



## Enhancing Climate Resilience of Northern Highland Communities

### TERMS OF REFERENCE

#### Integrated Impact Evaluation: Baseline and Endline Study

#### Component A: Ecosystem Services Assessment

### 1. Overview

<b>Consulting Team</b>	Team Leader + supporting technical specialists (remote sensing, GIS, field ecology, Digital Platform Specialist)
<b>Project</b>	Enhancing Climate Resilience of Northern Highland Communities
<b>Contracting Authority</b>	Raks Thai Foundation (RTF)
<b>Assignment Type</b>	Component A — Ecosystem Services Assessment (Baseline and Endline)
<b>Total Duration</b>	Approx. 50–60 working days across both phases
<b>Baseline Study Period</b>	July – September 2026
<b>Endline Study Period</b>	July – December 2028
<b>Application Deadline</b>	Two (2) weeks from date of publication of this TOR
<b>Geography</b>	38 communities across Chiang Mai, Chiang Rai, Nan, and Lamphun Provinces
<b>Total Budget (Ceiling)</b>	1,000,000 baht (inclusive of all applicable taxes, lump sum, both phases combined)
<b>Reporting To</b>	Programme Manager, Raks Thai Foundation

### 2. Background and Scope of the Project

The **Enhancing Climate Resilience of Northern Highland Communities** project is a three-year initiative (January 2026 – December 2028) funded by the European Union (EU) and implemented by the Raks Thai Foundation (RTF) in partnership with CARE France, IMPECT, and the Hug Muang Nan Foundation.

Thailand's northern highlands contain critical watershed forests that supply water to the Chao Phraya River Basin, the country's primary water source. However, communities in these areas are increasingly affected by climate change, including erratic rainfall, water shortages, declining agricultural productivity, and growing food insecurity. Indigenous Peoples and ethnic minority communities possess valuable traditional knowledge related to landscape management and biodiversity conservation, but their contributions remain underutilized due to capacity limitations, policy constraints, and restricted access to financial resources.

The project operates in 38 highland communities across four provinces and is expected to benefit approximately 175,000 people. It aims to achieve two Specific Objectives:

- **SO1:** Enable local development actors (CSOs and sub-district administrative organisations) to lead and implement community-based adaptation with a focus on ecosystem-based adaptation (EbA) and green economy approaches.
- **SO2:** Enhance the voice of women and youth to better engage in environmental policy-making and implementation.

As part of the project's Monitoring, Evaluation, Accountability, and Learning (MEAL) framework, an integrated Baseline Study (July–September 2026) and Endline Study (October–December 2028) will be conducted to assess changes over the project period. The studies will examine ecosystem services, community adaptive capacity, and gender dimensions.

This Terms of Reference (TOR) covers **Component A: Ecosystem Services Assessment**. The assessment will generate environmental and ecosystem-related evidence that contributes to the project's broader learning and evaluation framework and inform complementary analyses on community resilience, adaptive capacity, and gender dimensions undertaken separately under the project. The Consultant shall ensure that key findings, maps, spatial datasets, indicators, and analytical outputs are clearly documented and presented in a format that can be readily shared and used by RTF and other assessment teams.

### 3. Objectives of the Assignment (Component A)

- Conduct spatial and time series monitoring and analysis of ecosystems in the project's target areas and assess overall change value over the project period.
- Establish baseline values for ecosystem services (Indicators 1.2 and 1.3) through rigorous remote sensing, GIS analysis, and standardised field measurements across 38 communities.
- Develop a composite Ecosystem Services Index providing the baseline for the 30% enhancement target (Indicator 1.3), with a transparent, documented weighting methodology reproducible at endline.
- Design replicable measurement protocols for RTF field staff and community leaders to use for routine monitoring throughout the project lifecycle.
- At endline, conduct rigorous comparative analysis against baseline values to assess project impacts.

## 4. Scope of Work — Component A: Ecosystem Services Assessment

### 4.1 Baseline Study

#### 4.1.1 Remote Sensing and GIS Analysis

- Acquire and process multi-temporal satellite imagery (Sentinel-2, Landsat, or equivalent; 10-year time series 2016–2026) for all 38 communities and relevant sub-districts.
- Integrate community Participatory GIS (PGIS) data for boundary verification and refinement.
- Map sustainable agricultural/pastoral land use areas in rai/ha via GIS layers.
- Compile complete GIS database with metadata and data dictionary.
- Conduct a technical Ecosystem Services Assessment for Indicators 1.2 and 1.3 that include forest cover, biomass, hotspots, burn scars, vegetation fertility (NDVI), soil moisture (SMI), soil loss (RUSLE), and assess equivalent monetary value of ecosystem services.

#### 4.1.2 Composite Ecosystem Services Index

- Develop a composite index integrating all five ecosystem service categories as the baseline for Indicator 1.3 (30% enhancement target).
- Weighting methodology must be transparent, fully documented, and reproducible at endline.

#### 4.1.3 Community-Based Monitoring

- In consultation with RTF, develop practical and user-friendly community monitoring protocols and tools for field monitoring of ecosystem services that can be applied by community leaders and RTF field staff for mid-term and endline monitoring.

- Establish a community-accessible ecosystem services database and user-friendly digital platform, dashboard, or mobile-accessible interface integrating key project data, including land use, forest cover change, watershed information, and ecosystem service indicators.
- Facilitate knowledge-sharing and training sessions to strengthen community understanding of environmental change, ecosystem conditions, and ecosystem service trends identified through the assessment.
- Provide guidance on how environmental data, maps, and assessment findings can be used for climate adaptation planning, natural resource management, awareness raising, advocacy, and community decision-making.
- Develop simple procedures for communities to collect, record, contribute, and utilize monitoring data over time.
- Protocols and tools should include recommended indicators, sampling approaches, data recording formats, equipment requirements (where applicable), and guidance for interpretation and use of results.

## 4.2 Endline Study

- Assess community-based monitoring capacity and ecosystem services data of the trained community leaders and RTF field staff.
- Repeat the technical Ecosystem Services Assessment in the target sub-districts and communities and assess change value against the baseline.

## 5. Methodology

A rigorous technical approach combining remote sensing/GIS analysis with field-based measurements is required. The consultant team must demonstrate a coherent study design integrating satellite analysis with participatory field validation.

### 5.1 Technical / Ecosystem Methods

- Multi-temporal satellite imagery analysis (Sentinel-2, Landsat, or Google Earth Engine; 2016–2026).
- Participatory GIS: Community mapping sessions with forest committee members to integrate local spatial knowledge with satellite-derived data.
- Standardised field sampling: Biomass plots (allometric equations), soil analysis (carbon, moisture, texture, infiltration), stream flow and groundwater assessments, RUSLE erosion plots, fire hotspot GPS verification.
- Composite Ecosystem Services Index with transparent, documented weighting methodology reproducible at endline.

## 6. Indicators to Be Measured (Component A)

Code	Indicator	Baseline	Endline Target	Consultant Role
I2	Areas of agri-pastoral ecosystems with sustainable management practices (ha) — GIS/spatial mapping	0 ha	1,200 ha	Baseline + Endline (GIS/mapping)
1.2	# of ha of community forests spatially documented in GIS	15,043 ha (to verify)	15,043 ha	Baseline + Endline (GIS/mapping)
1.3	% enhancement of ecosystem services: forest cover, water regulation, carbon sequestration, soil moisture retention, reduced soil loss	0%	30%	Baseline + Endline

## 7. Timeline and Deliverables (Component A)

All written deliverables must be submitted in both English and Thai. GIS deliverables must be provided in PDF and shapefile formats. RTF written approval is required before the next payment milestone is triggered.

#	Deliverable	Content	Due Date
B1	Inception Report	The concept of ecosystem services, PES, and benefits to highland communities; rationale for the selected methods and tools for ecosystem assessment, detail data collection protocol and tools for 4.1.1, 4.1.2, 4.1.3; outline the workplan and deliverables for both baseline and endline collection; detail the weekly workplan for the baseline collection and coordination with RTF.	July 2026, Week 2
		RTF-Approved Data Collection Protocol and Instruments	July 2026, Week 3
B3	Cleaned Ecosystem Datasets	Ecosystem services datasets; GIS database; data dictionary; QA documentation.	Aug 2026, Week 3
B4	Draft Baseline Report (Ecosystem Component)	Ecosystem services assessment; composite Ecosystem Services Index baseline value; GIS maps; baseline values for Indicators I2, 1.2, and 1.3.	Sept 2026, Week 1
B5	Final Baseline Report and print-out maps for communities	Revised report incorporating RTF and CARE France feedback. English and Thai versions. Technical annexes, replicable measurement protocols, GIS maps (PDF + shapefiles), print-out maps for communities.	End of Sept 2026
B6	Stakeholder Dissemination	Presentation of ecosystem findings to RTF, CARE France, IMPECT, and provincial stakeholders.	End of Sept 2026
E1	Updated Inception Note (Endline)	Confirmation of methodology consistency with baseline; updated sampling plan and coordination arrangements.	Oct 2028, Week 1
E2	Cleaned Endline Ecosystem Datasets	Ecosystem reassessment data; GIS database update; data dictionary.	Nov 2028, Week 2
E3	Draft Endline Report (Ecosystem Component)	Comparative baseline–endline analysis for ecosystem indicators; impact assessment; policy and programmatic recommendations.	Nov 2028, Week 3
E4	Final Endline Report	Revised report incorporating feedback; lessons learned; scaling recommendations. English and Thai versions.	Nov 2028, Week 4
E5	Stakeholder Dissemination (Endline)	Presentation of endline findings for policy dialogue with DCCE and provincial authorities.	Dec 2028

## 8. Implementation Timeline

Phase	Key Step / Activity	Timing	Responsible
PROCUREMENT	Contract negotiation and signing	May – June 2026	RTF + Consultant

BASELINE	Kick-off meeting; document review; Inception Report submission (B1); RTF written approval of instruments (B2)	July 2026, W1–2	Consultant RTF →
	Field data collection — ecosystem measurements (GIS, remote sensing, field plots)	July 2026, W2–3	Consultant
	Data processing, cleaning, and analysis	July–Aug 2026	Consultant
	Draft baseline report (B4); RTF/CARE France review (max 5 working days)	Aug 2026, W4	Consultant RTF review →
	Final baseline report, GIS deliverables, measurement protocols (B5); Stakeholder dissemination (B6)	End of Sept 2026	Consultant
IMPLEMENTATION	Routine monitoring by RTF field team using consultant-designed protocols	2026–2028 (quarterly)	RTF MEAL Officer
ENDLINE	Consultant briefing; updated inception note (E1)	Oct 2028, W1–2	Consultant + RTF
	Endline field data collection — ecosystem reassessment	Oct W3 – Nov W2 2028	Consultant + RTF
	Data analysis; draft endline report (E3); RTF feedback; final endline report (E4)	Nov 2028	Consultant
	Stakeholder dissemination and policy dialogue (E5)	Dec 2028	RTF + Consultant

## 9. Required Team Composition and Qualifications

The consultant team for Component A must include the following roles. Applications from individuals covering multiple roles are acceptable where qualifications are clearly demonstrated.

### 9.1 Team Leader / Principal Investigator

- Advanced degree (PhD) in Environmental Science, Forestry, Geography, or related fields.
- Minimum 8 years' experience in ecosystem services assessment, community-based adaptation, or development programme evaluation.
- Demonstrated experience in evaluation for EU or equivalent international development projects.
- Experience with remote sensing, GIS, or participatory environmental assessment — or demonstrated ability to supervise specialists in these areas.
- Experience working with highland and ethnic minority communities in northern Thailand.
- Strong written and verbal English; Thai language strongly preferred.

### 9.2 Remote Sensing / GIS Specialist

- Master's degree or higher in GIS, Remote Sensing, Geoinformatics, or Forestry.
- Expert-level proficiency in ArcGIS or QGIS and remote sensing platforms (Google Earth Engine, ENVI, or equivalent).
- Demonstrated experience with forest cover classification and ecosystem service mapping in mountainous terrain.

- Minimum 5 years of professional experience.

### 9.3 Field Ecologist / Environmental Scientist

- Master's degree in Ecology, Environmental Science, Soil Science, or Hydrology.
- Field research experience in biomass sampling, soil analysis, and hydrological assessment in forested mountain environments.
- Experience working in northern Thailand highland ecosystems.
- Respectful and effective approach to working with ethnic minority communities.

### 9.4 Information Technology / Digital Platform Specialist

- Bachelor's degree or higher in Information Technology, Computer Science, Geographic Information Systems (GIS), Software Development, or a related field.
- Minimum 5 years of professional experience in developing web-based platforms, mobile applications, dashboards, or digital information systems.
- Demonstrated experience in designing user-friendly interfaces and data visualization tools for non-technical users.
- Experience integrating GIS, environmental, or monitoring data into digital platforms and databases.

One team member may cover more than one position provided that all required qualifications and competencies are demonstrated.

## 10. Budget and Payment Schedule

Budget ceiling: The total budget ceiling for Component A (this TOR) is 1,000,000 baht (inclusive of all applicable taxes), as a lump sum covering both the Baseline and Endline phases. This constitutes the absolute maximum financial obligation of RTF under this contract. The budget is strictly inclusive of all project-related expenses including professional fees, satellite imagery acquisition, GIS software, translation, report production, print-out maps, and all field logistics (transport and accommodation during data collection). No additional costs will be covered by RTF beyond this fixed lump sum.

Proposals must include a detailed budget breakdown by phase, by team member role, and by cost category.

Instalment	Milestone / Trigger	Amount (% of the contract value)
Baseline		Total 50% of the contract value
1st	Contract signing AND written approval by RTF of Inception Report and Data Collection Instruments (Deliverables B1 + B2)	30%
2nd	Written approval by RTF of the Baseline Report and completion of all Baseline deliverables (B5)	20%
Endline		Total 50% of the contract value
3rd	Approval of the detail endline plan (E1)	30%
4th	Written approval of the final endline report (E4, E5)	20%

## 11. Coordination Arrangements

- The consultant team reports to the RTF Project Manager and M&E Officer throughout both phases.
- Bi-weekly progress check-ins (virtual or in-person) during active data collection and report writing periods.
- RTF field staff will support community access, scheduling, and liaison with IMPECT for ethnic minority community protocols.
- The consultant team must participate in the baseline dissemination workshop (end of September 2026) and the endline policy dialogue session (December 2028).
- For the endline phase, the consultant team lead must attend a briefing with RTF at least one month before field data collection.

## 12. Ethical Considerations and Safeguards

- Free, Prior and Informed Consent (FPIC): Consent processes must be culturally appropriate for each ethnic minority group and conducted in the relevant local language.
- Ecological disturbance: Field sampling activities must follow 'leave no trace' principles and minimise disturbance to forest ecosystems.
- Data sharing with communities: Spatial data and key findings must be shared back with communities in accessible formats — Thai-language visual summary sheets and community-appropriate maps.
- Data protection: Personal identifiers must be anonymised in all datasets delivered to RTF. Handling must comply with CARE's Data Protection Policy and EU GDPR requirements.

Conflict of Interest: This assignment is funded by the European Union and is subject to EU procurement standards. All applicants must submit a signed Declaration of No Conflict of Interest with their application.

## 13. Intellectual Property and Data Ownership

All data, maps, GIS databases, reports, instruments, protocols, and other products generated under this assignment are the sole property of Raks Thai Foundation. The consultant team retains the right to use anonymised, aggregated data for academic research and publications, subject to prior written consent from Raks Thai Foundation. All resulting publications must acknowledge the EU-funded project and Raks Thai Foundation. Raw data containing personal identifiers must be securely deleted upon written acceptance of the final deliverable for each phase.

## 14. Selection Criteria

Criterion	Description	Weight
Technical expertise — ecosystem	Demonstrated experience in ecosystem services assessment, remote sensing/GIS, and field-based environmental measurement in highland or forested landscapes	35%
Experience with target context	Prior experience with EU-funded projects, ethnic minority highland communities, and/or community-based adaptation in northern Thailand	25%
Quality of technical proposal	Clarity, rigour of the proposed methodology; quality of sample data collection instruments	25%
Cost-effectiveness	Value for money; transparent daily rate per role; feasibility of proposed workplan within budget ceiling	15%

## 15. How to Apply

This TOR is published for a minimum two-week open application period to ensure transparency and equal opportunity in line with EU procurement standards. Interested individuals or teams must submit a complete application package to the address below by the stated deadline. Incomplete applications will not be considered.

### Required application package:

- CV(s) of all proposed team members, clearly indicating the role each person will fill and confirming availability for both the Baseline (July–September 2026) and Endline (October–November 2028) phases.
- Cover letter (maximum 2 pages): the team's motivation and directly relevant experience in ecosystem services assessment, remote sensing/GIS, and highland community contexts.
- Technical proposal (maximum 10 pages): proposed methodology for the ecosystem and GIS components; sampling framework; work plan.
- Sample data collection instruments: at minimum one draft ecosystem field measurement protocol or GIS data collection form relevant to this assignment.
- Financial proposal: daily rate per team member role; estimated number of days per role per phase; total cost for Baseline and Endline separately and combined. Proposals must not exceed EUR 38,400.
- Two professional references from clients who have managed the applicant(s) in a comparable assignment.
- Signed Declaration of No Conflict of Interest (template available on request from RTF).

### Submit to:

Email: [Rtfpdo@raksthai.org](mailto:Rtfpdo@raksthai.org)

Subject line: Application – TOR 1 (Component A) – Impact Evaluation – Climate Resilience Northern Thailand

Application Deadline: Two (2) weeks from the date of publication of this TOR. Late submissions will not be considered.

### For technical enquiries, contact:

Prattana Samransuk, Program Manager, Raks Thai Foundation

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