.php?nid=14592

³⁴ Germanwatch (2021). *Global Climate Risk Index 2021: Who Suffers Most from Extreme Weather Events?* <https://www.germanwatch.org/en/19777>
Department of Disaster Prevention and Mitigation (DDPM), Thailand (2025). *Annual Disaster Report 2024* <https://www.disaster.go.th>

exposed areas to monsoon-induced hazards³⁶.

47. In parallel, slow-onset climate stressors—especially drought and rising heat—are compounding risks. Chiang Rai’s dry season is becoming hotter and longer, resulting in water scarcity for both residents and tourism operators. The NAP (2023–2032) identifies 736 tourism destinations in drought-prone areas, with northern provinces like Chiang Rai accounting for the majority³⁷. Popular attractions such as tea and coffee farms, waterfalls, river-based tourism and river cruises increasingly suffer from lower water flow, diminishing visitor experience. Meanwhile, biodiversity loss is accelerating due to heat stress, shifting habitats, and invasive pests—jeopardizing ecotourism assets such as forest orchids, endemic birds, and wildlife in protected areas like Doi Tung³⁸.
48. Climate warming is also reducing Chiang Rai’s historical appeal as a cool-weather destination. According to Thailand’s updated NDC, mean annual temperatures could rise by +2°C under RCP4.5 or +4°C under RCP8.5 by 2100³⁹. Tourist demand declines significantly when temperatures exceed 28°C. A 2024 study showed Chiang Mai lost approximately 288,000 visitors during recent heatwaves, with similar declines observed in Phuket and Pattaya⁴⁰. While Chiang Rai’s tourism economy is smaller, it is more locally dependent and highly exposed to such seasonal fluctuations. Extended heatwaves also increase health risks for tourists and tourism workers, potentially requiring infrastructure upgrades such as cooling systems—costly for small community enterprises.
49. These compounding threats—floods, droughts, heat stress, and ecological degradation—create a web of vulnerabilities:
 - **Economic vulnerability:** Climate disruptions lead to abrupt and often prolonged income losses. In areas like Mae Sai and Chiang Saen, heavy rainfall has cancelled river-based tourism, festivals, and village stays, deepening indebtedness among MSMEs that lack formal insurance or savings buffers.
 - **Environmental and physical vulnerability:** Many communities are located in landslide-prone terrain. GISTDA’s 2025 hazard map confirms districts like Mae Fa Luang and Wiang Kaen fall within high-risk zones.⁴¹ Floods and erosion degrade forests, trails, and cultural sites central to CBT.
 - **Social vulnerability:** Women manage homestays and craft production, bearing dual burdens during disasters. Youth face job precarity and rising out-migration. Ethnic groups face cultural loss as climate shifts affect ancestral knowledge, crop cycles, and spiritual practices⁴².
50. Left unaddressed, these interconnected risks threaten a vicious cycle: climate shocks reduce tourism income and degrade natural assets, limiting community investment in adaptation, which in turn worsens vulnerability. The result is a downward spiral of environmental, social, and economic decline. This project targets that risk nexus by strengthening the adaptive capacity of vulnerable communities, preserving tourism-linked livelihoods, and safeguarding the ecosystems that underpin local resilience.

Project/Programme Objectives:

The objective of the proposed project is to enhance the climate resilience of CBT livelihoods in Chiang Rai Province (starting with a focus on Mae Fa Luang, Mae Chan, Mae Sai, and Chiang Saen) by addressing current and emerging climate risks through a package of integrated adaptation interventions. The project will strengthen climate knowledge systems, climate-proof local infrastructure, diversify and climate-adapt tourism-linked livelihoods, build inclusive community and institutional capacities, and embed adaptation into policy and planning processes. It directly contributes to Thailand’s NAP 2024, and supports Sustainable Development Goals (SDGs) 13 (Climate Action), 9 (Industry, Innovation and Infrastructure), 11 (Sustainable Cities and Communities), and 8 (Decent Work and Economic Growth). The project will be implemented through four interlinked and mutually reinforcing components that together create a continuous chain from climate intelligence to community action, enterprise resilience, and national replication.

51. **Component 1: Strengthening Climate Risk Intelligence for Tourism Resilience:** Working with GISTDA, the project will generate localized hazard assessments and spatial risk maps (e.g., floods, droughts, landslides) to support climate-smart tourism planning. Decision-making tools will integrate satellite data, local knowledge, and ethnic insights to guide zoning, seasonal planning, and localized adaptation actions. These outputs form the scientific and knowledge foundation for Components 2 and 3, ensuring that community adaptation and MSME measures are evidence-based and risk-informed.
52. **Component 2: Building Resilient CBT Ecosystems:** Led by DASTA, this component will apply the risk intelligence from Component 1 to strengthen tourism services and infrastructure. Proven NbS will be deployed for water

³⁶ GISTDA (2025). *Chiang Rai Flood Monitoring and Risk Zones, 2024–2025*. <https://www.gistda.or.th>

³⁷ Office of Natural Resources and Environmental Policy and Planning (ONEP) (2023). *Thailand National Adaptation Plan 2023–2032*. <https://climate.onep.go.th/en/nap/>

³⁸ ONEP (2023). *National Biodiversity Monitoring Report*. <https://www.onep.go.th>

³⁹ UNFCCC (2020). *Thailand Updated Nationally Determined Contribution (NDC)*. <https://unfccc.int/sites/default/files/NDC/2022-06/Thailand%20Updated%20NDC.pdf>

⁴⁰ Harnphattanusorn, T. et al. (2024). *The Effects of Heat Stress on Tourism Demand in Thailand*. *Journal of Climate & Society*.

⁴¹ GISTDA (2025). *Landslide Risk Zonation Map – Northern Thailand*. <https://www.gistda.or.th>

⁴² Chiang Rai Provincial Authority (2025). *Ethnic Communities and Climate Resilience Brief*. Internal Policy Note

management, erosion control, and heat mitigation; adaptation measures will be integrated into local tourism plans; and clean energy and adaptive food solutions will be introduced in tourism facilities. Outreach will prioritize vulnerable groups, including women, youth, ethnic groups, and people with disabilities. The outputs of this component generate resilient local planning and infrastructure, which in turn provide a stronger enabling environment for MSMEs supported under Component 3.

53. Component 3: Enhancing Climate-Resilient and Investment-Ready Tourism Supply Chains

Jointly led by UNIDO and DASTA, this component will build on Components 1 and 2 by focusing on resilient livelihoods linked to tourism, such as coffee, textiles, and handicrafts. Climate risk diagnostics, adaptation training, and business coaching (via HP LIFE and FairShare) will help MSMEs adopt resilience measures. Tested adaptation solutions—such as solar-powered coffee drying and water-efficient dyeing—will be deployed, supported by investment-readiness services to reduce financial barriers. This ensures that MSMEs benefit directly from risk intelligence (C1) and supportive local governance and infrastructure (C2).

54. Component 4: Knowledge, Learning, and Scaling for Climate-Resilient Tourism: Led by UNIDO, this component will capture lessons from Components 1–3 and translate them into policy, practice, and replication models. A knowledge and adaptive learning framework will systematize experiences; learning products and policy briefs (including the Chiang Rai case) will inform national planning; and community storytelling, media, and regional platforms such as the LKDF Forum and FairShare will disseminate results. This ensures that locally grounded successes are scaled to other DASTA zones and inform Thailand’s national adaptation priorities.

55. Together, these components provide a comprehensive, locally grounded, and scalable response to the climate threats facing tourism-based communities in Chiang Rai.

56. Through these components, the project directly supports AF Outcome 1 (Reduced exposure to climate-related hazards and threats), Outcome 3 (Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level), Outcome 4 (Increased adaptive capacity within relevant development sector services and infrastructure assets), Outcome 6 (Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas), Outcome 7 (Improved policies and regulations that promote and enforce resilience measures) and Outcome 8 (Support the development and diffusion of innovative adaptation practices, tools and technologies). The dedicated table in section IIIA provides further detail.

Site Selection Justification: (Chiang Saen, Mae Sai, Mae Chan, Mae Fa Luang)

57. The Chiang Rai region was selected as the target geography based on its high exposure to climate risks, socio-economic vulnerability, rich cultural and environmental assets, and strong potential for scalable impact. Chiang Rai is already known for its wellness tourism potential, leveraging its biodiversity, clean air, and cultural knowledge. Positioning health and wellness tourism as part of community-based climate adaptation provides co-benefits for local health, economic resilience, and sustainable visitor management — especially in mountainous or forest-fringe areas sensitive to climate stress. These four districts offer a representative terrain of the Northern Thailand highlands and lowlands, combining climate-affected tourism hubs, ethnic minority populations, and government-designated sustainable tourism zones. The selected site balances urgency and opportunity—where risks are high, local actors are motivated, and the enabling environment is ready.

58. **Exposure to Multiple Climate Hazards:** Chiang Rai experiences both rapid-onset disasters (flooding, landslides) and slow-onset stresses (drought, heat). In 2024, the province experienced the most severe flooding in 80 years, impacting over 60,000 households. Mountainous districts like Mae Fa Luang and Mae Chan are prone to landslides, while Chiang Saen, along the Mekong River, faces seasonal floods. These overlapping hazards severely threaten tourism livelihoods and infrastructure, making it an ideal site to pilot localized adaptation measures.

59. **High Vulnerability of Communities:** The selected districts are home to several ethnic groups who rely on farming, handicrafts, and cultural tourism. These populations face limited access to adaptation resources, training, and climate information. Climate impacts—such as reduced water availability, degraded ecosystems, and shortened tourist seasons—exacerbate poverty, migration, and gender inequality. The project will address these systemic vulnerabilities through targeted empowerment strategies.

60. **Rich Cultural and Environmental Assets:** Chiang Rai’s ethnic diversity and scenic landscapes form the backbone of its tourism appeal. From cultural heritage sites to tea gardens and forest trails, the area hosts nature-based and heritage tourism assets increasingly threatened by climate change. Preserving and adapting these resources contributes to both sustainable tourism and ecosystem-based adaptation.

61. **Strong Institutional Foundations for Scaling:** The region benefits from prior investment in sustainable tourism and local governance. It includes DASTA-designated sustainable tourism areas and is part of national recovery and resilience planning following the 2024 floods. Stakeholder consultations in April 2025 confirmed strong local demand for climate information, tourism innovation, and inclusive capacity building. The project will leverage this foundation to demonstrate scalable models

Project/Programme Components and Financing:

Project/Programme Components	Expected Concrete Outputs	Expected Outcomes	Amount (US\$)
1. Strengthening Climate Risk Intelligence for Tourism Resilience	Output 1.1 Develop district-specific hazard and vulnerability maps (floods in Chiang Saen, heat stress in Mae Sai, drought in Mae Chan, landslides in Mae Fa Luang) to inform tourism and community adaptation planning. Output 1.2 Establish an integrated climate risk information system for tourism planning, linked to national early warning systems (THAI DISASTER ALERT, Cell Broadcast Service, provincial disaster datasets), ensuring local-to-national coherence Output 1.3 Build decision-support tools that combine satellite data, local monitoring, and ethnic knowledge to guide zoning, seasonal visitor management, and investment decisions. Output 1.4 Apply hazard data and decision-support tools to implement anticipatory adaptation measures in the four districts Output 1.5: Develop a localized, open-access knowledge platform that makes climate risk intelligence usable for planners, MSMEs, and community actors, supporting replication in other DASTA zones	Outcome 1 Tourism authorities, local actors, and planners in Chiang Saen, Mae Sai, Mae Chan, and Mae Fa Luang systematically apply climate risk intelligence to implement localized adaptation strategies, reducing vulnerability to floods, droughts, heat stress, and landslides (GISTDA)	Component 1: 1,500,000 Outcome 1: 1,500,000 Output 1.1: 550,000 Output 1.2: 525,000 Output 1.3: 200,000 Output 1.4: 125,000 Output 1.5: 100,000
2. Building Resilient CBT Ecosystems	Output 2.1.1: Deliver tailored training for communities — flood preparedness in Chiang Saen, heat/urban climate risks in Mae Sai, drought resilience in Mae Chan, landslide safety in Mae Fa Luang — targeting women, youth, ethnic groups, and people with disabilities Output 2.1.2: Integrate climate adaptation actions into local tourism plans and subdistrict development policies, ensuring alignment with NAP 2024 and SDG 13. Output 2.1.3: Deploy proven nature-based solutions: riparian buffers (Chiang Saen), urban greenery and drainage (Mae Sai), drought-resilient agro-tourism (Mae Chan), slope stabilization (Mae Fa Luang) Output 2.1.4: Consolidate tools and practices into replicable models for scaling across other DASTA zones. Output 2.1.5: Develop a subnational strategy for climate-resilient CBT, based on district lessons, to influence national frameworks. Output 2.2.1: Design and implement resilient tourism infrastructure (e.g., solar cooling in Mae Chan, water-efficient kitchens in Chiang Saen, backup solar in Mae Sai, adaptive food/energy in Mae Fa Luang).	Outcome 2.1 Local and subnational tourism governance mainstreams climate adaptation through inclusive participation in the four districts. (DASTA) Outcome 2.2: Proven food, energy, and infrastructure solutions are deployed to ensure continuous service delivery and reduce vulnerability in tourism-dependent areas. (UNIDO)	Component 2: 3,000,000 Outcome 2.1: 2,000,000 Output 2.1.1: 880,000 Output 2.1.2: 320,000 Output 2.1.3: 540,000 Output 2.1.4: 150,000 Output 2.1.5: 110,000 Outcome 2.2: 1,000,000 Output 2.2.1: 1,000,000
3. Enhancing Climate-	Output 3.1.1 Conduct climate risk diagnostics for priority value chains in the four districts (coffee in Mae Fa Luang, textiles in Mae Chan, handicrafts in Mae	Outcome 3.1 ⁴³ Tourism-linked MSMEs in Chiang Saen, Mae Sai,	Component 3: 3,513,438

⁴³ Component 3 is structured as a jointly implemented model between DASTA and UNIDO, with Thailand's national ownership at the core. In line with the Adaptation Fund's direct access modality, DASTA leads the majority of field implementation and resource allocation, including MSME engagement, community-based adaptation pilots, and

Project/Programme Components	Expected Concrete Outputs	Expected Outcomes	Amount (US\$)
Resilient and Investment-Ready Tourism Supply Chains	Sai, agro-tourism in Chiang Saen) using UNIDO tools, in collaboration with DASTA and local networks (Lead: UNIDO; Support: DASTA) Output 3.1.2 Provide blended adaptation training and business coaching to MSMEs and tourism-linked supply chain actors through HP LIFE and FairShare platforms, with dedicated cohorts in the four districts, while building modules applicable nationally. (Joint: DASTA and UNIDO) Output 3.1.3 Develop business cases showing costs, benefits, and scalability of resilience measures, enabling MSMEs to access finance and enter formal supply chains. (Joint: DASTA and UNIDO) Output 3.2.1 Deploy proven adaptation solutions (e.g., solar-powered coffee drying in Mae Fa Luang, water-efficient textile dyeing in Mae Chan, resilient handicraft value chains using climate-tolerant materials and adaptive production methods in Mae Sai, adaptive agro-tourism in Chiang Saen), ensuring delivery through tested models Output 3.2.2 Facilitate access to tailored financing pathways and certification schemes (e.g., GI for sticky rice, organic coffee certification, eco-labels), linking MSMEs in the 4 districts to provincial and national markets. Output 3.2.3 Document and disseminate MSME adaptation success stories as evidence for replication in other Chiang Rai districts and nationally, targeting investors, tourism associations, and government platforms.	Mae Chan, and Mae Fa Luang adopt climate-resilient practices and become investment-ready. (Joint: DASTA and UNIDO) Outcome 3.2: Proven adaptation solutions in MSMEs are deployed in the four districts and scaled through provincial and national value chains, demonstrating resilience and attracting sustainable investment. (Lead: DASTA, with UNIDO support)	Outcome 3.1: 1,400,000 Output 3.1.1: 330,000 Output 3.1.2: 670,000 Output 3.1.3: 400,000 DASTA: 750,000 UNIDO: 650,000 Outcome 3.2: 2,113,438 Output 3.2.1: 1,275,000 Output 3.2.2: 390,000 Output 3.2.3: 448,438 DASTA: 1,233,438 UNIDO: 880,000
4. Knowledge, Learning, and Scaling for Climate-Resilient Tourism	Output 4.1.1 Establish a knowledge and adaptive learning framework to capture community-based adaptation lessons and translate them into scalable practices, training modules and policy recommendations. Output 4.1.2 Develop learning products, policy briefs (including Chiang Rai case), and promote regional exchange through LKDF Forum and FairShare. Output 4.1.3 Implement a communications and visibility strategy, including community storytelling, media coverage, digital content, and dissemination of results through local and regional platforms.	Outcome 4.1 Community-based adaptation lessons are systematically captured, translated into policy and practice, and disseminated nationally and regionally to scale climate-resilient tourism (UNIDO)	Component 4: 581,000 Outcome 4.1: 581,000 Output 4.1.1: 100,000 Output 4.1.2: 200,000 Output 4.1.3: 281,000
Sub total of Project Components			8,594,438
Project/Programme Execution cost ⁴⁴			622,152
Total Project/Programme Cost			9,216,590
Project/Programme Cycle Management Fee charged by the Implementing Entity (if applicable) ⁴⁵			783,410
Amount of Financing Requested			10,000,000

subnational policy integration. UNIDO complements this by providing high-value technical expertise, business resilience coaching (e.g., HP LIFE and FairShare Academy), investment promotion, and climate-smart value chain approaches. This partnership ensures that adaptation impact is nationally driven, while leveraging UNIDO's global networks, green standards, and private sector linkages to enhance scalability and investment-readiness of tourism-linked MSMEs.

⁴⁴ AF IE/EE fee calculator Excel Sheet used for the calculation of the project execution costs.

⁴⁵ AF IE/EE fee calculator Excel Sheet used for the calculation of the project implementation entity costs.

Projected Calendar:
Project duration: **4 years (48 months)**

Milestones	Expected Dates
Start of Project/Programme Implementation	May 2027
Mid-term Review (if planned)	October 2029
Project/Programme Closing	April 2031
Terminal Evaluation	June 2031

PART II: PROJECT/PROGRAMME JUSTIFICATION

A. Describe the project/programme components, particularly focusing on the concrete adaptation activities of the project, and how these activities contribute to climate resilience. For the case of a programme, show how the combination of individual projects will contribute to the overall increase in resilience.

Thailand is among the world's most climate-vulnerable countries, ranked 30th on the Global Climate Risk Index (CRI 2025). Tourism, contributing 20-22% to GDP (pre-Covid) and supporting millions of livelihoods, is highly exposed to floods, droughts, heatwaves, and landslides. These hazards threaten cultural and natural heritage, disrupt seasonal tourism flows, and undermine infrastructure, food security, and water availability in tourism-dependent communities. The severe 2024 floods in Chiang Rai, which affected over 60,000 households, underscore the urgent need to embed climate adaptation across all levels of tourism planning, operations, and supply chains. This project strengthens climate resilience in Thailand's tourism sector through **four interlinked components** that directly respond to local priorities identified during stakeholder consultations in **Chiang Saen, Mae Sai, Mae Chan, and Mae Fa Luang**. It is fully aligned with the NAP 2024, Thailand's NDCs, and SDG-aligned tourism and climate strategies.

A1. Theory of Change Summary

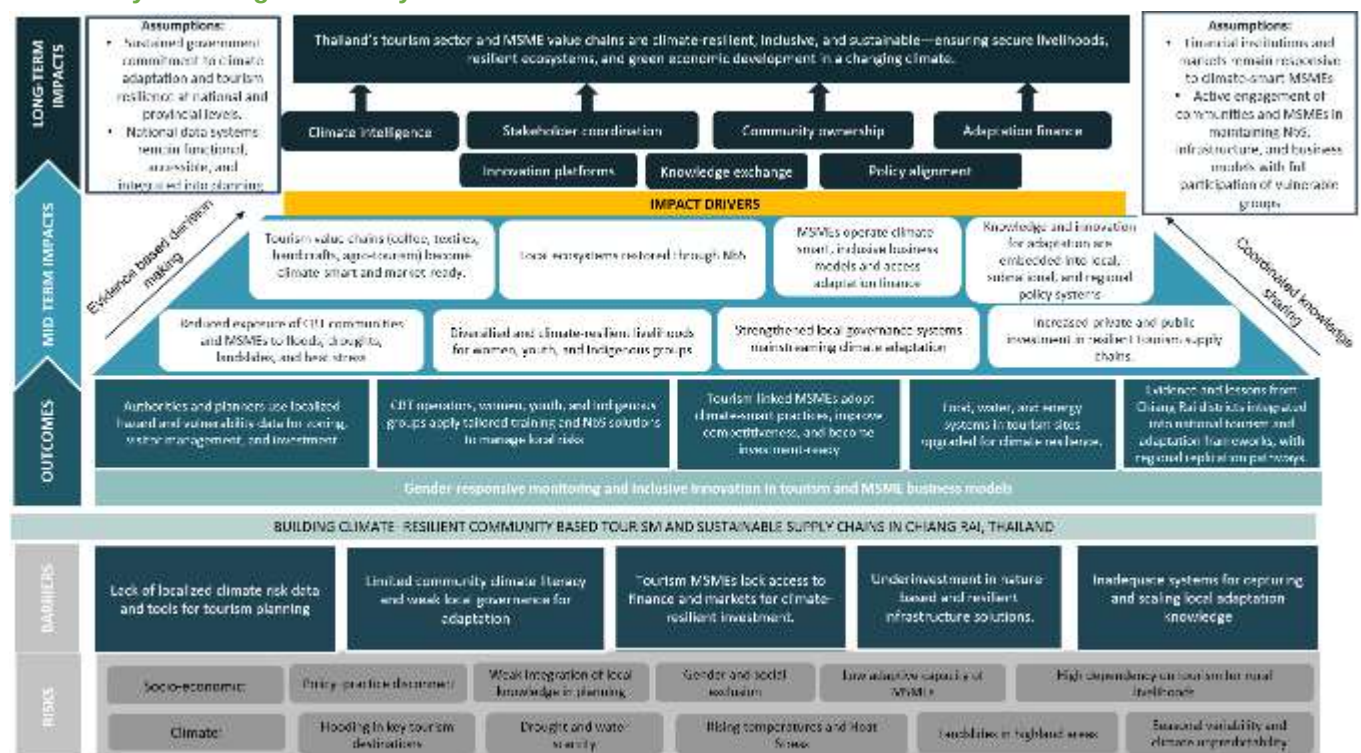


Figure 11 Theory of Change diagram

This project aims to strengthen the climate resilience of Thailand's tourism sector by transforming vulnerable CBT ecosystems and their connected value chains into climate-resilient, inclusive, and investment-ready systems. Centered in four climate-vulnerable districts of Chiang Rai and designed for replication across other priority tourism zones in Thailand, the project delivers systemic change through four interlinked components:

- District-specific climate risk intelligence for tourism planning.
- Resilient CBT ecosystems and adaptive infrastructure.
- Climate-smart MSMEs and value chains.
- Knowledge, learning, and scaling of climate-resilient tourism.

The logic of the Theory of Change (see Figure 11) rests on the following causal assumptions:

- If local institutions and tourism actors are equipped with **localized, high-resolution climate risk data and decision-support tools**,
- If tourism governance, infrastructure, and services are adapted using **proven nature-based solutions and climate-smart planning**,
- If tourism-linked MSMEs adopt **climate-resilient, investment-ready business models**, supported by access to certification and financing pathways,
- If lessons, models, and policy guidance are institutionalized and disseminated through **national and regional platforms**,
- Then Thailand's tourism sector will be better able to anticipate, absorb, and adapt to climate change, ensuring **sustainable livelihoods, resilient ecosystems, and improved climate risk management**.

How the Programme Enhances Overall Climate Resilience

The four components are mutually reinforcing. Climate intelligence (Component 1) directly informs community and infrastructure resilience (Component 2) and MSME adaptation (Component 3). Knowledge and learning (Component 4) capture lessons and ensure sustainability and replication. Together, they deliver a district-specific yet scalable model, reducing risks, strengthening adaptive capacity, and securing livelihoods in Thailand's tourism sector under a changing climate.

Component 1: Strengthening Climate Risk Intelligence for Tourism Resilience

This component focuses on enhancing the adaptive capacity of Thailand's tourism sector by developing localized, actionable climate risk information for planning and decision-making. It will produce hazard maps, digital risk systems, and participatory knowledge tools, ensuring that tourism authorities and communities in Chiang Rai and the four selected districts have the capacity to anticipate and respond to floods, droughts, landslides, and heat stress. Importantly, the project will build upon existing national early warning and hazard monitoring systems, such as THAI DISASTER ALERT, Cell Broadcast Service, GISTDA's geospatial platforms, rather than creating parallel systems. By grounding its activities in these established mechanisms, the project ensures credibility, data consistency, and alignment with Thailand's ongoing efforts, while tailoring information products to the specific needs of CBT planning and MSME decision-making. This ensures that climate risk intelligence is not only produced but actively used for zoning, seasonal planning and investment decisions, enabling more anticipatory and climate-responsive tourism governance.

Outcome 1: Tourism authorities, local actors, and planners in Chiang Saen, Mae Sai, Mae Chan, and Mae Fa Luang systematically apply climate risk intelligence to implement localized adaptation strategies, reducing vulnerability to floods, droughts, heat stress, and landslides (Lead: GISTDA; USD 1,500,000)

Output 1.1: Develop district-specific hazard and vulnerability maps (floods in Chiang Saen, heat stress in Mae Sai, drought in Mae Chan, landslides in Mae Fa Luang) to inform tourism and community adaptation planning.

Activity 1.1.1: Conduct high-resolution hazard and vulnerability modeling using 20–30 years of satellite, hydrological, and climate datasets to identify hotspots of floods, droughts, landslides, and heat stress in the four districts.

Activity 1.1.2: Overlay hazard maps with tourism assets and MSME value chains (e.g., cultural sites, agro-tourism, handicraft clusters) and validate them through consultations with communities and local administrative organizations (LAOs).

Activity 1.1.3: Disseminate finalized maps through provincial and district-level agencies, digital dashboards, community workshops, and local media to ensure accessibility for planners, MSMEs, and households.

Activity 1.1.4: Integrate water scarcity and solid waste risk layers into the maps to capture cross-cutting pressures on tourism communities and guide infrastructure investment and policy prioritization.

Output 1.2 Establish an integrated climate risk information system for tourism planning, linked to national early warning systems (THAI DISASTER ALERT, Cell Broadcast Service, provincial disaster datasets), ensuring local-to-national coherence.

This system will provide coherent, multi-level decision support for tourism planning, ensuring that local adaptation measures are informed by and contribute to national risk management frameworks.

Activity 1.2.1: Develop an interactive online platform that integrates hazard, exposure, and vulnerability data, aligned with

THAI DISASTER ALERT, Cell Broadcast Service, and provincial disaster datasets, to support scenario-based tourism planning.

Activity 1.2.2: Customize user dashboards for local administrative organizations (LAOs), CBT operators, and tourism MSMEs, ensuring usability for diverse end users in adaptation planning.

Activity 1.2.3: Train at least 150 stakeholders—including provincial authorities, community leaders, women, youth, ethnic groups, people with disabilities, and bedridden patients—on using the platform for risk-informed decision-making

Output 1.3 Build decision-support tools that combine satellite data, local monitoring, and ethnic knowledge to guide zoning, seasonal visitor management, and investment decisions.

Activity 1.3.1: Document ethnic climate indicators and local adaptation practices through workshops with community elders and CBT groups in each district.

Activity 1.3.2: Develop district-specific climate-tourism calendars and planning guides (e.g., flood-sensitive visitor scheduling in Chiang Saen, heat stress periods in Mae Sai).

Activity 1.3.3: Translate decision-support tools into local languages and disseminate through schools, CBT centers, and LAO platforms to ensure intergenerational and inclusive access.

Output 1.4 Apply hazard data and decision-support tools to implement anticipatory adaptation measures in the four districts

Activity 1.4.1: Co-design seasonal visitor flow models and risk-sensitive tourism routes with stakeholders (e.g., rerouting trails in landslide zones of Mae Fa Luang, adjusting agro-tourism seasons in Mae Chan).

Activity 1.4.2: Implement defined adaptation measures in 5–7 vulnerable tourism sites across the districts, such as shaded rest areas in Mae Sai, hazard signage in Mae Chan, or riverbank reinforcement in Chiang Saen.

Activity 1.4.3: Update subdistrict tourism zoning regulations to incorporate climate-informed visitor management and disaster contingency planning.

Output 1.5: Develop a localized, open-access knowledge platform that makes climate risk intelligence usable for planners, MSMEs, and community actors, supporting replication in other DASTA zones

Activity 1.5.1: Launch an open-access, multilingual platform sharing hazard maps, CBT case studies, and technical guides tailored to tourism adaptation.

Activity 1.5.2: Organize provincial peer-learning exchanges (Chiang Rai, Chiang Mai, Nan) with community leaders, MSMEs, and LAOs to replicate district-tested adaptation practices.

Activity 1.5.3: Publish policy briefs and technical guides synthesizing district-level lessons for subnational and national authorities, ensuring integration into Thailand's NAP and tourism policies

Component 2: Building Resilient CBT Ecosystems

This component strengthens climate resilience at the community and infrastructure level by combining climate literacy, governance, NbS, and resilient infrastructure. It directly addresses the four high-risk districts (Chiang Saen, Mae Sai, Mae Chan, Mae Fa Luang) and creates scalable models for other DASTA zones. By embedding adaptation measures into subdistrict development and tourism plans, CBT systems will be better able to withstand extreme events, water stress and shifting seasonal patterns.

Outcome 2.1 Local and subnational tourism governance mainstreams climate adaptation through inclusive participation in the four districts. (Lead: DASTA (Outcome 2.1); Budget: USD 2,000,000)

Output 2.1.1: Deliver tailored training for communities — flood preparedness in Chiang Saen, heat/urban climate risks in Mae Sai, drought resilience in Mae Chan, landslide safety in Mae Fa Luang — targeting women, youth, ethnic groups, and people with disabilities

Activity 2.1.1.1: Deliver at least 16 community training programmes (4 per district) on floods, heat risks, drought resilience, and landslide safety, ensuring participation of women, youth, ethnic groups, and people with disabilities.

Activity 2.1.1.2: Produce and distribute 8,000 copies of visual learning materials (posters, videos, and calendars) in local languages, co-designed with schools and CBT centers.

Activity 2.1.1.3: Establish 4 community adaptation hubs (one per district) equipped with hazard maps, emergency toolkits, and seasonal tourism planning guides.

Output 2.1.2: Integrate climate adaptation actions into local tourism plans and subdistrict development policies, ensuring alignment with NAP 2024 and SDG 13.

Activity 2.1.2.1: Provide technical assistance to 12 LAOs to integrate climate risk data and adaptation priorities into subdistrict development plans.

Activity 2.1.2.2: Conduct 8 district-level planning workshops (2 per district) to co-develop climate-informed zoning and

tourism plans.

Activity 2.1.2.3: Support the endorsement of 12 updated LAO tourism and development plans that include clear adaptation measures

Output 2.1.3: Deploy proven NbS: riparian buffers (Chiang Saen), urban greenery and drainage (Mae Sai), drought-resilient agro-tourism (Mae Chan), slope stabilization (Mae Fa Luang)

Activity 2.1.3.1: Implement 12 NbS interventions (3 per district) including riparian buffers, slope stabilization, urban greenery, drainage improvements, and drought-resilient agro-tourism.

Activity 2.1.3.2: Mobilize 200 women and youth in ecosystem restoration and maintenance, generating green jobs and local ownership.

Activity 2.1.3.3: Establish 4 citizen monitoring teams (1 per district) to track ecological benefits (water retention, erosion reduction, microclimate regulation).

Output 2.1.4: Consolidate tools and practices into replicable models for scaling across other DASTA zones.

Activity 2.1.4.1: Compile a Chiang Rai Resilience Toolkit with methods, cost-benefit data, and visual templates from the four districts.

Activity 2.1.4.2: Host 2 national exchange workshops with other DASTA zones to demonstrate district-tested models.

Output 2.1.5: Develop a subnational strategy for climate-resilient CBT, based on district lessons, to influence national frameworks.

Activity 2.1.5.1: Draft a Chiang Rai Climate-Resilient Tourism Strategy based on district-level lessons and data.

Activity 2.1.5.2: Organize 3 provincial and national consultations with MONRE, Ministry of Tourism, and provincial authorities for validation and adoption.

Outcome 2.2: Proven food, energy, and infrastructure solutions are deployed to ensure continuous service delivery and reduce vulnerability in tourism-dependent areas. (Lead: UNIDO; USD 1,000,000)

Output 2.2.1 – Design and implement resilient tourism infrastructure (e.g., solar cooling in Mae Chan, water-efficient kitchens in Chiang Saen, backup solar in Mae Sai, adaptive food/energy in Mae Fa Luang).

Activity 2.2.1.1: Conduct 10 climate-risk audits of CBT facilities (water, energy, food systems).

Activity 2.2.1.2: Upgrade at least 8 CBT facilities with resilient infrastructure solutions (e.g., solar cooling in Mae Chan, water-efficient kitchens in Chiang Saen, backup solar in Mae Sai, adaptive food/energy in Mae Fa Luang).

Activity 2.2.1.3: Train 120 local youth and women in eco-construction and resilient facility management through 4 hands-on workshops.

Activity 2.2.1.4: Develop 2 case studies and a Resilient Tourism Infrastructure Guide for replication in other provinces.

Component 3: Enhancing Climate-Resilient and Investment-Ready Tourism Supply Chains

This component strengthens the resilience and investment-readiness of MSMEs in four priority tourism-linked value chains — coffee in Mae Fa Luang, textiles in Mae Chan, handicrafts in Mae Sai, and agro-tourism in Chiang Saen. By combining risk diagnostics, capacity building, adoption of proven solutions, and access to financing/certification pathways, the component ensures MSMEs in these sectors adopt concrete climate-resilient practices that reduce vulnerability and create stable livelihoods. By linking adaptive MSMEs to certification and financing pathways, the component helps diversify local economies, attract sustainable investment and generate more stable climate-resilient livelihoods.

Outcome 3.1: Tourism-linked MSMEs in Chiang Saen, Mae Sai, Mae Chan, and Mae Fa Luang adopt climate-resilient practices and become investment-ready (DASTA: USD 750,000 + UNIDO: USD 650,000)

This outcome equips MSMEs with data-driven insights, adaptive business strategies, and investor-ready profiles. It fosters inclusive participation by women and youth while aligning MSME operations with national and international climate resilience standards.

Output 3.1.1 Conduct climate risk diagnostics for priority value chains in the four districts (coffee in Mae Fa Luang, textiles in Mae Chan, handicrafts in Mae Sai, agro-tourism in Chiang Saen) using UNIDO tools, in collaboration with DASTA and local networks (Lead: UNIDO; Support: DASTA)

Activity 3.1.1.1: Carry out vulnerability and risk diagnostics for coffee, textiles, handicrafts, and agro-tourism using UNIDO Climate adaptation rationale and Value chain tools, covering at least 40 MSMEs (10 per district).

Activity 3.1.1.2: Validate diagnostics through 4 district-level workshops with MSMEs, LAOs, and community networks, ensuring women and youth participation.

Activity 3.1.1.3: Publish 4 value-chain climate risk briefs (one per district/value chain) to guide adaptation action.

Output 3.1.2 Provide blended adaptation training and business coaching to MSMEs and tourism-linked supply chain actors through HP LIFE and FairShare platforms, with dedicated cohorts in the four districts, while building modules applicable nationally. (Joint: DASTA and UNIDO)

Activity 3.1.2.1: Deliver 8 hybrid training sessions (2 per district) for at least 120 MSMEs on climate adaptation, resource efficiency, and green business models via HP LIFE and FairShare.

Activity 3.1.2.2: Provide tailored business coaching to 20 MSMEs (5 per district) to co-develop resilience action plans and link to finance/certification.

Activity 3.1.2.3: Develop district-specific training modules to ensure replicability across northern Thailand.

Output 3.1.3 Develop business cases showing costs, benefits, and scalability of resilience measures, enabling MSMEs to access finance and enter formal supply chains. (Joint: DASTA and UNIDO)

Activity 3.1.3.1: Prepare 12–15 MSME business cases quantifying ROI of resilience measures (3–4 per district).

Activity 3.1.3.2: Organize one provincial investor roundtable in Chiang Rai, connecting MSMEs to banks, sustainable tourism funds, and certification schemes.

Outcome 3.2: Proven adaptation solutions in MSMEs are deployed in the four districts and scaled through provincial and national value chains, demonstrating resilience and attracting sustainable investment. (DASTA: USD 1,233,438 + UNIDO: USD 880,000)

This outcome supports the testing and demonstration of innovative solutions in MSMEs, creating evidence for replication and scaling.

Output 3.2.1 Deploy proven adaptation solutions (e.g., solar-powered coffee drying in Mae Fa Luang, water-efficient textile dyeing in Mae Chan, resilient handicraft value chains using climate-tolerant materials and adaptive production methods in Mae Sai, adaptive agro-tourism in Chiang Saen), ensuring delivery through tested models

Activity 3.2.1.1: Support 12–15 MSMEs to adopt tested climate solutions: Solar-powered coffee dryers (Mae Fa Luang, 3 MSMEs), Water-efficient textile dyeing systems (Mae Chan, 3 MSMEs), Resilient handicraft production with climate-tolerant materials (Mae Sai, 3–4 MSMEs), Adaptive agro-tourism models integrating water-saving & seasonal scheduling (Chiang Saen, 3–4 MSMEs)

Activity 3.2.1.2: Provide technical support for installation, operation, and monitoring of these solutions.

Output 3.2.2 Facilitate access to tailored financing pathways and certification schemes (e.g., GI for sticky rice, organic coffee certification, eco-labels), linking MSMEs in the 4 districts to provincial and national markets.

Activity 3.2.2.1: Connect at least 10 MSMEs to climate-relevant certification schemes (e.g., GI sticky rice, organic coffee, eco-labels).

Activity 3.2.2.2: Support at least 8 MSMEs to access financing (bank loans, community co-investment, or green SME funds) for scaling resilience measures.

Output 3.2.3 Document and disseminate MSME adaptation success stories as evidence for replication in other Chiang Rai districts and nationally, targeting investors, tourism associations, and government platforms.

Activity 3.2.3.1: Produce 8–10 multimedia case studies showcasing MSME resilience practices in the four districts.

Activity 3.2.3.2: Host 1 provincial MSME fair in Chiang Rai to share lessons, attract investors, and strengthen value chain linkages.

Component 4: Knowledge, Learning, and Scaling for Climate-Resilient Tourism Budget

This component ensures that adaptation lessons from the four districts are systematically documented, translated into practical tools and policy guidance, and disseminated nationally and regionally. By combining adaptive learning, communications, and regional exchange, it creates pathways for scaling climate-resilient tourism beyond Chiang Rai to other DASTA zones and Mekong countries. This supports replication and long-term policy uptake by converting district-level evidence into practical guidance for DASTA zones, national tourism actors and regional platforms.

Outcome 4.1: Establish a knowledge and adaptive learning framework to capture community-based adaptation lessons and translate them into scalable practices, training modules and policy recommendations (USD 581,000; Lead: UNIDO)

This outcome builds a culture of adaptive management and knowledge sharing. It ensures that the project's results, lessons, and best practices inform future climate adaptation initiatives and policy development.

Output 4.1.1 Establish a knowledge and adaptive learning framework to capture community-based adaptation lessons and translate them into scalable practices, training modules and policy recommendations.

Activity 4.1.1.1: Design and implement a learning framework to capture lessons from Components 1–3 (risk tools, NbS, MSME models).

Activity 4.1.1.2: Translate lessons into training modules for LAOs, CBT operators, and MSMEs (at least 4 district-specific modules + 1 cross-district module).

Activity 4.1.1.3: Develop policy recommendations for provincial and national authorities, aligned with Thailand's NAP 2024 and tourism strategies.

Output 4.1.2 Develop learning products, policy briefs (including Chiang Rai case), and promote regional exchange through LKDF Forum and FairShare.

Activity 4.1.2.1: Produce 6–8 learning products (case studies, policy briefs, toolkits), including a flagship Chiang Rai case study on climate-resilient tourism.

Activity 4.1.2.2: Facilitate 2 regional exchange events (1 through LKDF Forum, 1 through FairShare) with participation from Mekong countries and ASEAN tourism agencies.

Activity 4.1.2.3: Deliver at least 2 national policy dialogues to integrate project results into Thai tourism and adaptation policy frameworks.

Output 4.1.3 Implement a communications and visibility strategy, including community storytelling, media coverage, digital content, and dissemination of results through local and regional platforms.

Activity 4.1.3.1: Launch a community storytelling campaign (10+ multimedia stories from the four districts).

Activity 4.1.3.2: Develop digital content and media coverage (video clips, infographics, radio/TV features) reaching an estimated 100,000 people nationally.

Activity 4.1.3.3: Disseminate results via local and regional platforms, including DASTA networks, ASEAN tourism platforms, and development partner channels.

Promotion of Innovative Solutions to Climate Change Adaptation

This project promotes innovative, field-tested solutions that address the evolving climate risks of Thailand's tourism sector. Innovations are framed as **technological, ecosystem-based, financial, and social approaches**, designed to be **inclusive, investment-ready, and scalable**. They will be applied in four high-risk districts of Chiang Rai and provide replicable models for other DASTA zones and Thailand nationally.

1. Tourism-Integrated Climate Risk Intelligence and Decision Support; (Component 1)

First large-scale application of GISTDA hazard data for tourism. Localized hazard maps (floods, droughts, heat, landslides) are integrated with tourism assets and ethnic seasonal knowledge. Outputs include **District-specific risk dashboards** for LAOs, CBT operators, MSMEs; **Climate-smart tourism calendars & zoning tools** for seasonal visitor management; **Participatory planning frameworks** combining satellite data and local knowledge.

2. Adaptive Tourism Infrastructure and NbS; (Component 2)

Proven NbS and green-grey infrastructure measures address floods, heat, drought, and landslides in tourism areas. Integrated into zoning and local development plans: **Riparian buffers, slope stabilization, and urban greenery** in priority sites; **Eco-infrastructure** (solar cooling stations, rainwater harvesting, shaded rest points); **District-level visitor flow models** to adjust trails, routes, and tourism schedules. In addition to NbS, the project will pioneer climate-resilient food, energy, and facility solutions for tourism services in the four high-risk districts. These include solar-powered cooling stations in Mae Chan, water-efficient kitchens in Chiang Saen, backup solar systems in Mae Sai, and adaptive food-energy systems in Mae Fa Luang. At least 8 CBT facilities will be upgraded, supported by 120 youth and women trained in eco-construction and facility management. Lessons will be consolidated into a Resilient Tourism Infrastructure Guide and two case studies, providing replicable models for other DASTA zones and ASEAN tourism contexts.

3. Climate-Resilient Supply Chains and MSME Adaptation Finance; (Component 3)

Tourism-linked MSMEs are strengthened to withstand climate risks while accessing finance and new markets. Activities include: **Value-chain climate diagnostics** (coffee, textiles, handicrafts, agro-tourism); **Blended training & business coaching** via HP LIFE and FairShare; **Resilience business cases** and investor roundtables linking MSMEs to financing/certification (e.g., organic coffee, eco-labels, GI sticky rice).

4. Community-Driven Adaptation and Social Inclusion; (Cross-cutting in Components 2 & 3)

Social innovation ensures women, youth, ethnic groups, and people with disabilities benefit directly. Measures include: **16+ participatory training programmes** on district-specific hazards; **Four community adaptation hubs** with climate toolkits and maps; **Youth and women-led NbS activities**, reaching at least 5,000 beneficiaries with tailored awareness

materials.

5. National and Regional Knowledge Scaling; (Component 4)

Chiang Rai lessons are transformed into knowledge products, policy guidance, and regional exchanges. Key innovations: **Chiang Rai Resilience Toolkit** (tested methods, cost-benefit data, templates); **Two national workshops** to scale models across DASTA zones and **Flagship Chiang Rai case study and briefs** informing Thailand's NAP 2024 and ASEAN tourism policies.

Initial gender assessment

As part of the initial environmental and social screening, gender and social inclusion considerations have been reviewed to understand women's roles, participation and constraints in tourism-dependent and agriculture-linked communities in Chiang Rai Province, with particular attention to the four target districts.

Research and statistical data indicate that women play an important role in Thailand's service economy but face constraints in their labor force participation. In 2023, Thailand's Gender Inequality Index (GII) stood at 0.288, reflecting persistent gaps in political representation, education, and labor market access.⁴⁶ The labor force participation of women in Thailand has shown a declining trend since 1990, reaching 59% in 2025 according to World Bank data.⁴⁷ While women's formal employment rates have risen steadily, the gender wage gap remains, with women earning around 11% less than men.^{48,49}

Thai women account for roughly 40% of SME owners in the country, but face challenges such as limited access to finance, disproportionate unpaid care burdens, restricted market and network access, digital exclusion, and discriminatory legal frameworks.⁵⁰ In agriculture, around 66% of female workers in the agricultural sector earn below the minimum wage in Thailand.⁵¹

Tourism is one of the most female-intensive sectors in Thailand's economy, with women accounting for 68% of the workforce. Despite their central role, women in the sector earn approximately 14% less on average than men and face limited career advancement opportunities.⁵² In CBT, women are often the primary operators of homestays and providers of hospitality-related services.⁵³ However, they are disproportionately represented in lower-paid and routine functions, such as cooking and other service tasks, while remaining underrepresented in higher-value and decision-making roles. Women and girls in rural Thailand, especially members of ethnic minorities, struggle to access government services and face social norms that constrain their economic and personal autonomy.⁵⁴ In Chiang Rai, these challenges are by issues of both gender and legal status. Ethnic minorities in the region experience poverty, environmental degradation, and limited access to healthcare and education due to insecure legal status or citizenship.⁵⁵ In Akha communities, for instance, women experience systemic inequality in daily life, religious rituals, and labor expectations, all of which reinforce male dominance and position women as subordinate within family and community structures.⁵⁶ As climate shocks amplify these vulnerabilities, women face disproportionate pressure to generate income while continuing to shoulder the burden of household labor.

While women in northern Thailand are central contributors to CBT and agricultural supply chains, they face systematic barriers in decision-making recognition, access to finance, legal status, climate information services, and formal training. A gender analysis and Gender Action Plan (GAP) will therefore be developed during the full proposal stage to guide participatory design, training composition, benefit-sharing mechanisms, and gender-disaggregated monitoring indicators,

⁴⁶ United Nations Development Programme (UNDP). Gender Inequality Index (GII). 2025. <https://hdr.undp.org/data-center/thematic-composite-indices/gender-inequality-index#/indicies/GII>

⁴⁷ World Bank. Gender Data Portal – Thailand (Featured Indicators). 2025. <https://genderdata.worldbank.org/en/economies/thailand#featured-indicators>

⁴⁸ World Bank. Gender Data Portal – Thailand (Featured Indicators). 2025. <https://genderdata.worldbank.org/en/economies/thailand#featured-indicators>

⁴⁹ United Nations Geneva. 'Consideration of Thailand under CEDAW.' 2025. <https://www.ungeneva.org/en/news-media/meeting-summary/2025/06/examen-de-la-thailande-au-cedaw-les-experts-onusiens-se-penchant>

⁵⁰ United Nations Development Programme (UNDP). Building the Resilience of Women-led MSMEs in Asia. 2025. https://irff.undp.org/sites/default/files/2025/Nov/Building-the-Resilience-of-Women-led-MSMEs-in-Asia_0.pdf

⁵¹ International Labour Organization (ILO). Women in Business and Management in Asia and the Pacific. 2022. https://www.ilo.org/sites/default/files/wcmstp5/groups/public/@asia/@ro-bangkok/documents/publication/wcms_844317.pdf

⁵² UNESCO-UNEVOC. The Role of TVET in Hospitality and Tourism in Empowering Women Entrepreneurs in the Mekong Region: Challenges and Opportunities. 2023. <https://atlas.unevoc.unesco.org/research-briefs/the-role-of-tvet-in-hospitality-and-tourism-in-empowering-women-entrepreneurs-in-the-mekong-region-challenges-and-opportunities>

⁵³ Dunn, Susan. Toward Empowerment: Women and Community-Based Tourism in Thailand. 2007. <https://scholarsbank.uoregon.edu/server/api/core/bitstreams/4f25a181-78a5-44cc-9a39-ffa1c051d8/content>

⁵⁴ UN Women. 'Women learn new skills and push back against ethnic and gender prejudice in Thailand.' 2024. <https://www.unwomen.org/en/news-stories/feature-story/2024/02/women-learn-new-skills-and-push-back-against-ethnic-and-gender-prejudice-in-thailand>

⁵⁵ E3S Web of Conferences. Women in Sustainable Tourism Development. 2021. https://www.e3s-conferences.org/articles/e3sconf/pdf/2021/60/E3sconf_tpacce2021_10005.pdf

⁵⁶ Wongnuch, P., Apidechkul, T., Srichan, P., et al. 'Women oppressed in the daily lives and cultural practices of the Akha people, Thailand: how can the situation change?' BMC Psychology. 2023. <https://link.springer.com/article/10.1186/s40359-023-01361-6>

in line with the AF Gender Policy and UNIDO's Policy on Gender Equality and the Empowerment of Women.

Identification of Unidentified Sub-Projects (USPs)

In accordance with the AF's Updated Guidance on the Use of Unidentified Sub-Projects (Decision B.39/52), the project includes several activities for which site-level or beneficiary-level identification will occur during implementation. While the intervention types, districts, risk profiles, and technical modalities are fully defined, the specific micro-locations and MSME units will only be validated during detailed design. These activities are therefore treated as partially unidentified USPs, as per paragraphs 7–10 of the AF guidance.

Component 2 (USP 2.1–2.3)

- Site-level selection of NbS (riparian buffers, slope stabilization, drought-resilient agro-tourism, urban greenery/drainage).
- Selection of 5–7 tourism micro-sites for anticipatory climate adaptation measures.
- Selection of 8 CBT facilities for resilient infrastructure upgrades (solar cooling, water-efficient kitchens, backup solar, adaptive food/energy systems).

Component 3 (USP 3.1–3.2)

- Selection of 12–15 MSMEs across coffee, textiles, handicrafts, and agro-tourism value chains to receive technology-based climate adaptation solutions.
- Selection of MSMEs to participate in certification and financing pathways (GI sticky rice, organic coffee, eco-labels).

Each USP is bounded by a clearly defined intervention framework, district-level hazard maps, and technology specifications, ensuring that environmental and social risks can be screened prior to implementation, as required under paragraphs 16–22 of the AF USP guidance.

B. Describe how the project/programme provides economic, social and environmental benefits, with particular reference to the most vulnerable communities, and vulnerable groups within communities, including gender considerations. Describe how the project/programme will avoid or mitigate negative impacts, in compliance with the Environmental and Social Policy and Gender Policy of the AF.

The project delivers inclusive, measurable, and transformative benefits for climate-vulnerable tourism communities in Chiang Saen, Mae Sai, Mae Chan, and Mae Fa Luang. It is fully aligned with the AF's Environmental and Social Policy (ESP) and Gender Policy, ensuring safeguards, gender equity, and participatory approaches so that women, youth, ethnic groups, ethnic minorities, and people with disabilities are central to all interventions.

1 - Economic benefits: The project strengthens resilience in one of Thailand's most important economic sectors by supporting ~170 MSMEs across coffee, textiles, handicrafts, and agro-tourism value chains with risk diagnostics, blended training, and business cases for adaptation finance (Component 3). About 20 MSMEs will receive tailored coaching and 12–15 will adopt concrete climate solutions, generating models for replication. Approximately 120 MSMEs will be engaged in HP LIFE and FairShare trainings, indirectly benefiting ~2,000 workers and household members. Outcome 2.2 will further reduce disruption costs by upgrading at least 8 CBT facilities with resilient food, energy, and infrastructure solutions (e.g., solar cooling, water-efficient kitchens, backup solar, adaptive food-energy systems), creating safer, more reliable tourism services. ~800 women and youth will gain green and climate-resilient employment opportunities through NbS, facility upgrades, and eco-construction works.

2 - Social benefits: While the project will benefit over 25,000 people overall (including MSME entrepreneurs and relevant stakeholders), it will reach over 1,000 community members directly through 16 district-specific training programmes (on floods, droughts, landslides, and heat stress), with at least 60% participation from women and youth. Four permanent adaptation hubs will provide accessible knowledge, toolkits, and early warning materials, improving preparedness for vulnerable groups including ethnic communities and people with disabilities. Through Outcome 2.2, 120 local youth and women will be trained in eco-construction and facility management, building long-term skills and employability in climate-resilient sectors. Integration of adaptation into 12 local administrative organization (LAO) plans ensures long-term risk-informed governance, while ethnic knowledge and cultural indicators will be embedded into tourism calendars and planning tools, strengthening cultural identity and social cohesion.

3 - Environmental benefits: The project will restore and safeguard ~60 hectares of degraded ecosystems through 12 NbS interventions (riparian buffers, slope stabilization, urban greenery, and drought-resilient agro-tourism). These measures will reduce flood, drought, and erosion risks while enhancing biodiversity and ecosystem services. Low-carbon infrastructure solutions under Outcome 2.2—including solar PV systems, water-efficient kitchens, and adaptive food-energy systems—will reduce emissions, save ~200,000 liters of water annually, and promote circular economy practices (e.g., composting, bamboo-based crafts, waste reduction).

4 - Avoidance and mitigation of negative impacts: All interventions comply with the AF ESP and Gender Policy. Environmental and social screening will be applied to each NbS and infrastructure activity; FPIC will be ensured with

ethnic groups; and gender-sensitive procurement and quotas will secure equitable participation. Grievance redress and participatory monitoring mechanisms under Component 4 will ensure accountability and continuous learning.

By embedding gender-responsive governance, ecosystem-based solutions, resilient food-energy-infrastructure systems, and MSME adaptation into tourism, the project avoids harm and generates sustainable economic, social, and environmental co-benefits for Thailand's most vulnerable tourism communities.

C. Describe or provide an analysis of the cost-effectiveness of the proposed project/programme.

Thailand's tourism sector faces growing climate risks, with recent floods, droughts, and landslides in Chiang Rai causing severe losses for households and MSMEs. The proposed USD 10 million project is cost-effective because it addresses vulnerabilities through four integrated components, focusing on hazard intelligence, community resilience, MSME adaptation, and knowledge scaling. By combining tested tools, community-based models, and investment-ready enterprises, the project maximizes adaptation impact at relatively low cost, while ensuring replication and long-term sustainability.

1. Systemic, Multi-Level Impact

- Integrated design: Components 1–4 work at governance (risk intelligence), community (training, NbS, hubs), enterprise (MSMEs, value chains), and policy/knowledge levels, avoiding duplication and leveraging synergies.
- Cross-sectoral benefits: A single investment reduces multiple vulnerabilities—disaster risk, food-water insecurity, tourism volatility, and MSME fragility.

2. Cost-Effectiveness of Key Interventions

- Component 1 (USD 1,500,000): 4 district-specific hazard maps + integrated climate risk platform (linked to THAI DISASTER ALERT and Cell Broadcast Service) provide usable intelligence to 12 LAOs, 15+ tourism communities, and 150 stakeholders. One system prevents parallel investments and reduces disaster costs that regularly exceed millions annually.
- Component 2 (USD 3,000,000): 16 tailored community trainings, 12 NbS interventions (~60 ha restored), 4 adaptation hubs, and 12 updated LAO tourism plans. Eco-construction and NbS save 15–20% annually in CBT operational costs while protecting assets from damage. Ten climate-risk audits of CBT facilities, upgrades to at least 8 facilities with resilient infrastructure (e.g., solar cooling, water-efficient kitchens, backup solar, adaptive food-energy systems), and training for 120 youth and women in eco-construction. These upgrades reduce service disruptions, lower long-term operating costs, and ensure continuous delivery of food, water, and energy services in tourism-dependent areas. Two case studies and a Resilient Tourism Infrastructure Guide further enhance cost-effectiveness by enabling replication across provinces at minimal marginal cost.
- Component 3 (USD 3,513,438): Diagnostics for 4 priority value chains + blended training for ~120 MSMEs, coaching for 20 MSMEs, and proven solutions deployed in 12–15 MSMEs (3–4 per district). Business cases (12–15) and one investor roundtable crowd in private finance—ensuring every AF dollar leverages additional community and investor resources.
- Component 4 (USD 581,000): 6–8 learning products, 2 regional exchanges, 2 policy dialogues, and 10+ storytelling products. These ensure that once the tools are developed, they can be replicated in other DASTA zones at minimal marginal cost.

3. Leveraging Partnerships and Co-Financing

- Uses existing national systems (THAI DISASTER ALERT, Cell Broadcast Service, GISTDA geospatial data, DASTA networks).
- Builds on UNIDO platforms (HP LIFE, FairShare) to deliver training at low marginal cost.
- Co-financing in staff, data, and technical inputs from GISTDA and DASTA increases efficiency.

4. Long-Term Savings and Resilience Benefits

- Avoided losses: Extreme weather causes >USD 500M in tourism losses annually. Risk-informed zoning, NbS, and resilient MSMEs will substantially reduce recovery and repair costs.
- Low-cost scaling: Hazard maps, adaptation hubs, and MSME business cases can be rolled out in other provinces cheaply once developed.
- Community ownership: Training and local monitoring teams ensure sustainability beyond AF financing.

5. Cost-Effectiveness Compared to Alternatives

NbS are less costly and offer multiple co-benefits compared to traditional hard infrastructure. MSME co-investment and certification pathways are more sustainable than pure grants, leveraging private and community contributions. Embedding resilience in existing governance and business systems reduces the need for future standalone adaptation projects.

The table below provides an initial, conservative estimate of the annual costs under the no-action scenario, using data

referenced throughout this concept note, and compares them to the project costs. Even under this conservative scenario, the project only needs to reduce these climate-induced costs by 8.6% to break even during the four years of project operation. Considering a 10-year period of climate-induced costs under the no-action scenario, the project only needs to achieve a cost reduction of climate-induced impacts of 2.9% to break even. A more detailed cost-effectiveness analysis will be conducted in the full proposal stage.

Adaptation Area	Inputs Used (referenced in concept note)	Annual Cost Under No-Action Scenario	Proposed Intervention
1. Flood & Landslide Risk Reduction (Hazard Intelligence + NbS)	2024 flood loss = USD 125M; recurrence every 5 years	USD 25M/year	Included in Components 1 & 2
2. Tourism Service Disruptions	20–40k lost visitor-days (conservative fraction of the Chiang Rai total loss of 288,000); USD 50/day (Thai average of USD/110 per day) ⁵⁷	USD 2.5M/year	Component 2 investments
3. MSME Production Losses	Total local MSME Output USD 20–30M (conservative fraction of 1% of Chiang Rai's GDP); 5–7% climate loss (modelled reduction in rice and maize by 2029)	USD 1.0–2.1M/year	Component 3 investments
4. CBT Infrastructure Damage	8 upgraded facilities; repair cost USD 40–80k ⁵⁸ ; 1–2 events/year (e.g., food exposure in highly affected districts)	USD 0.5–1.0M/year	Included in Component 2
TOTAL No-Action Annual Cost	—	USD 29–30.1M/year	USD 10M project cost

D. Describe how the project/programme is consistent with national or sub-national sustainable development strategies, including, where appropriate, NAP, national or sub-national development plans, poverty reduction strategies, national communications, or national adaptation programs of action, or other relevant instruments, where they exist.

The project is fully consistent with Thailand's national and sub-national climate adaptation and development priorities, ensuring coherence, government ownership, and long-term sustainability.

- **National Adaptation Plan (NAP 2024):** Tourism, water, and ecosystems are identified as priority sectors. The project responds directly by (i) producing hazard maps and decision-support systems (Component 1), (ii) embedding adaptation into CBT and LAO plans and infrastructure (Component 2), including resilient food, energy, and infrastructure upgrades in tourism-dependent areas, (iii) strengthening MSME value chains and investor readiness (Component 3), and (iv) enabling policy uptake and scaling (Component 4).
- **Nationally Determined Contribution (NDC, 2022 update):** The project supports resilience in tourism and MSMEs, piloting NbS and low-carbon infrastructure, while promoting climate-smart supply chains aligned with Thailand's mitigation and adaptation goals.
- **National Development Frameworks:** It aligns with the 20-Year National Strategy (2018–2037), the extended 12th National Economic and Social Development Plan (2017–2027), the Climate Change Master Plan (2015–2050), and the Bio-Circular-Green (BCG) Economy Model, all of which emphasize sustainable tourism, green growth, and local economic resilience. Outcome 2.2 contributes directly by piloting resilient kitchens, cooling systems, solar energy, and adaptive food-energy facilities in CBT sites, creating replicable models for climate-smart rural development.
- **Provincial and Local Plans:** In Chiang Rai, the project strengthens LAO development plans and CBT strategies, creating district-tested models for replication in other DASTA zones.
- **Poverty Reduction and Livelihoods:** By targeting MSMEs, CBT groups, women, youth, ethnic groups, and

⁵⁷ According to data from the Bank of Thailand (based on Ministry of Tourism and Sports surveys), average spending by foreign tourists was approximately 4,077 baht per day in 2023 ($\approx$ USD 110/day), https://www.bot.or.th/content/dam/bot/documents/en/our-roles/monetary-policy/mpc-publication/monetary-policy-report/mpr-box/MPR_2024_Q2_BOX1.pdf

⁵⁸ The range is estimated for moderate to major repairs of facilities (like guesthouses, food service areas, support infrastructure etc.), i.e., interior flood damage repair, structural fixes, replacement of equipment etc. to larger structural repairs (e.g., foundations, partial rebuilding), replacement/repair of water systems, or external works like drainage improvements or slope stabilization.

people with disabilities, the project safeguards incomes, creates green jobs, and strengthens adaptive capacity in vulnerable rural economies.

- **International and Regional Commitments:** The project supports Thailand's National Communications to the UNFCCC. It supports the 2030 Agenda for Sustainable Development, particularly , SDG 7 (Affordable & Clean Energy), SDG 8 (Decent Work and Economic Growth), SDG 11 (Sustainable Cities and Communities), SDG 13 (Climate Action), and SDG 15 (Life on Land). The project also contributes to ASEAN's Framework on Sustainable Tourism Development and the Greater Mekong Subregion Tourism Strategy, reinforcing regional cooperation on climate resilience.

Please see below a summary table of the relevant plans and commitments.

Plan / Policy / Commitment	Year	Level	Key Relevant Aspects
UNFCCC Paris Agreement Commitments	Ratified 2016	International	National responsibilities to strengthen climate resilience, adaptation planning, and community-level capacity building.
ASEAN Tourism Strategic Plan	2016-2025; 2026-2030	Regional	Promotes resilient, inclusive, sustainable tourism and cross-border knowledge exchange.
Greater Mekong Subregion Tourism Strategy	2025	Regional	Supports transboundary climate-resilient tourism, nature-based tourism corridors, and MSME development.
National Adaptation Plan (NAP 2023–2037)	2024	National	Tourism, water, ecosystems listed as priority adaptation sectors; mandates climate-resilient tourism and sub-national implementation.
Thailand Updated Nationally Determined Contribution (NDC)	2022	National	National commitments on adaptation and mitigation; promotes resilient MSMEs, NbS, climate-smart supply chains.
20-Year National Strategy (2018–2037)	2018	National	Calls for green growth, sustainable tourism, disaster risk reduction, and resilience planning.
12th National Economic and Social Development Plan (2017–2027)	2017	National	Prioritizes rural development, climate resilience, sustainable tourism, and inclusive value chains.
Bio-Circular-Green (BCG) Economy Model	2021	National	Promotes sustainable tourism, low-carbon MSMEs, green technologies, and circular production systems.
Climate Change Master Plan (2015–2050)	2015	National	Framework for climate resilience, hazard management, adaptation mainstreaming, and subnational climate governance.
Chiang Rai Development Plan	2022-2027	Provincial	Prioritizes disaster risk reduction, sustainable tourism zones, ethnic community development, and climate-impacted value chains.
Local Administrative Organization (LAO) Development Plans (12 LAOs)	Various	District/Sub-district	Local tourism plans, disaster preparedness, land-use planning; project supports integration of climate adaptation measures.

E. Describe how the project/programme meets relevant national technical standards, where applicable, such as standards for environmental assessment, building codes, etc., and complies with the Environmental and Social Policy of the AF.

The proposed project adheres to Thailand's technical standards, regulatory frameworks, and environmental safeguards, while fully complying with the AF's Environmental and Social Policy (ESP) and Gender Policy. Activities span both community-level infrastructure and NbS (Component 2) and enterprise-level adaptation technologies and retrofits (Component 3).

1. Compliance with National Technical Standards

Environmental Impact Assessment (EIA) and Safeguards

- Community-scale interventions under Component 2 (e.g., slope stabilization, riparian buffers, solar cooling

systems, rainwater harvesting) will comply with the Enhancement and Conservation of National Environmental Quality Act (1992), associated EIA requirements overseen by the Office of Natural Resources and Environmental Policy and Planning (ONEP), and relevant forest conservation and watershed management standards of the Royal Forest Department.

- MSME-level adaptation measures under Component 3 (e.g., solar-powered coffee dryers, water-efficient textile dyeing, handicraft process upgrades, adaptive agro-tourism systems) will undergo environmental and occupational safety screening to ensure compliance with Thai industrial and SME regulations.

Building and Construction Standards

- All infrastructure retrofits (solar PV, energy-efficient kitchens, shaded rest areas, drainage improvements) will comply with the Thailand Building Control Act (1979) and relevant Ministerial Regulations on Green Building and Energy Efficiency.
- Small-scale MSME retrofits (e.g., textile dyeing units, coffee dryers) will follow Thai Industrial Standards (TIS) for product safety, environmental performance, as well as applicable Occupational Safety and Health Regulations of the Ministry of Labor. Community-level upgrades under **Outcome 2.2** (e.g., solar cooling in Mae Chan, water-efficient kitchens in Chiang Saen, backup solar in Mae Sai, adaptive food/energy in Mae Fa Luang) will comply with the Thailand Building Control Act (1979), Ministry of Energy efficiency regulations, and relevant occupational health and safety requirements. Eco-construction training will be aligned with the Department of Public Works' guidelines on safe and sustainable building practices.

Water and Energy Standards

- Water-saving systems (rainwater harvesting, water-efficient dyeing) will comply with the Department of Public Works and Town & Country Planning guidelines on water quality and safety.
- Solar and renewable energy installations for communities and MSMEs will follow Energy Regulatory Commission technical standards and Thailand's renewable energy codes.

Tourism and MSME Standards

- Component 2 tourism retrofits and Component 3 MSME production upgrades will align with Thailand's Bio-Circular-Green (BCG) Economy model, Green Label scheme, and relevant ISO standards (ISO 14001 for environmental management, ISO 50001 for energy management).
- Outcome 2.2 retrofits—water-efficient kitchens and adaptive food-energy systems—will comply with national food safety, water quality, and renewable energy codes, overseen by the Department of Health and the Energy Regulatory Commission. Backup solar, hybrid energy systems, and related renewable energy installations will follow the Solar and Renewable Energy Technical Codes of the Energy Regulatory Commission, Thai renewable energy requirements, and operational safety standards.
- Adaptation-linked certification schemes (e.g., GI sticky rice, organic coffee, eco-labels) will comply with national certification frameworks, WTO-aligned trade standards, and applicable Food Safety and Public Health Standards of the Ministry of Public Health.

2. Compliance with the AF's ESP and Gender Policy

The project has been screened against the AF's 15 ESP principles and is designed to:

- Avoid negative impacts: NbS (e.g., slope stabilization, riparian buffers) are restorative rather than extractive; MSME retrofits improve efficiency and reduce waste.
- Ensure inclusivity and human rights: All planning uses participatory methods, with Free, Prior, and Informed Consent (FPIC) applied in ethnic areas.
- Promote gender equity: Activities include quotas for women in training, leadership in MSME coaching, and women/youth-led ecosystem restoration.
- Preserve cultural heritage: Adaptation measures will safeguard cultural tourism sites and integrate ethnic knowledge into calendars and hazard tools.
- Guarantee health, safety, and labor compliance: All construction, retrofits, and MSME activities will follow Thai occupational health and safety laws and international labor standards.

3. Technical and Institutional Oversight

- GISTDA will ensure scientific accuracy of risk data; DASTA will oversee compliance of community-level activities with local planning and tourism standards; UNIDO will apply its Environmental and Social Safeguards (ESS) Framework for MSME activities, ensuring consistency with international best practice.
- ONEP will provide oversight for environmental approvals, while local authorities will support monitoring and enforcement.

The table below summarizes the applicable Thai national technical standards relevant to the project's community infrastructure, MSME technologies, NbS, and early warning systems. The table specifies the year, scope of application, and the project's compliance arrangements.

Standard / Regulation	Year	Applies To	Project Compliance Arrangements
EIA requirements: Enhancement and Conservation of National Environmental Quality Act	1992 (with amendments)	NbS interventions, slope stabilization, drainage works, any activity with potential ecological impact	Screening conducted under the project's ESMF; if thresholds met, EIA/IEE procedures followed with ONEP oversight.
Forest Conservation & Watershed Management Standards (Royal Forest Department)	Relevant regulations updated 2019/2023	NbS interventions such as riparian buffers, slope vegetation, ecosystem restoration	NbS designs vetted with district forestry officers; no interventions in restricted areas without approval; biodiversity safeguards integrated into ESMPs.
Thai Industrial Standards (TIS) for Machinery, Electrical Systems, and Food Processing Equipment	Various	MSME machinery (e.g., solar dryers, dyeing systems), kitchen equipment, handicraft production tools	UNIDO procurement requires TIS-certified equipment; suppliers must provide compliance certificates; training includes safe operation.
Thailand Building Control Act	1979 (various amendments)	Construction and renovation of community tourism infrastructure; solar cooling stations; kitchen retrofits; slope stabilization structures	All designs validated by certified Thai engineers; LAO permitting procedures applied; construction supervised by UNIDO/DASTA to ensure structural safety and compliance.
Occupational Safety & Health Regulations (Ministry of Labour)	Updated 2013–2022	All MSME retrofits, construction sites, training activities	Contractors must comply with OSH rules; safety plans incorporated into ESMPs; PPE and safety training mandatory for all workers.
Ministerial Regulations on Energy Efficiency in Buildings	Various (latest amendments 2020)	Solar cooling systems, backup solar installations, energy efficient retrofits in CBT facilities	UNIDO applies national energy codes; all solar/energy systems designed by licensed providers; compliance verified through installation audits.
Guidelines on Safe and Sustainable Building Practices (Department of Public Work)	2021	CBT facility upgrades, eco-construction training, water-efficient kitchens, solar cooling/backup systems, shaded rest areas, and small-scale community infrastructure.	Designs will follow DPT guidance on safe, resource-efficient and climate-responsive construction. DASTA/UNIDO will ensure review by certified engineers and LAO technical staff, with compliance documented through design checks, procurement specifications, supervision records and ESMPs.
National Water Supply & Quality Standards (Department of Public Works and Town & Country Planning)	Various, updated regularly	Water-efficient kitchens, water-saving technologies; drainage improvements, rainwater harvesting systems	Designs reviewed by LAO engineers; water systems tested for quality and safety; adherence included in site-specific ESMPs.
Energy Regulatory Commission – Solar and Renewable Energy Technical Codes	2018–2022	Solar PV backup systems in Mae Sai, solar-powered dryers in MSMEs, hybrid energy systems	All solar/RE technologies procured from licensed installers; technical specifications must comply with ERC codes; commissioning tests documented.
Bio-Circular-Green (BCG) Economy Model – Technical Guidelines	2021	Sustainable tourism, eco-friendly MSME production, circular material use	Project supports MSMEs in adopting BCG-aligned practices; DASTA ensures BCG consistency in tourism plans.
Food Safety and Public Health Standards (Ministry of Public Health)	Updated 2017–2023	Water-efficient kitchens, adaptive food-energy systems in CBT facilities	Equipment and processes comply with MoPH food safety codes; inspections by local health authorities coordinated by DASTA.
National Disaster Prevention and Mitigation Act	2007	Early warning systems, hazard signage, risk-informed zoning tools	GISTDA ensures alignment with national disaster-warning protocols; district early-warning products integrated with THAI DISASTER ALERT.

F. Describe if there is duplication of project/programme with other funding sources, if any.

The proposed project is the **first tourism-focused climate adaptation initiative in Thailand**, directly aligned with the 2024 NAP, which has only recently identified tourism as a priority adaptation sector. Current climate finance efforts in Thailand focus on water, agriculture, or biodiversity, but none address **tourism governance, MSME value chains, or CBT (CBT) infrastructure** in a climate-resilient way. The project therefore fills a clear gap and avoids duplication, while creating strong synergies with complementary initiatives.

1. No Overlap with Existing Climate Finance

- **GCF projects in Thailand** (e.g., GIZ-led FP214) target climate-resilient agriculture and water systems, with no focus on tourism, CBT, or tourism-linked MSMEs.
- **GEF-funded projects** emphasize biodiversity conservation, protected areas, forest landscapes, wildlife conservation, and biodiversity-based tourism, but do not integrate climate risk intelligence or adaptation into tourism development or value chains.
- **AF regional programmes** cover agriculture, coasts, and fisheries in Southeast Asia but do not operate in northern Thailand or target tourism-related risks, MSMEs, or community infrastructure.

2. Complementarity with Ongoing Initiatives

- The **Doi Tung/Mae Fah Luang projects** demonstrated sustainable tourism and livelihoods but did not integrate climate risk data, hazard mapping, or anticipatory adaptation into tourism management. This project expands to four new districts in Chiang Rai with direct climate risk intelligence, NbS, and infrastructure retrofits.
- **DASTA Sustainable Tourism Zone initiatives** provide the institutional platform for sustainable tourism zoning, CBT coordination, community engagement, and replication. This project adds the climate adaptation layer through localized climate-risk intelligence, NbS, resilient CBT infrastructure, and MSME adaptation support.
- **Provincial and LAO disaster preparedness projects in Chiang Rai** provide local coordination channels, disaster-risk data, and emergency-response mechanisms. This project complements these efforts by adding anticipatory, tourism-specific hazard mapping, seasonal visitor management, resilient CBT infrastructure, and climate-informed local planning.
- **UNIDO's CAPFISH programme in Cambodia** pioneered adaptation in fisheries value chains; this project applies similar diagnostics and investment-readiness approaches to tourism-linked MSMEs (coffee, handicrafts, textiles, agro-tourism).
- Thailand's **Bio-Circular-Green (BCG) Economy framework** operates at the national policy level, while this project operationalizes adaptation at the subnational/community level by embedding climate resilience into CBT, LAO planning, and MSME practices.

3. Mechanisms to Ensure Complementarity

- **National coordination:** Executing partners GISTDA and DASTA will align with the Ministry of Natural Resources and Environment (AF Designated Authority), Ministry of Tourism and Sports, and provincial governments.
- **Donor coordination:** UNIDO will engage through Thailand's Climate Finance Coordination Mechanism to ensure complementarity with GCF, GEF, and bilateral investments.
- **Local integration:** All activities are designed and validated through provincial and LAO consultations in Chiang Rai, ensuring complementarity with local tourism and development plans.

4. Innovation and Added Value

The project introduces innovations that are not covered by any other funding source:

- **Tourism-specific hazard mapping and dashboards** for decision-making (Component 1).
- **District-tailored NbS and resilient community infrastructure** co-designed with vulnerable groups (Component 2).
- **Climate-smart MSME diagnostics and investment cases** for value chains in Chiang Saen, Mae Sai, Mae Chan, and Mae Fa Luang (Component 3).
- **Knowledge scaling and replication** through a Chiang Rai Resilience Toolkit, LKDF Forum, and FairShare platforms (Component 4).

By filling this gap, the project ensures no duplication and delivers the **first climate-resilient tourism model in Thailand**, complementing existing climate finance while offering transferable models for other DASTA zones and Mekong countries. The project has mapped all relevant national, regional, and international climate-related programs to ensure full complementarity and avoid duplication. The table below summarizes these related initiatives, including their dates, status, funding sources, and synergies with the proposed project. The analysis confirms that no existing GCF, GEF, AF, or domestic initiative targets climate-resilient tourism systems, climate-risk MSME supply chains, or subnational tourism governance in Northern Thailand. Accordingly, the proposed project fills a clear and unaddressed adaptation gap while leveraging lessons from ongoing programs.

Project Title & Funding Source	Dates / Status	Synergies	Complementarities
GCF – FP214 (Agriculture & Water Resilience Programme in Thailand)	2023–ongoing	No duplication. FP214 is rice-sector focused and does not target tourism governance, CBT infrastructure, tourism-linked MSMEs, or tourism planning in Chiang Rai.	Provides methodological lessons on climate-smart value chains, standards, MSME engagement, investment readiness, and gender-sensitive outreach. These lessons can inform Component 3 MSME diagnostics and adaptation business cases.
GEF Biodiversity, Protected Areas and Sustainable Landscapes Projects in Thailand: UNDP's Mainstreaming Biodiversity-Based Tourism in Thailand ; FAO's Forests for Life – Intact Tropical Forest Landscape Conservation ; FAO's Integrated Forest Landscape Management for Strengthening the Northeastern and Eastern Forest Corridors ; IUCN's Recovering Tiger Population and Landscape through Sustainable Land Use and Ecosystem Restoration ; UNDP's Combatting Illegal Wildlife Trade ; and UNEP Inclusive Sustainable Rice Landscapes in Thailand .	2018–ongoing; portfolio includes completed, approved and ongoing GEF-6, GEF-7 and GEF-8 initiatives.	No duplication. The GEF portfolio focuses primarily on biodiversity conservation, protected areas, forest landscapes, wildlife conservation, sustainable rice landscapes and biodiversity-based tourism. These projects do not provide an integrated climate adaptation package for tourism systems, CBT infrastructure, tourism-linked MSMEs or climate-risk tourism planning in Chiang Rai.	Provide useful lessons on biodiversity safeguards, protected area, and forest landscape management, community stewardship, biodiversity-based tourism, ecosystem restoration, sustainable land-use planning, and conservation finance. These lessons can inform Component 2 NbS design, Component 3 MSME adaptation cases, and the project's biodiversity-positive tourism approach, while the proposed project fills the distinct gap on climate-resilient CBT and tourism-linked MSME supply chains.
AF Regional Projects in Southeast Asia / Greater Mekong Subregion: Mekong EbA South: Enhancing Climate Resilience in the Greater Mekong Sub-region through Ecosystem-based Adaptation ; Groundwater Resources in the Greater Mekong Subregion: Collaborative Management to Increase Resilience ; Enhancing Climate Adaptation and Resilience of Mekong Communities through Strengthening Weather, Water and Climate Services (ECR-MEKONG) ; Enhancing Coastal Resilience in the South-East Asia Seas ; Building Climate Resilience of Small Scale Fisheries and Aquaculture in Southeast Asia ; and Regional Climate Adaptation Initiative on Sustainable and Equitable Rice-fish Systems in Cambodia and Viet Nam	Completed/Ongoing (varies)	No duplication. These AF initiatives focus on drought and flood management, EbA, transboundary groundwater governance, hydrometeorological services, coastal resilience, fisheries, aquaculture and rice-fish food systems. They do not provide an integrated adaptation package for CBT, tourism infrastructure, tourism-linked MSMEs or climate-risk-informed tourism planning in Chiang Rai.	Provide useful AF-standard lessons on ESMF/ESMP design, environmental and social risk screening, gender-responsive adaptation, community-level resilience planning, climate services, EbA and regional knowledge management. The proposed project applies these lessons to a distinct sector and geography by focusing on climate-resilient CBT and tourism-linked MSME supply chains in northern Thailand.
Doi Tung Development Project / Mae Fah Luang	1988–ongoing	No duplication. Doi Tong	Provides strong lessons on community

Foundation (Government & Donor Blend)		provides a historical model for sustainable tourism and livelihood development but does not provide AF-aligned climate risk intelligence, climate-proof MSME technologies, or AF-aligned adaptation planning.	mobilization, social enterprise, local ownership, livelihood diversification, and tourism-linked development. The proposed project builds on these lessons while adding climate adaptation, NbS, hazard dashboards, and investment-ready MSME resilience.
UNIDO – CAPFISH (Cambodia)	2021–ongoing	No duplication. Operates in Cambodia and focuses on fisheries, not Thailand, tourism, or CBT systems.	Provides technical models for climate-resilient value chains and investment-readiness methodologies. These lessons can inform Component 3 for tourism-linked MSMEs.
Thailand Bio-Circular-Green (BCG) Economy Initiatives	2021–ongoing	No duplication. BCG is a national policy framework focused on sustainable growth, not a dedicated project delivering climate-resilient CBT infrastructure or MSME adaptation in Chiang Rai.	The proposed project operationalizes BCG principles locally through resource-efficient MSME practices, eco-labels, circular materials, climate-smart food systems, and sustainable tourism value chains.
DASTA Sustainable Tourism Zone Initiatives (Government-funded)	Ongoing	No duplication. Existing DASTA work supports sustainable tourism through zoning, community engagement, and tourism governance frameworks. However, it does not provide a dedicated AF-financed climate adaptation package combining climate-risk intelligence, NbS, resilient infrastructure, and MSME adaptation finance.	Provides the institutional platform for local tourism planning, CBT coordination, community engagement, and replication across DASTA zones. The proposed project adds the climate adaptation layer and creates a replicable resilience model.
Provincial & LAO Disaster Preparedness Projects (Chiang Rai Provincial Authorities)	Various (ongoing)	No duplication. Existing initiatives mainly focus on emergency response, recovery, and general disaster preparedness. The proposed project focuses on anticipatory adaptation and tourism-specific resilience.	Provides local coordination channels, disaster-risk data, and emergency-response linkages. The proposed project complements this by adding tourism-specific hazard mapping, seasonal visitor management, resilient CBT infrastructure, and climate-informed local planning.

The proposed project is the first initiative in Thailand to integrate hazard intelligence, NbS, climate-proof community tourism infrastructure, and investment-ready MSME resilience in the tourism sector. Existing projects do not target the Chiang Rai tourism districts nor provide sector-specific climate adaptation interventions in tourism value chains. The project therefore avoids duplication and builds strong synergies with national climate strategies, GCF/GEF investments, and DASTA's sustainable tourism planning frameworks.

G. If applicable, describe the learning and knowledge management component to capture and disseminate lessons learned.

Learning and adaptive knowledge management are a central pillar of the proposed project, captured under Component 4. The project is designed not only to deliver adaptation interventions, but also to function as a learning system, in which evidence generated during implementation is systematically captured, analyzed, and fed back into decision-making, while simultaneously informing national policy frameworks, regional replication, and global knowledge exchange under the AF.

Learning as a System Embedded Across Components

Learning is embedded across all Components (1–3) and consolidated through Component 4. Components 1–3 are deliberately structured to generate practical evidence—technical, institutional, economic, and social—that is continuously synthesized and translated into actionable knowledge products. Learning therefore occurs during implementation, not only at project completion, and directly informs adaptive project management. At defined intervals (annual learning cycles), evidence from climate-risk diagnostics, NbS pilots, resilient infrastructure retrofits, MSME adaptation solutions, and stakeholder feedback is reviewed and used to:

- refine site-level implementation approaches;
- adjust technical designs and selection criteria;
- strengthen institutional coordination and capacity-building content; and
- update policy and investment-oriented guidance as new lessons emerge.

This ensures that the project remains responsive to evolving climate risks and implementation realities, and that learning actively improves outcomes rather than remaining observational.

Cross-Component Knowledge Generation

Components 1–3 are deliberately designed to generate evidence and learning that feed into Component 4:

- *Component 1 (Risk Intelligence)*: Component 1 generates foundational learning on the application of hazard intelligence to tourism systems. Output 1.3 produces replicable decision-support tools and climate-tourism calendars, while Output 1.5 establishes an open-access knowledge platform integrating hazard maps, CBT case examples, and technical guidance. These outputs are structured for reuse in other DASTA-designated tourism zones and serve as the analytical backbone for scaling climate-risk-informed tourism planning.
- *Component 2 (CBT Ecosystems)*: Component 2 produces practice-based learning on community-driven adaptation. Climate-risk audits, nature-based solutions, resilient CBT retrofits (including solar cooling, backup solar, water-efficient kitchens, adaptive food-energy systems), and eco-construction training generate concrete evidence on scalable, low-cost adaptation models. Outputs 2.1.4 and 2.1.5 consolidate these lessons into a Chiang Rai Resilience Toolkit, translating district-level experience into policy-relevant guidance for national authorities, including MONRE and the Ministry of Tourism.
- *Component 3 (MSMEs and Value Chains)*: Component 3 generates economic and financial learning. Output 3.1.3 produces MSME adaptation business cases supported by cost–benefit evidence, while Output 3.2.3 documents MSME success stories through fairs, case studies, and investor briefs. These outputs are explicitly designed to inform policymakers, financiers, and private-sector partners on the feasibility and bankability of climate-resilient tourism value chains.

Distinct Role of Component 4: Synthesis, Translation and Scaling

- *Knowledge and adaptive learning framework (Output 4.1.1)*: Aggregates lessons from risk intelligence, NbS, resilient infrastructure, and MSME value chains into training modules for LAOs, CBT operators, and MSMEs, as well as concise policy recommendations for provincial and national authorities.
- *Learning products and regional exchange (Output 4.1.2)*: Develops 6–8 structured case studies, toolkits, and policy briefs (including a flagship Chiang Rai case), combined with at least two regional learning exchanges and targeted national policy dialogues to support replication across Thailand and Mekong tourism contexts.
- *Communications and visibility (Output 4.1.3)*: Produces community storytelling, digital campaigns, and media products (at least 10 multimedia stories, infographics, and videos), reaching an estimated 100,000 people nationally and regionally, and ensuring that learning extends beyond technical audiences.

Institutional Uptake and Sustainability Beyond the Project

The project's KM system is designed to ensure that learning outputs remain operational beyond AF financing:

- DASTA will integrate project toolkits and guidance into national CBT training and certification programmes, embedding learning in routine capacity-building processes.

- GISTDA will maintain and update climate-risk and hazard data products as part of its ongoing national mandate.
- UNIDO will retain learning outputs within its global knowledge infrastructure and apply them in subsequent tourism-focused climate adaptation initiatives.
- LAOs will integrate relevant guidance into local development and disaster preparedness planning cycles.

These arrangements institutionalize learning and reduce reliance on project-specific structures.

Feedback Mechanisms for Adaptive Learning

To ensure continuous improvement, the project applies multiple feedback mechanisms:

- Post-training surveys and structured feedback from CBT groups, MSMEs, and LAO staff (gender-disaggregated where relevant);
- Focus group discussions with women, youth, and ethnic community representatives;
- After-action reviews following pilot interventions and extreme climate events;
- Annual multi-institution learning reflection workshops involving UNIDO, DASTA, and GISTDA.

Outputs from these processes directly inform updates to KM materials, implementation approaches, and policy recommendations.

Global Knowledge Integration and CAIL Platform

For global learning and visibility, the project will be integrated into the UNIDO Climate Adaptation Innovation and Learning (CAIL) platform. A dedicated project webpage within CAIL will serve as a central hub for knowledge products, events, recordings, outcomes, and success stories, while enabling structured knowledge exchange with other innovative climate adaptation projects targeting vulnerable communities.

In summary, by embedding adaptive learning across all components and consolidating results under Component 4, the project establishes durable pathways for replication, institutional uptake, and policy integration. This positions Thailand's first tourism-focused adaptation initiative as a national demonstration model and a regional reference point for climate-resilient tourism, fully aligned with the AF's learning and scaling objectives.

H. Describe the consultative process, including the list of stakeholders consulted, undertaken during project preparation, with particular reference to vulnerable groups, including gender considerations, in compliance with the Environmental and Social Policy and Gender Policy of the AF.

The project was informed by an inclusive, participatory consultation process between March and May 2025, ensuring the voices of vulnerable groups shaped its design. Consultations focused on climate-vulnerable tourism communities, with emphasis on gender, ethnic perspectives, and SME engagement.

1. Consultative Methods and Dates:

- **Community Roundtables (24–25 April 2025, Chiang Rai):** Facilitated by DASTA and Local Administrative Organizations (LAOs), engaging academic institutes, tourism SMEs, women leaders, and elders from six hazard-prone areas (Mueang Chiang Rai, Mae Chan, Mae Rai, Mae Fa Luang, San Thang Luang, and Doi Tung).
- **Focus Group Discussions (23–24 June 2025, Chiang Rai):** Conducted with communities in Mae Chan District (San Thang Luang Community and Mae Rai Community), Mae Sai District (Pha Mee Community), Mae Sai District (Mae Sai Market) and Chiang Saen District (Chiang Saen Ancient City, Tha Khan Thong Community, and Golden Triangle Market); included women's cooperatives and youth groups.
- **Technical Workshops (April & June 2025):** Co-led by UNIDO, GISTDA, and DASTA on hazard mapping, climate data use, SME adaptation, and infrastructure planning.
- **Online Survey (April–May 2025):** Collected 15 responses from tourism stakeholders, communities, and local organizations in Chiang Rai.

2. Stakeholder Groups Consulted



Figure 12 Stakeholder Consultation, 24 April 2025

Table 3 Summary of Stakeholder Consultations

Date	Stakeholders	Topic Discussed and Key Considerations	Outcomes & Integration into Project Design
24 April 2025	Total 23 participants (14 female, 9 male) from - Provincial government (Tourism, Disaster prevention, Industry, Commercial affairs, LAOs) - Academic institute (CRRU, MFU) - Private (Chiang Rai Development, Population & Community Development)	- Project steering committee: Governor of Chiang Rai to chair; include provincial stakeholders - Climate change impacts & local disaster events: floods, droughts, seasonal shifts, landslides, affecting tourism and safety - Emergency preparedness: Lack of disaster response plans for tourism and communities - Infrastructure recovery: Urgent needs post-floods in Ko Loi and Mueang Ngim - Satellite & climate data: GISTDA to provide flood/drought analysis and climate modelling - Economic & product development: Promote handicrafts, improve the quality and market value of ethnic products, and expand export markets - Creative economy: Leverage Chiang Rai's culture, art, cuisine, and festivals - Alternative livelihoods: Tourism as income for farmers affected by climate disasters - Relocation challenges: No alternative areas for residents in high-risk zones	Validated the selection of target districts and informed the focus on localized early warning systems (Comp 1) and disaster-resilient CBT infrastructure (Comp 2).
24 April 2025	Total 11 participants (7 female, 4 male) from Mae Fah Luang University	- Flood risk in Mae Chan District: Repeated flooding history; need for preparedness and forecasting plans - Wiang Nong Lom development: Government water management project altered ecosystems and livelihoods - Ecosystem impact: Loss of 8 fish species and over 10 plant species; 300 buffalo deaths due to food shortage - Community adaptation: Villagers need support to shift to tourism, cultural revitalisation, and alternative income sources - Community awareness: Refer to Climate Resilience Project (MFU & AUSAID); 33% of surveyed villagers are unaware of climate change; education and early warning systems introduced	Directly shaped the inclusion of NbS for ecosystem restoration (Comp 2) and alternative livelihood diversification (Comp 3).
24 April 2025	Total 10 participants (4 female, 6 male) from the Chiang Rai Governor and the Province Office	- Project steering committee: The Governor of Chiang Rai agreed to chair the committee - Provincial support: The Governor's strong commitment to coordination and data sharing, especially on climate and disaster-related datasets from the province - Long-term tourism vision: Develop Chiang Rai as a year-round eco-tourism destination - Ethnic tourism promotion: Support for ethnic communities and local products - Satellite technology use: GISTDA to support tracking via satellite and local data - Concerning PM2.5 pollution: pollution affects tourists' travel decisions	Solidified in providing geospatial hazard intelligence (Comp 1) and secured high-level institutional endorsement for the Steering Committee.
25 April	Total 19 participants (11 female, 8 male) from	Vulnerable communities: Mae Rai Community is prone to flooding; it lacks a detention basin	Driven the inclusion of backup solar power and

Date	Stakeholders	Topic Discussed and Key Considerations	Outcomes & Integration into Project Design
2025	- Doi Tung Development Project - San Thang Luang Village - Mae Rai Community - Mae Chan District Office - Mae Fa Luang District Office	- Water management: Need for reservoirs - Cultural tourism: In Santhang Luang, tourism declined due to the heat - Disaster impacts: Electricity outages; insufficient solar power; damaged agricultural yields - Sustainable supply chains: proposed coffee product development and certification - Handicrafts & resilience: Mae Rai's weaving and embroidery support cultural and economic strength - Landslides & floods in Doi Tung: 145 landslide sites in 2024; flash floods affected 826 households - Windstorm damage: The April 2024 storm affected 278 households and 117.12 hectares of forest - Forest conservation: Strong local engagement in wildfire prevention for Doi Tung, but needs to educate locals on forest conservation benefits for other areas in the Mea Chan District	water management infrastructure (Comp 2), and selected coffee and handicrafts as priority value chains for MSME upgrades (Comp 3).
23 June 2025	Total 38 participants (27 female, 11 male) from - Doi Pha Mee Tourism Community Enterprise - Chiang Saen CBT Enterprise Group - Baan San Tang Luang Community - Baan Mae Rai Community	- Pha Mee Community: Akha ethnic village with 130+ households; active in tourism and coffee 2024 flood impact in Pha Mee: 20+ landslides, road closures, power and internet outages; recovery took over a week - Chiang Saen tourism activities: Creative tourism integrating local wisdom; spiritual, eco-art, and seasonal events - Nighttime tourism potential in Chiang Saen: Lighting installations proposed; needs agency support - Geographical Indication (GI) product: Chiang Rai Khiaw Ngoo Sticky Rice grown in Chiang Saen lowlands - Tourism calendar gap: No formal calendar for Chiang Saen tourism events - City moat restoration: Proposal to use solar pumps to refill the moat from the Mekong River for tourism appeal - River pollution: Kok and Ruak Rivers pollute the Mekong; affect tourism, fisheries, and local consumption	Informed the creation of climate-tourism calendars (Comp 1) and established certification pathways (e.g., GI sticky rice) for MSMEs to increase market resilience (Comp 3).
24 June 2025	Total 86 participants (51 female, 35 male), including - Vice Governor of Chiang Rai Province and the Province Office - Department of Climate Change & Environment - Provincial government (Tourism, Geological resources, Disaster	- Project relevance: 66% of Chiang Rai's income is from tourism; high vulnerability to climate disasters - Target districts: Mae Sai, Mae Chan, Mae Fa Luang, and Chiang Saen are well-suited and serve as strong pilot areas - Water management: Urgent need for check dams and reservoirs; current capacity far below demand - Disaster preparedness: Backup power (solar), especially in Mae Rai; integrate disaster planning - CBT: Cultural tourism, eco-tourism, and youth engagement in Chiang Saen and Mae Rai	Officially validated the 4 target districts. Directly shaped Component 2's inclusion of solar backup power and water infrastructure. Solidified Component 3's strategy to use the FairShare platform to upgrade coffee, tea, and handicraft MSMEs

Date	Stakeholders	Topic Discussed and Key Considerations	Outcomes & Integration into Project Design
	prevention, Commercial affairs, LAOs) • Community (San Thang Luang, Pha Mee) • Academic institute (CRRU, MFU) • Private (The Association of Northern Tourism Federation, Chiang Rai Coffee Lovers) • Community Enterprise Group (Baan Tha Khan Thong, Chiang Saen, Mae Rai, Baan Santhat)	• Geographical Indication (GI) & local products should be prioritised for support, including Coffees, Pineapples, Teas, Sticky Rice, embroidery and handicrafts • Climate impact on coffee & tea: Reduced yields, quality, and export potential; need for adaptive strategies • FairShare & sustainable supply chains: Promote equitable, green, and inclusive supply chains for GI & local products	to be climate-resilient and attain GI certifications.



Figure 13 Meeting with The Governor of Chiang Rai (24 April 2025), and Doi Tung (25 April 2025)



Figure 14 Focus Group Discussions, 23 June 2025





Figure 15 Validation Workshop, 24 June 2025

3. Summary of Key Feedback Integrated into Project Design

- **Component 1:** Need for localized, user-friendly climate dashboards and hazard maps.
- **Component 2:** Strong demand for nature-based infrastructure and seasonal visitor zoning.
- **Component 3:** Women SMEs requested easier access to adaptation funds and sustainability certification.
- **Component 4:** Community leaders stressed long-term access to climate tools and regional peer learning.

4. Gender and Inclusion

- Over 50% participation of women and youth across all consultations.
- Separate breakout sessions held for ethnic women and entrepreneurs.
- FPIC (Free, Prior, and Informed Consent) is respected in all ethnic community engagements.
- Feedback on barriers to finance, land use, value chain entry, and service access documented.

5. Alignment with ESP and Gender Policy

- Consultations followed the AF's ESP and Gender Policy, with strong inclusion of vulnerable groups.
- Inputs shaped the draft ESMF and future Gender Action Plan.
- Local grievance redress protocols will be created with LAOs and CBT groups in Thai and ethnic languages.

6. Future Consultations and Detailed Assessments

While the preliminary consultations and visual documentation provided above successfully validate the project's conceptual framework and priority adaptation interventions, comprehensive and in-depth consultations will be conducted during the Full Proposal development phase. Utilizing the PFG, the project team will conduct detailed socio-economic baseline surveys, site-specific Environmental and Social Management Plan (ESMP) screenings, and localized gender assessments. Crucially, these future in-depth consultations will ensure the continued application of Free, Prior, and Informed Consent (FPIC) mechanisms across all targeted ethnic communities.

I. Provide justification for funding requested, focusing on the full cost of adaptation reasoning.

The proposed Master project (USD 10 million) has been designed from the outset within the AF envelope, ensuring that all activities, institutional arrangements, and delivery modalities are calibrated to this funding level. The AF resources alone are sufficient to achieve the intended outcomes; no co-financing is foreseen or required. This ensures full compliance with the AF's full cost of adaptation principle and guarantees that the project is not contingent on additional resources for implementation or sustainability.

Baseline Scenario (Without AF Financing)

Tourism development in northern Thailand, including Chiang Rai, remains focused on growth and recovery, with limited integration of climate risks into planning, infrastructure, or MSME operations. National hazard systems (THAI DISASTER ALERT, Cell Broadcast Service, GISTDA) provide general data but lack tourism-specific applications. CBT facilities remain vulnerable to floods, heat, drought, and landslides. MSMEs lack risk diagnostics, adaptation finance, and investor-ready models. Lessons from pilot initiatives (e.g., Doi Tung Development Project) are not systematically documented or scaled. Without dedicated adaptation finance, climate risks will continue to undermine tourism livelihoods, infrastructure, and ecosystems, particularly affecting women, youth, ethnic groups, and marginalized groups.

Adaptation Scenario Enabled by AF Financing

Component 1: Strengthening Climate Risk Intelligence for Tourism Resilience (USD 1,500,000)

- ✓ **Baseline:** National hazard data exists but is generic and not tailored to tourism or MSMEs.
- ✓ **Adaptation Increment:** AF financing enables district-specific hazard maps (floods, heat, drought, landslides), risk dashboards, and decision-support tools that integrate ethnic knowledge and guide zoning, seasonal visitor calendars, and investment planning. It also supports an open-access knowledge platform for replication in other DASTA zones.
- ✓ **Full Cost Justification:** These tourism-specific risk intelligence systems are public goods with no immediate revenue stream; AF financing is essential to generate, institutionalize, and apply them.

Component 2: Building Resilient CBT Ecosystems (USD 3,000,000)

- ✓ **Baseline:** CBT infrastructure, governance, and essential services (food, energy, water) in Chiang Rai remain highly exposed to floods, heatwaves, droughts, and landslides. Facilities lack contingency systems, causing

service disruptions, income losses, and risks for vulnerable groups. Local development plans do not systematically integrate climate risks, and adaptation investments are absent from domestic tourism budgets.

- ✓ **Adaptation Increment:** AF financing will deliver an integrated package of resilience measures, including NbS (riparian buffers, slope stabilization, drought-resilient agro-tourism, urban greenery) and resilient infrastructure upgrades in at least 8 CBT facilities (solar cooling in Mae Chan, water-efficient kitchens in Chiang Saen, backup solar in Mae Sai, adaptive food/energy in Mae Fa Luang). It will support 12 LAOs to integrate adaptation into tourism plans, establish 4 community adaptation hubs with hazard maps and toolkits, and train ~900 women and youth in NbS, eco-construction, and resilient facility management. Lessons will be consolidated into a Chiang Rai Climate-Resilient Tourism Strategy and a Resilient Tourism Infrastructure Guide for replication nationwide.
- ✓ **Full Cost Justification:** These measures go beyond basic infrastructure budgets and require dedicated adaptation finance. AF support is essential to cover the incremental costs of climate-proofing CBT systems, preventing a cycle of repeated damage, repair costs, and lost livelihoods.

Component 3: Enhancing Climate-Resilient and Investment-Ready Tourism Supply Chains (USD 3,513,438)

- ✓ **Baseline:** MSMEs in coffee, textiles, handicrafts, and agro-tourism operate with low awareness of climate risk and limited access to adaptation finance.
- ✓ **Adaptation Increment:** AF funding enables climate diagnostics for 4 value chains, blended training via HP LIFE and FairShare, business coaching for 20 MSMEs, and deployment of 12–15 proven adaptation solutions (solar coffee drying, water-efficient textile dyeing, resilient handicraft materials, adaptive agro-tourism). Business cases and investor roundtables connect MSMEs to finance and certification.
- ✓ **Full Cost Justification:** These adaptation-focused diagnostics, pilots, and investor linkages would not occur without AF financing, which de-risks private sector engagement and generates replicable business models.

Component 4: Knowledge, Learning, and Scaling for Climate-Resilient Tourism (USD 581,000)

- ✓ **Baseline:** Lessons from local adaptation pilots are rarely synthesized or scaled nationally.
- ✓ **Adaptation Increment:** AF resources establish a knowledge and adaptive learning framework, producing case studies, toolkits, and the Chiang Rai Resilience Toolkit; support 2 regional exchange events and national policy dialogues; and implement a visibility strategy reaching 100,000 people.
- ✓ **Full Cost Justification:** AF funding ensures systematic learning and replication beyond the four districts, embedding adaptation into national policies and Mekong regional strategies.

Why AF Financing is Essential

Public goods: Hazard maps, NbS retrofits, community hubs, and resilience toolkits lack commercial incentives and require concessional adaptation finance. *Market barriers:* MSMEs in remote tourism districts cannot access commercial loans for climate-proofing. AF support bridges this financing gap and ensures inclusion of vulnerable groups. *Full cost of adaptation principle:* The USD 10 million AF grant is both necessary and sufficient to achieve the proposed outcomes. The project is deliberately scoped to AF resources alone, with no co-financing required, ensuring direct and measurable adaptation benefits.

J. Describe how the sustainability of the project/programme outcomes has been taken into account when designing the project/programme.

The sustainability of outcomes is deeply embedded in the project design across all four components, ensuring long-term ownership, financial viability, and policy integration beyond the life of the AF's support. To ensure robust post-project continuity, specific post-project management mechanisms have been defined in direct collaboration with the Executing Entities and local stakeholders, structured across six core dimensions:

Institutional Sustainability & Digital Intelligence Management: The project is anchored in Thailand's existing institutional systems (THAI DISASTER ALERT, Cell Broadcast Service, GISTDA, DASTA, LAOs), ensuring that climate risk tools, NbS, and MSME models are mainstreamed into national and subnational planning processes rather than developed in isolation. By integrating climate adaptation into 12 LAO plans and producing a provincial Climate-Resilient Tourism Strategy for Chiang Rai, the project ensures that resilience measures become part of ongoing governance and budgetary processes. **Responsible Entities & Integration:** Risk information and disaster maps will be permanently integrated into GISTDA's core operations and formally linked to the national THAI DISASTER ALERT system. Locally, the 12 target LAOs will take direct ownership of the climate-resilient tourism calendars and risk zoning criteria, and will legally integrate them into their mandatory 4-year sub-district and provincial development and budgeting cycles.

Social and Community Sustainability: Sustainability is reinforced through local ownership. Communities, including women, youth, ethnic groups, and people with disabilities, are directly engaged in training, NbS implementation, eco-construction, and facility management. The creation of 4 adaptation hubs, citizen monitoring teams, and district-level learning cohorts ensures continuity of knowledge and practice. Embedding ethnic knowledge into risk tools and tourism calendars further supports cultural sustainability and intergenerational transfer. **Responsible Entities & Integration:** The

4 established Adaptation Hubs will be permanently transferred to the CBT groups as "permanent learning centres" to provide continuous disaster information and emergency response guidance. Additionally, the project establishes "Citizen Monitoring Teams," training local volunteers in "citizen science" to continuously monitor and maintain local ecosystems and adaptation measures at the grassroots level.

Economic and Financial Sustainability: The project strengthens ~170 MSMEs in priority value chains (coffee, textiles, handicrafts, agro-tourism), develops 12–15 investment-ready business cases, and links them to financing and certification schemes. This builds adaptive business models that can attract private and community co-investment beyond AF resources. Resilient infrastructure retrofits (e.g., solar cooling, water-efficient kitchens, backup solar) reduce long-term operating costs for CBT facilities, while NbS (e.g., slope stabilization, riparian buffers) lower recurring disaster recovery costs. **Responsible Entities, O&M, & Future Financing:** Upgrading CBT facilities with clean energy and water-efficient solutions will reduce long-term operational expenses by an estimated 15–20% annually. To guarantee Operations and Maintenance (O&M) sustainability, physical assets will be formally handed over to the CBT committees. The project inherently mitigates O&M costs by explicitly training local youth and community members in eco-construction and basic maintenance, eliminating reliance on costly external contractors. Furthermore, the USD 300,000 co-investment mechanism will act as a prototype to link these MSMEs to ongoing green finance from banks and the private sector post-project.

Environmental Sustainability: By restoring ~60 hectares of ecosystems and deploying NbS (riparian buffers, slope stabilization, urban greenery, drought-resilient agro-tourism), the project delivers long-lasting environmental co-benefits—erosion control, biodiversity conservation, microclimate regulation, and water retention—that extend well beyond the project duration. Low-carbon energy and water-efficient systems further embed circular economy practices into tourism. **Responsible Entities & Integration:** These NbS interventions utilize methods that require extremely low maintenance and are naturally self-sustaining. The post-project governance and management of these landscapes will be driven primarily by the respective LAOs in close collaboration with the local communities.

Knowledge and Policy Sustainability: Under Component 4, all results are documented in case studies, toolkits, and policy briefs (including a flagship Chiang Rai case) and disseminated through the LKDF Forum, FairShare, and ASEAN tourism networks. The Chiang Rai Resilience Toolkit and Resilient Tourism Infrastructure Guide ensure tested practices can be replicated nationally and regionally. National dialogues with MONRE and the Ministry of Tourism ensure alignment with Thailand's NAP, NDC, and Bio-Circular-Green Economy Model, embedding sustainability at the policy level.

Responsible Entities & Scaling Up: The Chiang Rai Resilience Toolkit will function as the primary vehicle for scaling up, serving as DASTA's official blueprint for replicating climate-resilient tourism across its other Designated Areas nationwide. Furthermore, all lessons learned will be permanently hosted on a digital knowledge platform jointly managed by GISTDA, UNIDO, and DASTA, ensuring perpetual institutional and public access.

Regional Replication: The project lays a strong foundation to serve as a regional demonstration model. By sharing experiences and tested adaptation practices through established Mekong and ASEAN tourism cooperation platforms, the project will drive the widespread adoption of climate-resilient tourism across the broader region. By combining local ownership, financial viability, institutional integration, and ecosystem restoration, the project creates durable adaptation models that remain relevant and replicable beyond AF financing

K. Provide an overview of the environmental and social impacts and risks identified as being relevant to the project/programme.

An initial environmental and social screening has been conducted using the AF's Environmental and Social Policy (ESP) framework. The project is expected to fall under Category B (moderate risk) and will prepare a comprehensive Environmental and Social Management Framework (ESMF) during the full proposal phase. The table below summarizes the assessment against each of the 15 ESP principles.

UNIDO, as the Implementing Entity, confirms full compliance with the AF's Updated Guidance on Unidentified Sub-Projects (Decision B.39/52). All activities identified as USPs in Part II.A will undergo the same environmental and social risk identification, assessment, and management procedures as fully-formulated interventions prior to implementation. No USP will be implemented until UNIDO has verified and documented ESP compliance, in line with paragraphs 18–22 and 31–37 of the AF USP guidance.

An Environmental and Social Management Framework will be prepared at the full proposal stage, and site-specific Environmental and Social Management Plans (ESMPs) will be prepared for all moderate-risk interventions, covering both community NbS/infra (Component 2) and MSME retrofits (Component 3).

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
<i>Compliance with the Law</i>		Low Risk: The proposed project is developed in close collaboration with the governments of Thailand, ensuring strict compliance with relevant laws and regulations, thereby reducing the risk level associated with this ESP. The project will ensure that all local laws are well adhered to and complied accordingly and that all permits, EIAs, and approvals required are secured prior to implementation. Oversight will be led by UNIDO with coordination from DASTA and GISTDA.
<i>Access and Equity</i>	✓	Low Risk: Risk of unequal participation by remote, under-resourced or marginalised tourism communities. This will be mitigated by inclusive design, decentralised training delivery and accessible infrastructure. Activities specifically target women, youth and ethnic minorities. Gender-disaggregated M&E indicators will track equitable benefit distribution. USPs (Components 2 & 3) will apply the same access-and-equity screening criteria during site-level selection prior to implementation.
<i>Marginalized and Vulnerable Groups</i>	✓	Low Risk: The project will ensure compliance with the AF Environmental and Social Policy (ESP) checklist by actively identifying and engaging marginalized and vulnerable groups through inclusive consultations and social assessments. It will promote equitable access to project benefits by implementing targeted interventions, such as tailored capacity-building programs, financial inclusion, and access to climate-resilient resources. Measures will be in place to prevent displacement, discrimination, or exclusion while ensuring that these groups have meaningful participation in decision-making. The project will also put in place mechanisms to address concerns transparently, ensuring social safeguards are upheld throughout project implementation. For USPs, social screening will be applied before any sub-project proceeds, in line with AF USP guidance.
<i>Human Rights</i>		Low Risk: This project is committed to upholding the rights of all individuals and does not violate any fundamental human rights principles or pillars.
<i>Gender Equality and Women's Empowerment</i>	✓	Low Risk: The project will ensure compliance on Gender Equity and Women's Empowerment by promoting equal participation of women in all project activities and decision-making processes. A gender analysis will be conducted to identify barriers and opportunities for women's engagement, ensuring that project benefits are equitably distributed. Targeted interventions, such as capacity-building programs, access to financial resources, and leadership opportunities, will empower women to actively contribute to climate adaptation. The project will also integrate gender-sensitive indicators to monitor progress and to address any gender-related concerns, ensuring an inclusive and gender-responsive approach throughout implementation. For USPs, gender screening will be applied prior to sub-project implementation.
<i>Core Labour Rights</i>		Low Risk: To ensure compliance with the AF's Environmental and Social Policy (ESP) regarding Core Labour Rights, the project will adhere to the core labour standards as identified by the International Labour Organization (ILO) ⁵⁹ . These standards encompass the elimination of forced and compulsory labour, the abolition of child labour, the elimination of discrimination in respect of employment and occupation, and the freedom of association and the right to collective bargaining. By integrating these principles, the project will promote fair treatment, non-discrimination, and equal opportunity for all workers involved. Regular monitoring and reporting

⁵⁹ <https://www.ilo.org/international-labour-standards>

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
		mechanisms will be established to ensure adherence to these labour standards throughout the project's implementation.
<i>Indigenous Peoples</i>	✓	Low Risk: Multiple ethnic indigenous communities are present in Chiang Rai and other target zones. The project will comply by ensuring their full and effective participation in all stages of project design, implementation, and monitoring. A Free, Prior, and Informed Consent (FPIC) process will be conducted to respect their rights, traditions, and cultural heritage. The project will integrate ethnic knowledge and practices into climate adaptation strategies while safeguarding their land, resources, and livelihoods. USP site selection will ensure FPIC compliance is documented prior to any sub-project activity in indigenous communities.
<i>Involuntary Resettlement</i>		No Risk: The project has no plans for any resettlement. All infrastructure and land use will be community-approved.
<i>Protection of Natural Habitats</i>	✓	Low Risk: The project will fully comply with Protection of Natural Habitats by ensuring that all activities avoid adverse impacts on critical ecosystems and biodiversity. USP site selection will include a habitat sensitivity screening as part of ESP compliance checks prior to sub-project approval.
<i>Conservation of Biological Diversity</i>	✓	Low Risk: Project interventions are not expected to have any adverse impacts on biodiversity. A biodiversity screening will be conducted during USP sub-project design, with biodiversity impact mitigation measures incorporated into site-specific ESMPs where any risk is identified.
<i>Climate Change</i>	✓	No Risk: The project will comply with the AF Environmental and Social Policy (ESP) on Climate Change by ensuring that all activities contribute to climate resilience and do not exacerbate greenhouse gas (GHG) emissions. The project will promote low-carbon, climate-smart practices, NbS, and sustainable resource management practices. It will align with national climate policies and commitments under the Paris Agreement to enhance adaptive capacity and mitigation co-benefits.
<i>Pollution Prevention and Resource Efficiency</i>	✓	Low Risk: The project will comply fully with Pollution Prevention and Resource Efficiency by adopting sustainable practices that minimize pollution and optimize resource use. The project will prioritize low-carbon technologies, sustainable land and water management, and eco-friendly materials to limit environmental impacts.
<i>Public Health</i>		Low Risk: No adverse impact on public health related issues is envisaged. Site-specific ESMPs will address any residual public health risks identified during USP sub-project screening.
<i>Physical and Cultural Heritage</i>	✓	Low Risk: Cultural tourism may intersect with sacred or heritage sites. Mapping, community-led planning, and cultural sensitivity protocols will guide these activities. A cultural heritage assessment will be conducted as part of USP site screening.
<i>Lands and Soil Conservation</i>	✓	Low Risk: Minor infrastructure (e.g., trails, bioswales, solar rest points) may cause localized soil disturbance. These will be managed through restoration plans and best practices. All USP site selections will include a soil and land sensitivity assessment as part of ESP compliance screening prior to sub-project approval.

PART III: IMPLEMENTATION ARRANGEMENTS

The project will be implemented by the United Nations Industrial Development Organization (UNIDO) as the Multilateral Implementing Entity (MIE), co-executed in partnership with DASTA and GISTDA. This framework ensures national ownership, technical specialization, and inclusive participation across all four components.

UNIDO, as MIE, will be accountable to the AF for overall fiduciary management, quality assurance, compliance with environmental and social safeguards, and project cycle reporting. In addition to Components 3 and 4, UNIDO will execute selected activities under Component 2. UNIDO's added value is to link hazard intelligence (Component 1) and community adaptation measures (Component 2) to MSME resilience, vocational skills, and investment readiness, ensuring that data and infrastructure translate into sustained livelihoods and scalable business models.

GISTDA will lead execution of Component 1, producing district-specific hazard and vulnerability maps, developing an integrated climate risk information system linked to THAI DISASTER ALERT, Cell Broadcast Service, building decision-support tools that combine satellite data and ethnic knowledge, implementing anticipatory adaptation measures, and establishing an open-access knowledge platform.

DASTA will lead execution of Component 2 and co-execution of Component 3. Under Outcome 2.1, DASTA will guide CBT governance, tailored risk training, integration of adaptation into subdistrict development plans, and deployment of district-specific NbS. Under Outcome 2.2, DASTA will work with UNIDO to implement climate-smart infrastructure (e.g. solar cooling, water-efficient kitchens, renewable backup systems). In Component 3, DASTA will support MSME adaptation diagnostics, blended training, business case development, and uptake of climate-resilient production methods in coffee, textiles, handicrafts, and agro-tourism.

A Project Steering Committee (PSC) chaired by the Governor of Chiang Rai will provide strategic guidance, with representation from UNIDO, DASTA, GISTDA, the Ministries of Tourism and Sports, Interior, Agriculture and Cooperatives, and Finance, as well as private sector, women's groups, ethnic organizations, and academia. The final composition will be confirmed at full proposal stage.

A. Demonstrate how the project/programme aligns with the Results Framework of the AF

Project Objective(s) ¹	Project Objective Indicator(s)	AF Outcome	AF Outcome Indicator	Grant Amount (USD)
Objective 1: Strengthen the climate resilience of Thailand's CBT ecosystems and MSME value chains in Chiang Rai through risk intelligence, NbS, resilient infrastructure, and adaptive supply chains.	- No. of districts applying climate risk intelligence in planning and investment decisions - No. of CBT facilities and MSMEs with operational adaptation measures - % of targeted households with more secure and climate-resilient tourism-linked livelihoods	Outcome 1: Reduced exposure to climate-related hazards and threats Outcome 3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level Outcome 4: Increased adaptive capacity within relevant development sector services and infrastructure assets Outcome 6: Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas Outcome 7: Improved policies and regulations that promote and enforce resilience measures Outcome 8: Support the development and diffusion of innovative adaptation practices, tools and technologies	1.1: No. of projects/programmes that conduct and update risk and vulnerability assessments 3.1: % of targeted population aware of predicted adverse impacts of climate change, and of appropriate responses 4.1.2: No. of physical assets strengthened or constructed to withstand climate variability 6.2: % of targeted population with sustained climate-resilient alternative livelihoods 7: Climate change priorities are integrated into national development strategy 8: Innovative adaptation practices are rolled out, scaled up, encouraged and/or accelerated at regional, national and/or subnational level	10,000,000
Total objective level grant amount				10,000,000

Project Outcome(s)	Project Outcome Indicator(s)	AF Output	AF Output Indicator	Grant Amount (USD)
Outcome 1.1 Tourism authorities, local actors, and planners in Chiang Saen, Mae Sai, Mae Chan, and Mae Fa Luang systematically apply climate risk intelligence to implement localized adaptation strategies, reducing vulnerability to floods, droughts, heat stress, and landslides	- No. of hazard maps, dashboards, and decision-support tools developed and applied in 4 districts - No. of stakeholders trained in climate risk intelligence use	Output 1.1: Risk and vulnerability assessments conducted and updated	1.1: No. of risk assessments and decision-support tools produced and applied for planning	1,500,000
Outcome 2.1 Local and subnational tourism governance mainstreams climate adaptation through inclusive participation in the four districts..	- No. of LAO and CBT plans updated with adaptation actions - No. of community adaptation hubs operational	Output 7: Improved integration of climate-resilience strategies into country development plans	7.2: No. of subnational plans/policies updated to include climate change priorities	2,000,000
Outcome 2.2: Proven food, energy, and infrastructure solutions are deployed to ensure continuous service delivery and reduce vulnerability in tourism-dependent areas.	- No. of CBT facilities upgraded with resilient infrastructure - No. of women/youth trained in eco-construction and facility management	Output 4: Vulnerable development sector services and infrastructure assets strengthened	4.1.2: No. of physical assets strengthened (solar cooling, water-efficient kitchens, backup solar)	1,000,000
Outcome 3.1 Tourism-linked MSMEs in Chiang Saen, Mae Sai, Mae Chan, and Mae Fa Luang adopt climate-resilient practices and become investment-ready.	- No. of MSMEs with diagnostics, adaptation plans, and business cases - No. of MSMEs receiving blended training and coaching	Output 6: Targeted individual and community livelihood strategies strengthened	6.1.1: No. of adaptation assets created or strengthened for MSMEs	1,400,000
Outcome 3.2: Proven adaptation solutions in MSMEs are deployed in the four districts and scaled through provincial and national value chains, demonstrating resilience and attracting sustainable investment.	- No. of MSMEs adopting solar dryers, water-efficient dyeing, resilient handicraft materials, or adaptive agro-tourism models - No. of MSMEs accessing certification or financing pathways	Output 8: Viable innovations rolled out, scaled up, encouraged, and/or accelerated	8.1: No. of innovative adaptation practices scaled/replicated	2,113,438
Outcome 4.1: Community-based adaptation lessons are systematically captured, translated into policy and practice, and disseminated nationally and regionally to scale climate-resilient tourism	- No. of toolkits, case studies, and policy briefs produced - No. of people reached via communication/visibility campaigns	Output 3.2: Strengthened capacity to capture and disseminate knowledge and learning	3.2.2: No. of knowledge products and technical exchanges produced and disseminated	581,000
Total output level grant amount				8,594,438

¹ The AF utilized OECD/DAC terminology for its results framework. Project proponents may use different terminology but the overall principle should still apply

PART IV: ENDORSEMENT BY GOVERNMENT AND BY THE IMPLEMENTING ENTITY**A. Record of endorsement on behalf of the government²**

Provide the name and position of the government official and indicate date of endorsement. If this is a regional project/programme, list the endorsing officials all the participating countries. The endorsement letter(s) should be attached as an annex to the project/programme proposal. Please attach the endorsement letter(s) with this template; add as many participating governments if a regional project/programme:

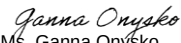
Mr. Phirun Saiyasitpanich Director General Department of Climate Change and Environment Ministry of Natural Resources and Environment	Date: February 9, 2026
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B. Implementing Entity certification

Provide the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the project/programme contact person's name, telephone number and email address

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans and subject to the approval by the Adaptation Fund Board, commit to implementing the project/programme in compliance with the Environmental and Social Policy and the Gender Policy of the Adaptation Fund and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.

Each Party shall designate and communicate to the secretariat the authority that will endorse on behalf of the national government the projects and programmes proposed by the implementing entities.

Name & Signature	
 Ms. Ganna Onysko Senior GEF, GCF, AF Coordinator Division of Funding Partner Relations Directorate of Global Partnerships and External Relations United Nations Industrial Development Organization - UNIDO Implementing Entity Coordinator	
Date: June 6, 2026	Tel. and email:
Project Contact Person: Virpi Stucki, Chief, Fair Production, Sustainable Standards and Trade	
Tel. And Email: v.stucki@unido.org ; +43 1 26026 3752	
And also cc to Stefan Pahl S.PAHL@unido.org	

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No. 0804/ ๒๒๓



Ministry of Natural Resources
and Environment
92 Soi Phahon Yothin 7
Phahon Yothin Road
Bangkok 10400 Thailand
Tel./Fax. (+66) 2 298 5646

February B.E. 2569 (2026)

To: The Adaptation Fund Board

**Subject: Endorsement for Building Climate-Resilient Community-Based
Tourism and Sustainable Supply Chains in Chiang Rai, Thailand (Single-Country Project)**

In my capacity as Designated Authority for the Adaptation Fund in Thailand, I confirm that the above national project proposal is in accordance with the government's national priorities in implementing adaptation activities to reduce adverse impacts of, and risks, posed by climate change in Thailand.

Accordingly, I am pleased to endorse the above project proposal with support from the Adaptation Fund. If approved, the project will be implemented by the United Nations Industrial Development Organization (UNIDO) and executed by Thailand's Designated Areas for Sustainable Tourism Administration (Public Organization) in collaboration with the Geo-Informatics and Space Technology Development Agency (Public Organization).

Yours sincerely,

(Mrs. Raweewan Bhuridej)
Permanent Secretary

Ministry of Natural Resources and Environment

I hereby endorse and validate this Letter of Endorsement (LOE)

(Mr. Phirun Saiyasitpanich)

Director General

Department of Climate Change and Environment

Adaptation Fund Board Secretariat
c/o Global Environmental Facility,
Mail stop: N 6-600
1818 H Street NW
Washington D.C.
Email: Secretariat@Adaptation-Fund.org
Fax: 202 522 3240/5

Primary Contact Point of the Designated Authority to the Adaptation Fund