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16 March 2026

Adaptation Fund Board
Project and Programme Review Committee
Thirty-seventh Meeting
Bonn, Germany, 7-8 April 2026

PROPOSAL FOR THAILAND (2)

ADAPTATION FUND BOARD SECRETARIAT TECHNICAL REVIEW OF PROJECT/PROGRAMME PROPOSAL

PROJECT/PROGRAMME CATEGORY:

Country/Region: Thailand
Project Title: Building Climate-Resilient Municipalities in Thailand: Integrating Health Adaptation and Climate Change Education
Thematic Focal Area: Health and Education
Implementing Entity: World Health Organization (Lead)
Executing Entities: Ministry of Public Health (Department of Health), Ministry of Education (Office of Educational Council, Office of Basic Education Commission)
AF Project ID: AF00000517
IE Project ID:
Requested Financing from Adaptation Fund (US Dollars): 10,000,000
Reviewer and contact person: Alexandra Munoz
Co-reviewer(s): Timileyin Oyebade
IE Contact Person:

Technical Summary	The project "Building Climate-Resilient Municipalities in Thailand: Integrating Health Adaptation and Climate Change Education" aims to reduce the health impacts of climate change in Thailand, including deaths and illnesses from heatwaves, dengue, COPD, and flooding injuries and deaths, by at least 5% compared to the past 5-year average values, by improving health-climate resilience in municipalities in Thailand through addressing adaptation gaps/needs in four key areas. This will be done through the four components below: Component 1: National Policy Frameworks, Support Mechanisms and Systems (USD 2,366,590); Component 2: Strengthening Municipality-Level Health-Climate Resilience in High-Risk Areas through Pilot initiatives (USD 6,205,000); Component 3: Up-Scaling and Knowledge Management and Sharing (USD 400,000). Component 4: Monitoring, Evaluation, and Learning (USD 245,000). Requested financing overview: Project/Programme Execution Cost: USD -

	Total Project/Programme Cost: USD 9,216,590 Implementing Fee: USD 783,410 Financing Requested: USD 10,000,000 The proposal includes a request for a project formulation grant of USD 150,000. The initial technical review raises several issues, such as the lack of a Theory of Change, the lack of an Initial Gender Analysis, the need for revision of the vertical logic and their outcomes and outputs, clarifications about the use of USPs, among others, as is discussed in the number of Clarification Requests (CRs) and Corrective Action Requests (CARs) raised in the review.
Date:	March 3, 2026

Review Criteria	Questions	Comments First Review [March 3, 2026]
Country Eligibility	1. Is the country party to the Kyoto Protocol, and/or the Paris Agreement?	**Yes.** The country has ratified both the Kyoto Protocol (28 August 2002) and the Paris Agreement (21 September 2016).
	2. Is the country a developing country particularly vulnerable to the adverse effects of climate change?	**Yes.** Thailand is a developing country that is particularly vulnerable to the adverse effects of climate change. The country is highly exposed to extreme heat, floods, droughts, and climate-sensitive diseases, which have caused significant loss of life, damage to health and education infrastructure, and economic disruption, with Thailand repeatedly ranked among the most climate-impacted countries globally.
Project Eligibility	1. Has the designated government authority for the Adaptation Fund endorsed the project/programme?	**Yes.** As per the Endorsement letter dated February 2026.
	2. Does the length of the proposal amount to no more	**No.**

	than Fifty pages for the project/programme concept, including its annexes?	The proposal is 75 pages in total. **CAR1:** Kindly limit the document to 50 pages, including Annexes. Consider streamlining the background section to present only essential information in a concise manner. **CR1:** Please provide a brief overview of the specific municipalities where the infrastructure pilot will take place, offering justification for the selection of this area and ensuring a smooth flow. **CR2:** The section addressing existing initiatives and baseline projects (Page 17) may be relocated to the complementarity section, and its content can be streamlined for conciseness. Please avoid repeating information throughout the different parts of the CN. **CR3:** Please include: (i) captions in all tables and figures, including the tables of the AF CN template such as the Table "Project/Programme Components and Financing". (ii) paragraph numbering to facilitate easier referencing and review.
	3. Does the project / programme support concrete adaptation actions to assist the country in addressing adaptive capacity to the adverse effects of climate change and build in climate resilience?	**No.** **Further information is needed.** *Part II.A, pages 24-38.* The project clearly supports concrete adaptation actions that strengthen Thailand's adaptive capacity and climate resilience. The project goes beyond routine health or education programming by explicitly addressing climate-induced risks. It also provides a description of the objectives, their components, expected outcomes, outputs and activities. However, the objectives need to be revised;

		there is no Theory of Change included nor an initial gender analysis, among other issues. **CR4:** Please revise the general and specific objectives to reflect the latter as concrete, measurable results to contribute to the overall purpose. To avoid attribution and measurement concerns, the percentage reduction in deaths and illnesses should be reflected in outcome-level indicators rather than the overall objective, which should focus on reducing vulnerability and strengthening adaptive capacity. **CR5:** Please revise all outcomes and outputs and: (i) Amend all of them, considering that **outcomes** are the expected results (e.g., strengthened institutional capacity) while **outputs** are the direct, tangible products (e.g., trainings held). For example, project output 1.1: "National policy framework/strategy and data support system for health-climate surveillance and early warning improved", corresponds to an outcome, as it represents a high-level change in capacity; therefore, it is a result rather than a product. (ii) Include the number of beneficiaries per outcome, disaggregated by gender. (iii) Include a target for each output. **CR6:** Please revise and amend activities using this definition: *activities are the specific operational tasks implemented to deliver each output. They should describe specifically what the project will finance rather than higher-level changes and should be clearly defined and feasible*. For example, project activity 1.1.1 "Improving national climate-health-related data system", corresponds to a structural change. An

		alternative could be “Integrate existing climate and health information systems into a unified national climate–health data platform”. **CR7:** Please revise and reorganize the components, outcomes, and outputs to ensure they are not mixed and are aligned with their respective specific objectives. For example, there are knowledge-related outputs such as 2.3 and 2.4 that could be included under Component 3. **CR8:** The proposal lacks details regarding infrastructure improvements. Could you specify the types of upgrades planned for these facilities? Additionally, please indicate which tools or technologies would be utilized. Providing basic information on these aspects would be appreciated. **CR9:** Please clarify whether the coordinated response mechanism outlined in section 2.1.3 is intended specifically for schools, or if it supplements the broader implementation of the response mechanism? **CR10:** The Monitoring and Evaluation activities within Component 4 should be incorporated into the IE and EE fees, rather than remaining as a separate component, and this structure should be reflected in the revisions. Knowledge and Learning are typically bundled together as an independent component. **CR11:** Kindly include a Theory of Change narrative and diagram to describe the vertical logic of the proposed project towards climate adaptation, including the following elements: (i) the main problem. (ii) the overall objective.

		(iii) outcomes, outputs, and activities. (iv) components (as the solutions and the specific results financed by this proposal). (v) assumptions and risks, as transversal elements across all the above. **CR12:** Several outputs in the 'project components and finance' table use process-oriented language without stating the tangible product explicitly. Kindly revise the output language to explicitly reference the specific output generated, rather than describing the resultant outcome or activities. See **CR5.** **CR13**: Please revise and clarify or amend the funding distribution among the four components, as for example, Component 2 currently represents approximately 62% of the total financing request, while Component 3 accounts for only 4%. 1. Provide more details on the activities to demonstrate the amount/size of work and substantiate allocated budgets. **CAR2:** Please clarify if the project activities include any un-identified subprojects (USPs). If so, please ensure to: (i) specify them and ensure related compliance with AF requirements. Refer to this link for guidance. (ii) include a sound justification for the use of USPs, if applicable, according to the guidance.
	4. Does the project / programme provide economic, social and environmental benefits, particularly to vulnerable communities, including gender considerations, while avoiding or mitigating negative impacts, in compliance with the Environmental and Social Policy and Gender	**No.** *Part II.B, pages 38-40.* The proposal provides broad information on economic, social, and environmental benefits, particularly to vulnerable communities, with attention to equity, gender, and risk mitigation. Targeting is based on health risk data, exposure to

	Policy of the Fund?	hazards, and population vulnerability. However, more information is required. **CAR3:** Please note that an Initial Gender Analysis is required at the concept stage and should inform. Please provide an Initial Gender Analysis based on desktop research to address at least: (i) the distinct needs, capacities, roles, and knowledge resources of women and men at the national level and in the areas of intervention. (ii) to identify how evolving gender dynamics may influence potential changes. **CR14:** Please outline how the benefits will be equitably distributed, specifically the benefits that women, the elderly and other vulnerable groups will receive from the economic, social and environmental perspectives. **CR15:** Please provide the beneficiaries and the quantification of the identified benefits for each outcome. If benefits quantification is not available, please include estimates of them. **CR16:** Please clarify the language in Page 40 “WHO’s Gender Mainstreaming Tool (GERD) will be used to guide the integration of gender-sensitive measures”. Please note that this should only be used in conjunction with the Adaptation Fund Gender Policy and Environmental and Social Policy to guide the project’s design and implementation. **CAR4:** Please consider including a Gender Action Plan and the complete Initial Gender Analysis as part of the PFG form. **CR17:** Please clarify/identify the USPs, and if so,

		include a brief discussion on how they will be managed to meet AF requirements. Refer to the AF guidance.
	5. Is the project / programme cost effective?	**Yes.** **However, further information is required.** *Part II.C, pages 40-43.* The proposal provides general logical justification for its scope and integrated approach and demonstrates cost-effectiveness from a sustainability perspective through quantified avoided health and infrastructure costs, preventive system-level investments, and strong potential for long-term institutionalization and scaling. However, the cost-effectiveness narrative is neither specific nor clear, and additional details are required. **CR18:** Please demonstrate the cost effectiveness of the intervention by using a distinct methodology or explain how its chosen approach offers advantages over alternative strategies. The proposal would benefit from a brief comparative analysis. **CR19:** Could you please clarify the rationale for selecting pilot areas exclusively from those designated as Gold Healthy City? Based on my understanding of this classification, would it not be more appropriate to consider piloting in other areas as well? **CR20:** Please consider using the description of the AF financing assistance in Part II.C as the specific objectives of the proposed project. These are: *"1) strengthen national policy frameworks for promoting national scaling of health-climate resilience in municipalities across the country, 2) create replicable and scalable pilot models of health-climate resilient municipalities for replication and up-scaling to the national and regional levels, and 3) support*

		dissemination of lessons from the project as well as national and regional scaling of pilot models". **CR21:** Kindly strengthen the cost-effectiveness narrative to provide a clear logic per component.
	6. Is the project / programme consistent with national or sub-national sustainable development strategies, national or sub-national development plans, poverty reduction strategies, national communications and adaptation programs of action and other relevant instruments?	**Yes.** **However, further information is required.** *Part II.D, pages 43-45.* The project proposal is consistent with Thailand's national and sub-national sustainable development and climate adaptation frameworks. The proposal identifies and aligns with all key adaptation-relevant strategies, including the NAP, NDC-related instruments, national development strategies, and sectoral plans, and demonstrates internal consistency with their priorities. However, more details are required. **CAR5:** Kindly provide the details of the identified plans and strategies in a table format, including: i. Specific name of the plan/strategy and years of implementation, ii. Main objective(s), iii. Explain the relevance to the proposed project, including its alignment with the existing plan or strategy. A suggested structure could be: *'The proposed project is aligned with [Plan XX], under [Specific Action XX], contributing to [Outcome XX].'*
	7. Does the project / programme meet the relevant national technical standards, where applicable, in compliance with the Environmental and Social Policy of the Fund?	**Not cleared.** *Part II.E, pages 45-47.* The proposal broadly identifies applicable national regulations—including environmental assessment requirements, building codes, energy-efficiency standards, occupational safety regulations, and public health and environmental

		standards—and commits to compliance through appropriate screening, permitting, and mitigation measures consistent with national law and AF ESP principles at the **Full Proposal stage**. However, details such as the compliance status, among others, are not provided. **CAR6:** Kindly include a table listing with all national standards applicable to the activities of the proposed project. For each identified standard, please include the following information: i. The **scope and relevance** should be described specifically. For example, by clarifying whether these are minimum requirements or standards for construction. ii. How is it **relating to the proposed project**, clearly identifying the outputs/activities that will require compliance with the identified standard. iii. The **project's compliance status**. In the case that compliance is required, please include the steps needed to comply with it.
	8. Is there duplication of project / programme with other funding sources?	**Not cleared.** *Part II.F, pages 47-48.* The proposal provides an outline of projects and demonstrates non-duplication with other funding sources. It identifies potentially overlapping initiatives, explains complementarity, and demonstrates how lessons learned from earlier initiatives informed the project design. However, more information is required. **CR22:** Kindly include the information in a table listing format for easier visualization and review,

		including all projects ongoing or executed in Thailand and related to the proposed project. For <u>each</u>, please include: (i) Project title, Timeline and specific Location within the country. (ii) Main project interventions, and Target population. (iii) Implementing entity. (iv) Lessons learned. (v) Overlaps and synergies with the proposed project. **CR23:** Please include a sound justification for each "no duplication" statement. Some examples could include highlighting the distinct geographic locations and/or types of interventions for each related project identified. **CR24:** Please include any relevant regional projects and AF-funded projects, if they exist. Previous AF-funded projects may provide lessons learned that can support the project design. **CR25:** Please provide some details on the coordinating mechanisms, if any, currently in place to ensure complementarity and synergy.
	9. Does the project / programme have a learning and knowledge management component to capture and feedback lessons?	**Yes.** **However, further information is required.** *Part II.G, pages 48-50.* The proposal includes a dedicated learning and knowledge management (KM) component, and it also embeds learning and feedback mechanisms across other components to ensure continuous improvement and knowledge sharing at local, national, and global levels. However, details such as previous agreements, entities involved, mechanisms to ensure the sustainability of

		lessons learned, among others, are not fully provided in the proposal. **CR26:** Consider consolidating Components 3 & 4 as a single Knowledge and Learning Component. **CR27:** Kindly include the following details: • More details of the Learning and Knowledge Management activities, including institutions involved, specific activities, and main goals. • What entity will be responsible for tracking the experiences gained, how this will be done, and what will be the frequency of that monitoring. • What feedback measures are put in place to evaluate and refine the training materials and capacity building activities to ensure that they are more effective and impactful. **CR28:** Please clarify how the knowledge generated will be sustained after the project concludes and what arrangements are required to support these actions. In addition, please indicate whether any pre-agreements have been established. For example, Component 3 explains that existing knowledge-exchange tools will be used; in this regard, are there any agreements already signed with the Ministry of Education, WHO, or any other institution to ensure this use?
	10. Has a consultative process taken place, and has it involved all key stakeholders, and vulnerable groups, including gender considerations in compliance with the Environmental and Social Policy and Gender Policy of the Fund?	**Yes.** **However, further information is required.** *Part II.H, pages 50-52.* The proposal demonstrates that an initial, inclusive consultative process has taken place, involving key national and sub-national stakeholders, as well as vulnerable and marginalized groups, with explicit attention to gender and inclusion, in compliance with AF ESP and Gender Policy

		requirements. However, more information is required. **CR29:** Please provide the following information for <u>each consultation</u>: i. The total number of attendees, disaggregated by sex, with background information to verify whether marginalized and vulnerable groups have been consulted. ii. Expand the summary of the subjects/issues discussed and any agreements reached. iii. Indicate how their interests have been incorporated, including how gender and other vulnerable group considerations were addressed. **CAR7:** Please provide an Initial Gender Analysis and explain how gender perspectives were factored into the consultation process. See **CAR3.**
	11. Is the requested financing justified on the basis of full cost of adaptation reasoning?	**Unsure.** *Part II.I, pages 52-53.* The requested financing is justified on the basis of full cost of adaptation reasoning but requires more information. **CR30:** Please confirm whether this project will require co-financing. The proposal mentions that the project will explore co-financing opportunities; therefore, please clarify how this could potentially affect the success of the project. In addition, if co-financing is required, please explain how the proposed project will achieve the outcomes and outputs solely with the AF resources. **CR31:** Please provide: • a detailed logical narrative on how the

		proposed project's objective will be achieved in terms of adaptation. • the costs of the proposed activities, including a comparison with alternative options.
	12. Is the project / program aligned with AF's results framework?	**Yes.** **However, some amendments are required.** *Part III.A, pages 65-69.* The proposal demonstrates alignment with the Adaptation Fund's Strategic Results Framework (2019) in terms of its objectives, components, and intended adaptation outcomes. However, some adjustments are required. **CAR8:** Please revise and amend the table on page 65(A) ensuring the following information is included in the table: • All project's outputs and outcomes indicators are SMART. • Please ensure consistency between the AF outcome, outcome indicators, output and output indicators according to the Adaptation Fund Strategic Results Framework outlined in the updated AF Results Framework (Nov 2025). • Ensure that the grant amount sum for the project outcomes for each component aligns with the corresponding amounts for each component in the Table of Project Components and financing.
	13. Has the sustainability of the project/programme outcomes been taken into account when designing the project?	**Unsure.** *Part II.J, pages 53-54.* The proposal provides some information on sustainability in its design and addresses key dimensions of sustainability—economic,

		social, environmental, institutional, and financial—while enabling replication and scaling beyond the project lifetime. However, further clarification is required. **CR32:** The proposal references the development of a 'costed transition plan to identify recurrent costs for inclusion in annual budgets' (Page 53). Kindly clarify the mechanisms that will be employed to manage these costs and ensure project sustainability in instances where the respective offices are unable to absorb them. **CR33:** See CR4, please provide some information on the type of upgrades and cost estimates including maintenance and how these costs will be sustained after the project. **CAR9:** Please revise Section J to address sustainability under separate headings: economic, social, environmental, institutional, and financial. Include considerations for O&M of infrastructure upgrades and potential replication or scaling up with other funding sources after project completion.
	14. Does the project / programme provide an overview of environmental and social impacts / risks identified, in compliance with the Environmental and Social Policy and Gender Policy of the Fund?	**No.** *Part II.K, pages 54-57.* The proposal provides a narrative overview of environmental and social risks and classifies the project as Category B under the Adaptation Fund ESP. Gender-specific context and vulnerabilities are acknowledged, and mitigation commitments are articulated. However, further information is required. **CAR10:** Please include in the Table in Part II.K: • Describe all potential impacts (direct, indirect, transboundary and cumulative) and risks that

		could result from the project. • Identify the magnitude of the risks and impacts **ie. No risk, low risk, medium risk or high risk.** Risk should describe as: "*There is a risk ….".* If no risk is identified, please provide sound reasoning/justification for this. • All identified risk should be accompanied by mitigation plans. Mitigation plans should be started by "*The mitigation plan for this risk is ….*" or "*to mitigate this risk, the project will ….*" • Kindly leave a check mark in the second column '**No further assessment required for compliance**' if no further assessment and leave blank if an assessment is to be conducted. **No text should be included in the second column.** **CAR11**: Please note for the checklist that Adaptation Fund Principles 1, 4 and 6 always apply. For more information, please visit: AF's ESP guidance and Environmental and Social Policy .
Resource Availability	1. Is the requested project / programme funding within the cap of the country?	**Yes.** The country cap balance for Thailand is USD 40,000,000.
	2. Is the Implementing Entity Management Fee at or below 8.5 per cent of the total project/programme budget before the fee?	**Yes.** **As per information provided in Table "Project/Programme Components and Financing" and PFG Form.** All figures are rounded to whole numbers, and the Implementing Entity Management Fee is exactly 8.5% (USD 783,410). The figures add up across the tables. The PFG request is correct in size (USD 150,000), including the PFG fee for the Implementing Entity's Management of 8% (USD

		12,000).
	3. Are the Project/Programme Execution Costs at or below 9.5 per cent of the total project/programme budget (including the fee)?	**Unsure.** The figures are rounded to whole numbers and are consistent throughout the CN. However, the Execution Costs are not clear. Currently, there is a title, "Total Activities and Project/Programme Execution Cost," which sums USD 9,216,590 (the total of the components budget). In addition, the executing entity should be clarified. **CR34:** Kindly ensure that the Execution Cost is clearly highlighted. Please note that it must not be included as a bundled component. **CR35:** Please amend Table "Project/Programme Components and Financing" using the AF template for CN. It should include: (i) Project/Programme Execution cost; (ii) Total Project/Programme Cost; (iii) Project/Programme Cycle Management Fee charged by the Implementing Entity (if applicable); (iv) Amount of Financing Requested. Please see the cost and fees definitions here. **CR36:** Please clarify whether the Municipal Offices in the selected pilot municipalities are executing entities. If so, please include them on the cover page. Please refer to this AF definition.
Eligibility of IE	1. Is the project/programme submitted through an eligible Implementing Entity that has been accredited by the Board?	**Yes.** World Health Organization (WHO) is an accredited Multilateral Implementing Entity (MIE).

		Accreditation Expiration Date: 24 November 2028. **CR37:** Please clarify what "Implementing partner" means. Does it refer to an Implementing Entity? Is the Implementing Entity WHO or UNICEF? Please amend it accordingly on the cover page.
Implementation Arrangements	1. Is there adequate arrangement for project / programme management, in compliance with the Gender Policy of the Fund?	n/a at concept stage
	2. Are there measures for financial and project/programme risk management?	n/a at concept stage
	3. Are there measures in place for the management of environmental and social risks, in line with the Environmental and Social Policy and Gender Policy of the Fund?	n/a at concept stage
	4. Is a budget on the Implementing Entity Management Fee use included?	n/a at concept stage
	5. Is an explanation and a breakdown of the execution costs included?	n/a at concept stage
	6. Is a detailed budget including budget notes included?	n/a at concept stage
	7. Are arrangements for monitoring and evaluation clearly defined, including budgeted M&E plans and sex-disaggregated data, targets and indicators, in compliance with the Gender Policy of the Fund?	n/a at concept stage
	8. Does the M&E Framework include a break-down of how implementing entity IE fees will be utilized in the supervision of the M&E function?	n/a at concept stage
	9. Does the project/programme's results framework align with the AF's results framework? Does it include at least one core outcome indicator from the Fund's results framework?	n/a at concept stage
	10. Is a disbursement schedule with time-bound milestones included?	n/a at concept stage

CONCEPT NOTE PROPOSAL FOR SINGLE COUNTRY

PART I: PROJECT/PROGRAMME INFORMATION

Title of Project/Programme:	Building Climate-Resilient Municipalities in Thailand: Integrating Health Adaptation and Climate Change Education
Country:	Thailand
Thematic Focal Area:	Health and Education
Type of Implementing Entity:	Multilateral Implementing Entity
Implementing Entity:	World Health Organization (Lead)
Implementing Partner:	United Nations Children's Fund (Support)
Executing Entities:	Ministry of Public Health (Department of Health) Ministry of Education (Office of Educational Council, Office of Basic Education Commission)
Amount of Financing Requested:	10,000,000USD (in U.S Dollars Equivalent)

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

Amount of Requested financing for PFG: 150,000USD (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: Click or tap to enter a date.

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

Abbreviations

AF	Adaptation Fund
BHAP	Belém Health Action Plan
CG	Caregiver
CM	Care manager
COP	Conference of the Parties of the UNFCCC
COPD	Chronic Obstructive Pulmonary Diseases
CRI	Global Climate Risk Index
CWD	Children with Disabilities
DCCE	Department of Climate Change and Environment
DDC	Department of Disease Control
DDPM	Department of Disaster Prevention and Mitigation
DLA	Department of Local Administration
DMS	Department of Medical Services
DOH	Department of Health
DOLE	Department of Learning Encouragement
DOP	Department of Older Persons
DPT	Department of Public Works and Town & Country Planning
DRR	Disaster Risk Reduction
EESD	Environmental Education for Sustainable Development
EHIA	Environmental Health Impact Assessment
EIA	Environmental Impact Assessment
ESAO	Educational Service Area Office
ESMS	Environmental and Social Management System
ESP	Environmental and Social Policy
EWS	Early Warning System
GCF	Green Climate Fund
GCM	Global Climate Model
GEEW	Gender Equality and Women's Empowerment
GERD	WHO's Gender Mainstreaming Tool
GHG	Green House Gas
GISTDA	Geo-Informatics and Space Technology Development Agency
GLOBE	Global Learning and Observations to Benefit the Environment
GP	Gender Policy
GPD	Gross Domestic Product
IOM	International Organization for Migration
IPST	The Institute for the Promotion of Teaching Science and Technology
LAO	Local Administrative Organization
LGBTQ+	People who identify with a range of sexual orientations and gender identities beyond heterosexual and cisgender
LPHC	Local (sub-district) Health Promotion Hospital
M&E	Monitoring and Evaluation
mm	millimeters
MOE	Ministry of Education
MOI	Ministry of Interior
MONRE	Ministry of Natural Resources and Environment
MOPH	Ministry of Public Health
MSDHS	Ministry of Social Development and Human Security
NAP	National Adaptation Plan
NPDMP	National Plan on Disaster Prevention and Mitigation
NGO	Non-Governmental Organization
OBEC	Office of Basic Education Commission
OEC	Office of Education Council
OPS	Office of the Permanent Secretary
PAO	Provincial Administrative Organization
PM	Particulate Matter
PSC	Project Steering Committee
RCP	Representative Concentration Pathway
RHPCs	Regional Health Promotion Centers
SEhRT	Special Health Emergency Response Team
SOP	Standard Operating Procedure
THB	Thai Baht
TMD	Thai Meteorological Department
UN	United Nations
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNICEF	United Nations Children's Fund
USD	United States Dollar
VHV	Village Health Volunteer
WASH	Water, Sanitation, and Hygiene
WHO	World Health Organization
WHO SEARO	World Health Organization South-East Asia Regional Office

Project/Programme Background and Context:

Thailand's vulnerability to climate change and overall climate change impacts

Physical Context:
Thailand is located in the tropical zone of the Southeast Asia region encompassing a total area of 513,115 km2. The country comprises the Northern high mountains, the Central plains, the Northeast plateau, and the Southern coastal plain, which is a narrow peninsula with a total coastline of 3,151.02 km consisting of the Andaman Sea coast in the west and the Gulf of Thailand coast in the east. The country is divided into 76 provinces, excluding the capital, Bangkok. Thailand's climate is tropical and influenced by two seasonal monsoon winds most of the year. The southwest monsoon brings a stream of warm and moist air from the Indian Ocean toward Thailand from mid-May to mid-October and results in the rainy season, causing abundant rain over most of the country. The northeast monsoon brings cold and dry air from the anticyclone in the Chinese mainland over major parts of Thailand, mainly the Northern and Northeastern regions, from mid-October to mid-February, and results in the winter season. The interval between these two seasonal monsoons from mid-February to mid-May is the pre-monsoon season or summer season.

Figure 1. Map of Thailand
Source: Department of Field Cartographic Section, United Nations (UN)

The national physical context reveals Thailand's vulnerability to climate change impacts as above-average temperatures have risen, precipitation has fluctuated over time, and its long coastal zone has faced sea-level rise. The country's vulnerability to climate change impacts has been well documented and acknowledged. In the past decades, recurrent extreme weather events such as extreme rainfall, heat waves, and droughts have taken a heavy toll on both lives and properties and adversely affected the country's economy and ecosystems. Based on the Global Climate Risk Index (CRI) 2019, 2020 and 2021 developed by Germanwatch, which analyzed direct impacts of extreme weather events in terms of fatalities

and economic losses that occurred, Thailand was ranked among the top ten out of 181 countries most impacted in one single year of 2017, and also during the past long-term (two-decade) period of 1999-2018, and of 2000-2019. Furthermore, based on the most recent CRI 2026, which analyzed impacts of extreme weather events in terms of economic losses and not only fatalities but also the number of people affected, injured and homeless, Thailand was ranked 17th in 2024, and 22nd during the three-decade period of 1995-2024. Numerous extreme weather-related events, such as extreme rainfall and severe and widespread floods, for instance, in 2011, 2021 and 2022, have resulted in massive and widespread economic losses in various sectors, such as agricultural, tourism and manufacturing sectors, and have adversely affected the ecosystems, biodiversity, as well as health and wellbeing of the populations.

Extreme rainfall and floods have also caused a substantial number of direct injuries, illnesses, and deaths, and have led to infrastructure losses and damages including those of health and school infrastructure. The most recent catastrophic flooding—triggered by the heaviest rainfall in 300 years—struck Hat Yai District in Songkhla Province and nine of the fourteen southern provinces in November 2025. The Ministry of Public Health (MOPH) reported that only in this flooding incident and in Songkhla Province alone, there were more than 145 deaths (mostly from drowning), several hundred injuries and illness cases, and nearly 3 million people affected. Flooding also severely impacted MOPH health facilities across the nine provinces, with total damages estimated at USD 30.2 million. Only Hat Yai Hospital alone suffered losses and damages of approximately USD 25.5 million. According to the Ministry of Education (MOE), only in this flooding incident, nearly 148,000 students, 8,290 teachers were affected, and 1,090 schools were damaged.

Moreover, extreme heat and the spread of vector-borne climate-related diseases such as dengue, associated with increasing temperature and rainfall, have contributed to a considerable number of illness cases and deaths in Thailand. Therefore, adaptation efforts to reduce and respond to the adverse impacts of climate change have become Thailand's top and urgent national agenda.

Thailand's National Adaptation Policy, Plans and Priority Sectors

Thailand has formulated the Climate Change Master Plan (2015–2050) which serves as a long-term national policy framework aimed at transforming the country into a climate-resilient and low-carbon society. The plan is built around three core strategies; climate change adaptation, climate change mitigation, and capacity building. Under the adaptation strategy, six priority sectors have been identified to enhance resilience and reduce vulnerability to climate impacts: Water Resources Management, Agriculture and Food Security, Tourism, Public Health, Natural Resource Management, Human Settlements and Security.

To support action across the six priority sectors at both national and sub-national levels, Thailand developed the National Adaptation Plan (NAP) 2018–2037. The NAP provides a comprehensive framework to guide agencies in integrating climate change adaptation into sectoral and local planning. It also informs domestic budget allocation and international support aligned with Thailand's adaptation priorities. Recognizing that adaptation is a long-term process, the NAP's timeline is aligned with the National Strategy and the National Economic and Social Development Plan (2018–2037). The plan outlines both overarching short- and long-term goals, as well as specific sectoral objectives. To achieve Thailand's climate adaptation goals, actions must go beyond sector-specific measures in the six priority areas.

The NAP highlights the importance of cross-cutting enablers such as data systems, regulations, financing, incentives, and capacity-building. Among these, "education" is recognized as a core enabler, essential for strengthening climate resilience across all sectors. The NAP promotes the integration of climate change and disaster risk into both formal and informal education systems. It emphasizes training for government officials, youth, and

communities, and also encourages academic and research collaboration to translate scientific knowledge into policy and practice. The MOE plays a central role in advancing climate literacy, laying the foundation for sustainable and climate-resilient national development.

Thailand has enacted the Disaster Prevention and Mitigation Act (2007) and the National Plan on Disaster Prevention and Mitigation (NPDMP) (2021–2027) to address disasters, including those related to climate change. These frameworks are guided by two key concepts: Disaster Risk Reduction (DRR) and Build Back Better and Safer. The NPDPM places strong emphasis on strengthening local administrative capacity and promoting community engagement in disaster management. This approach supports resilience, sustainable disaster response, and alignment with international standards, while complementing the NAP. According to Thailand's first Adaptation Communication submitted as part of the Fourth National Communication (2022) to the United Nations Framework Convention on Climate Change (UNFCCC), progress in implementing adaptation and cross-sectoral measures under the NAP varies across the six priority sectors. Differences in progress are influenced by sectoral capacity and the level of support received. To enhance effectiveness, sectoral focal agencies have been assigned and are either developing or have developed sector-specific adaptation plans to guide targeted, area-based climate adaptation efforts.

The health sector and Thailand's critical climate change-related health impacts

According to the World Health Organization (WHO), climate change is a major global health threat, impacting human well-being through extreme weather events, food and water insecurity, and the spread of diseases. It causes direct health effects, such as injuries and fatalities from floods, storms, and heavy rainfall, as well as illnesses linked to extreme heat, which can lead to heat stress and exacerbate cardiovascular and respiratory conditions such as Chronic Obstructive Pulmonary Diseases (COPD)—particularly among older adults. Climate change contributes to COPD by worsening air quality and increasing the frequency of extreme weather events like heatwaves and wildfires. These factors exacerbate symptoms, increase hospital admissions, and can contribute to the development of the disease, particularly through long-term exposure to air pollutants. The WHO recognizes air pollution as a major global health threat and a significant contributor to noncommunicable diseases, including COPD. Climate change also drives indirect health consequences, including malnutrition and an increase in vector-borne diseases.

WHO estimated that between 2030 and 2050, climate change could result in approximately 250,000 additional deaths annually due to malnutrition, malaria, diarrhea, and heat stress. Vulnerable populations—such as children, the elderly, and individuals with pre-existing health conditions, especially in regions with weak health systems—will be most affected. By 2050, climate-related risks are expected to intensify in urban areas, with projections indicating that 1.6 billion people will face extreme heat, 800 million will be exposed to urban flooding, and 650 million will experience freshwater insecurity.

Recognizing these threats, the 2024 Conference of the Parties of the UNFCCC (COP29) highlighted the urgent need to integrate health into climate action. The UNFCCC process and WHO called for mainstreaming health in global climate policies and national commitments, including efforts to build climate-resilient health systems.

Critical Climate Change-related Health Impacts in Thailand:

Number of Illness Cases, Deaths, and Injuries:
In the health sector, Thailand faces four major climate-related health impacts and challenges that the proposed project aims to address, namely, illnesses and deaths from extreme heat, vector-borne diseases, particularly dengue and. COPD, and injuries and fatalities from heavy rainfall and flooding, According to national data from the Thai MOPH and the Department of Disaster Prevention and Mitigation (DDPM) of the Ministry of Interior (MOI) these impacts are significant and of growing concerns:

- Extreme heat (2022–2024): Average of 108 deaths and 585 illness cases. Cases increased by an average of 67.2% from 2022. It is projected that the mortality rate will rise to approximately 58 deaths per 100,000 population by 2080, compared to the baseline rate of about 3 deaths per 100,000 population per year during 1961–1990 among older adults (aged 65 and above).
- Dengue (2019–2024): Average of 110 deaths and 90,000 illness cases per year.
- Respiratory Diseases (2022–2024):
    - Number of Patients: In 2022, the rate was 15,565.52 per 100,000 population, increasing to 18,469.73 per 100,000 population in 2024.
    - COPD: Deaths: In 2022, there were 27.86 per 100,000 population, rising slightly to 28.52 per 100,000 population in 2024. Illnesses: In 2022, the rate was 287.88 per 100,000 population, increasing to 310.98 per 100,000 population in 2024.
- Injuries and deaths due to flooding and heavy rainfall (2019–2024): Average of 53 deaths and 10 injuries per year.

Importantly, all these figures show increasing trends, underscoring the urgency of targeted climate-health interventions and improved resilience planning.

Estimated Healthcare Costs:

Heat-Related Healthcare Costs

Specific information on the cost of medical treatment for heat-related illnesses in Thailand has not yet been published as a standardized guideline. However, according to the World Bank's *Urban Heat* report, each additional 1°C in temperature could cost Bangkok between THB 85–123 billion (USD 2.4–3.5 billion)—equivalent to 1.6–2% of its 2019 Gross Domestic Product (GDP). These costs include heat-related mortality, lost productivity, and higher energy consumption. Vulnerable groups include 880,000 children under 15 and 1 million people over 65.

Healthcare Costs from Flooding

Specific information on the cost of medical treatment for flooding injuries and illnesses in Thailand has not yet been published as a standardized guideline. However, according to the Thai flood 2011 report by the World Bank, the 2011 floods severely impacted Thailand's health sector, causing 652 deaths, mostly from drowning. Around 600 public health facilities and numerous private hospitals and clinics were damaged. Estimated costs:

- Damage to health facilities: THB 1.6 billion (USD 46 million)
- Economic losses (emergency response, temporary hospitals, revenue decline): THB 2.1 billion (USD 60 million)
- Recovery and reconstruction: THB 2.3 billion (USD 66 million)
- Total health sector impact: ~THB 6 billion (USD 172 million)

Data from the MOPH for 2025, as of July 2025, there were 322 hospitals that were damaged due to flooding, estimated costs were 10 million USD.

Healthcare Costs for Dengue

A 2022 review by Thisyakorn et al. highlighted the extensive economic impact, productivity losses, and societal burden associated with the disease. The average cost per case in Thailand ranges from USD 41 to USD 261, with severe cases reaching up to USD 793 per patient. Annual costs are estimated at USD 440.3 million, and patients lose an average of 7.6 workdays for dengue hemorrhagic fever and 6.6 days for dengue fever. The true economic burden is likely higher due to underreporting and misdiagnosis.

Vulnerable Populations Affected:

In terms of vulnerable populations, children and older adults are among the groups most significantly affected by these health impacts.

Heat-Related Illnesses and Deaths: Between 2022 and 2024, there were 585 reported cases of heat-related illnesses and deaths. The majority occurred among the working-age population (60%), followed by older adults aged over 60 years (37%), and children and youth aged 0–20 years (3%). Most fatalities each year were among individuals working as outdoor laborers or farmers, or those with pre-existing conditions such as hypertension, diabetes, and cardiovascular disease, as well as regular alcohol drinkers. The average age of those who died ranged from 47 to 60 years.

Dengue-Related Deaths and Illnesses: From 2019 to 2024, approximately 660 dengue-related deaths were recorded. Of these, 20% occurred among children aged 5–14 years, and 15% among older adults aged over 60 years. During the same period, around 540,000 illness cases were reported, with 55% affecting children and youth aged 5–24 years.

Deaths Caused by Heavy Rainfall and Flooding: Between 2019 and 2024, about 320 deaths were attributed to heavy rainfall and flooding, with 6% occurring among children and youth aged 5–24 years.

COPD: Older adults aged 60 years and above represent the age group most affected by COPD.

Affected Areas:
The health impacts of climate change in Thailand are not uniform across regions and provinces. Different areas experience varying degrees of vulnerability to specific health risks, meaning the problem is not concentrated in just one or two provinces. Instead, each region faces distinct challenges.

Heat-Related Illnesses and Deaths (2022–2024): The top ten provinces reporting heat-related deaths were mostly in the northeastern and central region --Udon Thani, Chon Buri, Buri Ram, Samut Songkhram, Chaiyaphum, Prachin Buri, Si Sa Ket, Nakhon Ratchasima, Surin, and Samut Prakan.

Dengue-Related Illnesses and Deaths (2019–2023): Provinces with the highest accumulated annual illness cases per 100,000 inhabitants were primarily in the southern region—Trang, Satun, Narathiwat, and Krabi—as well as Mae Hong Son in the northern region.

Deaths and Injuries from Heavy Rainfall and Flooding (2020–2024): The southern provinces of Narathiwat and Yala recorded the highest accumulated number of deaths and the highest death rates per 100,000 inhabitants.

COPD: Chiang Mai in the north reported the highest number of COPD-related deaths, while Nakhon Ratchasima in the northeast had the highest number of illness cases. Older adults aged 60 years and above remain the most affected age group.

The education sector: climate change-related health impacts on vulnerable populations in the sector

According to UNICEF, climate change impacts the education sector directly through extreme weather events (e.g., heavy rainfall, floods, storms, and heatwaves). First, it directly leads to school infrastructure damage and also leads to associated health impacts (e.g. injuries, illnesses and deaths) on students/children and teachers at schools. As school infrastructure can also protect or be shelter for vulnerable populations (e.g. students/children), teachers and communities, these extreme weather events can also lead to injuries, illnesses and deaths of students and teachers being in school infrastructure which is not resilient to extreme weather events, or is damaged and destroyed.

Second, climate change directly leads to disrupted education (e.g., school closures, loss of school days, loss of learning and concentration, and a higher risk of dropping out, particularly for marginalized groups such as girls), and consequently also leads to health impacts (e.g., illnesses and deaths from climate-related diseases such as heat-related disease and dengue) on students/children, families and communities. Education is vital for building health-climate resilience by equipping individuals with the knowledge and skills to understand climate change and be prepared to address the impacts of climate change. Schools and early childhood development centers are thus critical in building health-climate resilient municipalities. They serve as vital bridges between children, families, and communities—accelerating climate action, strengthening climate and health literacy, and promoting proactive health practices. Disrupted education or loss of education can thus lead to lack of knowledge, awareness and preparedness of students/children and families to address health impacts of climate change and can consequently lead to increased illnesses and deaths of students and families in communities from climate-related disaster and diseases such as floodings, heat-related disease and dengue. In addition, climate-related disaster and disruptions such as the most recent catastrophic flooding incident in Hat Yai District in Songkhla Province in November 2025 can have long-lasting negative impacts/scars on children's mental health and long-term academic performance and future.

Moreover, climate change also impacts the education sector indirectly through increased poverty, food insecurity, and migration, which consequently lead to disrupted education, and also health impacts (e.g., illnesses or deaths from climate-related diseases such as heat-related disease, malnutrition, and dengue) on students/children and families in communities. For instance, climate-related crop failures and loss of livelihoods can force families to pull children out of school to work and contribute to household income. Besides, climate change can exacerbate health shocks and food insecurity, which further impacts a child's ability to attend and learn at school. Also, climate-induced displacement can disrupt a child's education and force them to drop out. All these can indirectly lead to disrupted education and associated health impacts.

School Infrastructure Damage, Disrupted Education and Associated Damage Costs in Thailand:
According to national data of the MOE and the DDPM, between 2017 and 2024, approximately 3,812 schools in Thailand were affected by flooding (ranging from 200 to 800 schools annually), disrupting the education of at least 400,000 students and causing nearly USD 23.5 million in repair costs for damaged buildings and replacement of essential learning materials, including books and classroom equipment. The most recent catastrophic flooding incident in southern Thailand in November 2025 inflicted severe damage across multiple provinces. According to data from the Geo-Informatics and Space Technology Development Agency (GISTDA) posted on 27 November 2025, at least 58 schools were submerged. These recurring disasters have not only damaged school infrastructure but have also exacerbated the country’s existing learning crisis.

Rising temperatures, storms, floods, and other climate-related hazards are increasingly disrupting education in Thailand. These events damage school infrastructure and supplies, block access routes, create unsafe learning environments, and negatively impact students’ concentration, memory, and overall mental and physical health. Long-standing challenges—such as shortages of trained teachers, overcrowded classrooms, and disparities in education quality and access—are being exacerbated by climate hazards, deepening the learning crisis.

Associated Health Impacts on Vulnerable Populations in the Education Sector in Thailand:
To better understand how climate change impact children in Thailand—one of the most vulnerable groups—and to evaluate the support schools have received and still require to cope with extreme weather incidents, United Nations Children's Fund (UNICEF) Thailand conducted a teacher survey in August 2025. The survey gathered insights from 318 primary and secondary schools across 14 provinces identified by national government data as being

most affected by extreme weather events during the past few years. Some key findings include:

• Universal Exposure: All surveyed schools have experienced at least one extreme weather event in the past three years. The most severe events reported were heavy rainfall, storms, and flooding (57.75%).

• Child Injuries and Deaths: Narathiwas and Yala provinces in the south of Thailand reported the highest rates of child injuries and deaths due to heavy rainfall and flooding. Specifically, 32% of surveyed schools in Narathiwas and 46% in Yala reported child injuries, while 8.1% and 12.5% of schools in these provinces, respectively, reported child fatalities.

• Climate-Related Illnesses: The survey also revealed high incidences of climate-related diseases such as heatstroke, dengue, and diarrhea. Yala and Narathiwas again showed the highest rates, with 79% of schools in Yala and 54% in Narathiwas reporting cases of student illness linked to these diseases.

Economic, social, development and environmental contexts in which the proposed project would operate

Climate and environmental contexts: Historical trends and projections of key weather data:
Temperature: According to the Fourth Biennial Update Report (2022) to the UNFCCC, between 1981-1990, 1991-2000, and 2001-2010, the annual mean temperatures in Thailand increased by 0.33°C, 0.16°C and 0.14°C per decade, respectively. In addition, between 2011-2021, the annual mean temperature in Thailand increased by an average of 0.09°C per year. Moreover, the annual mean maximum temperature increased substantially from 32.4°C in 1951 to 33.7°C in 2020, while the annual mean minimum temperature also increased from 22.5°C in 1951 to 23.5°C in 2020. According to the Thai Meteorological Department's (TMD) climate change reports, the period of 2012-2024 showed the country's recorded highest temperatures. In April 2016 and April 2023, Thailand recorded its highest temperature since 1951 at 44.6°C in Mae Hong Son province, and Tak province (both provinces in the northern region), respectively. These highest temperatures are likely to continue to rise. Besides, in 2023, the annual mean temperature was 28.1°C, higher than the 1991-2020 averaged temperature by 0.7°C, and was the country's highest annual mean temperature in 73 years (1951-2023), which was equal to the annual mean temperature of 2019. The monthly mean temperatures in all the months in 2023 except January were also higher than normal (i.e., the 1991-2020 monthly averaged temperatures), with the months of December, March and April higher than the monthly mean temperatures by 1.7%, 1.5%, and 1.5%, respectively. Furthermore, in 2024, the annual mean temperature increased even further to 28.5°C, higher than the 1991-2020 averaged temperature of 27.4°C by 1.1°C, and was newly recorded the country's highest annual mean temperature in 74 years (1951-2024). In April 2024, the country almost reached its recorded highest temperature since 1951 at 44.2°C in Lampang province (also in the northern region) and most provinces in the country experienced extreme heat. Moreover, most provinces in the northern Thailand experienced heat waves which remained continuously from late April through early May, and consequently the monthly mean temperatures in those provinces became the highest monthly mean temperatures in the country's record.

As for the projections, the mean temperature change of 1.5°C under the Representative Concentration Pathway 4.5 (RCP) scenario of the Global Climate Models (GCMs) results is projected to occur as early as 2050, while the mean temperature change of 2°C under the RCP4.5 scenario is projected to occur during the year 2070.

The historical data of the annual mean maximum temperature, which is an indicator of extreme heat, during the summer season (March-May) were directly consistent with the available historical data of the annual number of deaths from heat-related diseases during 2017-2023. The projections of the increasing temperatures in Thailand pose an increasing

risk of extreme heat and heat waves, leading to heat stress and contributing to the illnesses and deaths from extreme heat.

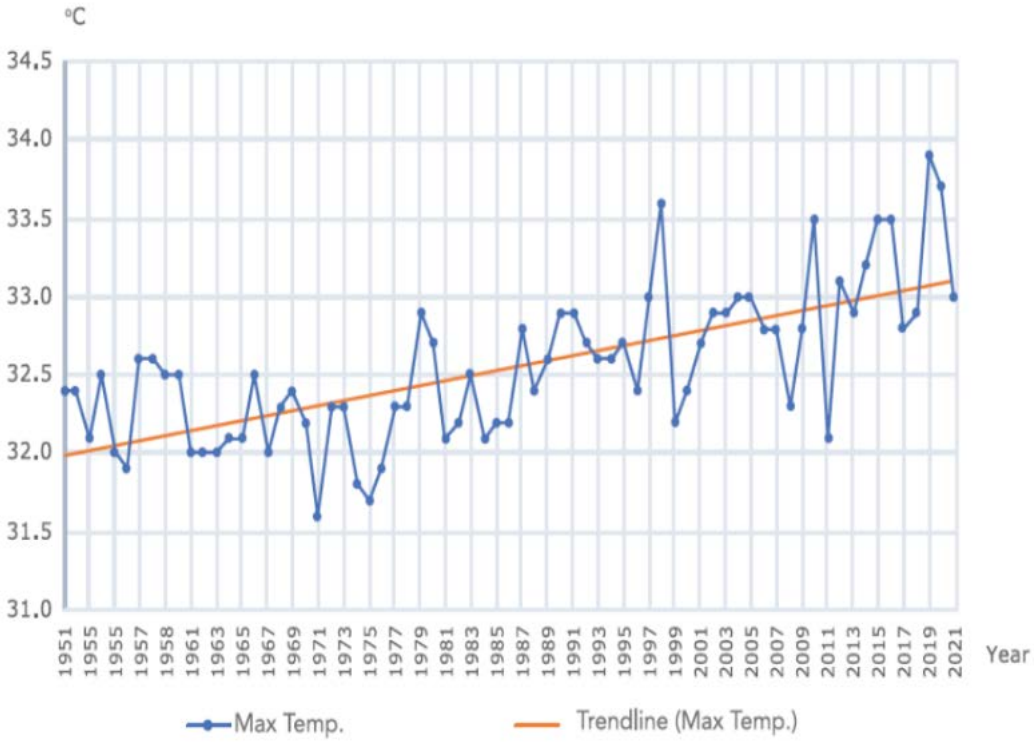


Figure 2: Annual Mean Maximum Temperature in Thailand (°C) 1951-2021.
Source: TMD, 2025

Rainfall: According to the TMD's climate change reports, during 1951-2024, the amount of annual rainfall and the number of annual rainy days has oscillated. Particularly during the latest 10-year period of 2015-2024, the annual rainfall amount has varied a lot, with both the country's highest annual rainfall in 2017 (2,017 millimeters [mm]) in 74 years ever since the record began in 1951, and with the country's lowest annual rainfall in 40 years in 2019 (1,343.4 mm) since 1979. The annual rainfall increased again in 2020, 2021 and 2022 and was recorded at 1,528.8 mm, 1,759.3 mm, and 2012.0 mm (the country's second highest annual rainfall in 72 years since 1951 in which several provinces in the country experienced the maximum rainfall in one day), respectively. The annual rainfall decreased again in 2023 and was recorded at 1,520.6 mm, which was below normal (i.e., below the 1991-2020 averaged annual rainfall amount of 1,622.9 mm) by 102.3 mm or 6%. In 2024, the annual rainfall increased again and was recorded at 1,704.4 mm. Most provinces in the northern and northeastern parts of Thailand and some provinces in the Southern Thailand experienced higher rainfall than normal, while the rest of the country faced lower rainfall than normal.

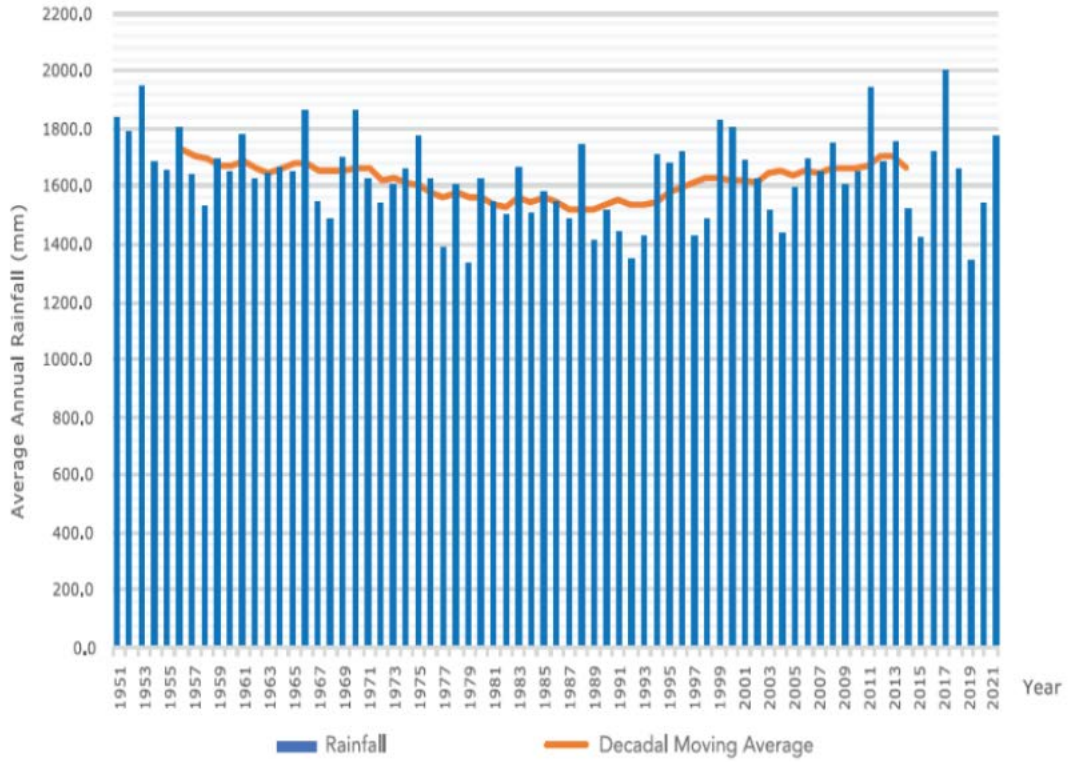


Figure 3: Annual Rainfall in Thailand (mm) 1951-2021. Source: TMD, 2025

In terms of future projection of extreme rainfall under RCP4.5, under 3 GCMs, namely EC-Earth, HadGEM2-ES, and MPI-ESM-MR and 3-time horizons: near future (2016-2035), intermediate future (2046-2065), and far future (2081-2099), the maximum 1-day rainfall (Rx1day) was projected to increase. The precipitation intensity (maximum 1-day and 5-day rainfall) as well as frequency (number of days with extreme rainfall) are both projected to increase. This reflected the tendency of severe and flash floods from heavy rainfall. However, the total annual rainfall was projected to decrease, which reflected the tendency of drought under future climate change in certain regions. According to the projection, the northeastern and southern regions of Thailand tended to have higher impacts of drought than other regions of Thailand.

The historical trend shows the fluctuating annual rainfall pattern in Thailand with extreme annual rainfall and extreme rainfall per day in some years and with low annual rainfall in others, while the projection shows increasing maximum rainfall per day and increasing number of days with extreme rainfall. This extreme annual rainfall or rainfall per day or the high rainfall intensity as well as the increasing number of days with extreme rainfall or the increasing frequency of extreme rainfall pose an increasing risk of severe floods, urban flash floods, and landslides, contributing to the injuries and deaths from heavy rainfall and floodings.

Furthermore, the increasing temperature and the extreme rainfall per day (and high humidity often occurring alongside heavy rainfall are among the contributing factors, according to the WHO, to the spread of the dengue, leading to the illnesses and deaths from dengue. According to WHO, dengue is a viral infection by the dengue virus, which is transmitted to humans through the bite of infected female mosquitoes, primarily the *Aedes aegypti* mosquitoes, which are active during the day and breed through water sources and storages. Environmental factors such as increased temperatures, humidity, and rainfall contribute to dengue transmission by accelerating mosquito development and the virus's replication cycle within the mosquito, leading to more infected mosquitoes. Higher temperatures can shorten the mosquito's development time and accelerate the virus's replication within the mosquito (the extrinsic incubation period), making the mosquito

infectious sooner and increasing its ability to transmit the virus. Rainfall, particularly heavy rains, creates stagnant water collections that serve as ideal breeding sites/grounds for Aedes mosquitoes, increasing their numbers. High humidity, often occurring alongside heavy rainfall, creates favorable conditions for the adult vector, increasing its survival rate and allowing more infected mosquitoes to spread the virus.

Social, Economic and Development contexts:
An aging society characterized by a low birthrate and a growing elderly population:
According to Thailand's registration records, the country's total population peaked at 66.56 million in 2019, before gradually declining to 66.17 million in 2021, 66.09 million in 2022, 66.05 million in 2023, and 65.95 million in 2024. In 2024, the population distribution by age group was as follows:

- Children (0–18 years): 18%
- Youths (15–24 years): 12%
- Working-age population (25–54 years): 44.93%
- Pre-retirement group (55–64 years): 14.03%
- Elderly (65 years and older): 14.26%. Among them, ADL score (Activities of Daily Living) < 4: 1.08% (indicating moderate to severe functional impairment).

Thailand's population structure has shifted toward an aging society, driven by a declining birth rate and increasing life expectancy.

In 2023, Thailand officially became a fully aged society, with 20% of the population aged over 60, up from approximately 18.5% in 2021. At the same time, the proportion of children aged 0–14 declined from 16.5% in 2021 to 15.6% in 2023, while the working-age population (15–59 years) decreased from 65.0% to 64.4% over the same period.

In 2024, the number of births dropped to 461,421, falling below 500,000 for the first time in 70 years. The fertility rate declined from 1.21 in 2021 to 1.0 in 2023 and is projected to decrease further.

Meanwhile, life expectancy is expected to rise—from 74 years for men and 81 years for women in 2025, to 77 years for men and 83 years for women by 2040.
By 2040, the aging population is projected to be more than double the size of the youthful population.

A higher proportion of older adults in the population means a greater share of vulnerable groups—those with increased exposure and reduced adaptive capacity to climate-related health risks. These risks include heat-related illnesses and deaths, as well as injuries and fatalities caused by heavy rainfall and flooding, as previously mentioned. The growing elderly population may contribute to a rise in heat-related mortality, dengue-related deaths, and climate-induced injuries. In an aging society, the proportion of children and working-age individuals continues to decline. Its working-age population must become more productive to sustain economic growth and support the higher share of dependent elderly. In other words, its human capital must be developed to the fullest potential, starting from an early age.

At the same time, climate change impacts both children and older persons in interconnected ways—weakening children's health, learning, and nutrition reduces Thailand's future adaptive capacity, while heightened risks for older persons strain today's social systems. This dual vulnerability makes a combined health–education approach essential for building resilient communities and long-term national capacity.

Increasing non-Thai population:
Tourists: Thailand's economy is increasingly driven by tourism, which plays a vital role in national development. According to the Office of the National Economic and Social Development Council, the tourism sector contributed 20% of GDP in 2019 and is projected to reach 30% by 2030. Data from the Ministry of Tourism and Sports and the National Statistical

Office of Thailand show that the number of international tourists surged from 9.51 million in 2000 to 39.92 million in 2019. Although the COVID-19 pandemic temporarily disrupted this growth, the sector has rebounded strongly. In 2024, Thailand welcomed 35.5 million international tourists, marking a 26% increase from 2023. Despite a declining national population since 2019, the Tourism Authority of Thailand projects continued growth in international arrivals, with 36 million tourists expected in 2026. This rising influx may lead to increased population density in major tourist destinations and place additional pressure on local health systems, particularly in managing vector-borne diseases.

Migrants: Thailand's strategic geographical location and growing economy, particularly in tourism and trade, position it as a major migration hub in Southeast Asia. The country attracts a diverse range of migrants, including labor migrants, refugees, and displaced persons, both for short-term and long-term stays. The ongoing conflict in Myanmar has significantly increased the number of undocumented migrants seeking refuge in Thailand. This influx adds to the already substantial migrant population drawn by economic opportunities, further reinforcing Thailand's role as a regional center for labor, commerce, and tourism. As of July 2024, Thailand had approximately 3.4 million documented migrants out of an estimated 5.2 million non-Thai nationals, according to International Organization for Migration (IOM) Thailand. Migrants in Thailand are particularly vulnerable to the impacts of climate change, due to a combination of environmental exposure, socioeconomic challenges, and limited access to services. These conditions heighten the risks of illness, injury, and poor mental health, placing additional pressure on local health systems. Many migrants work in labor-intensive outdoor jobs (construction, agriculture) with minimal protective equipment. Breaks and hydration are often insufficient, and deadlines force work during peak heat hours. Although there is no systemic data on climate change-related healthcare costs for migrants in Thailand, recent information indicates that the MOPH reports annual losses of 4–5 billion THB (approximately 110–140 million USD) from providing care to uninsured or underinsured migrants.
Furthermore, climate change is increasingly impacting migrant children in Thailand, exacerbating both health and education challenges. According to UNICEF (2023), an estimated 300,000–400,000 migrant children live in Thailand, and more than 200,000 of them may be out of school. Many are unable to access education due to legal and documentation barriers, language challenges, discrimination, and limited geographic access to schools. Despite these challenges, only about 170,928 non-Thai children are currently enrolled in Office of Basic Education Commission (OBEC) schools, under the MOE, leaving a significant number of migrant children without learning opportunities.

Key adaptation gaps and challenges in the health sector

In the health sector, the Department of Health (DOH) has been designated as the focal point for climate change adaptation and has developed a dedicated Health National Adaptation Plan (HNAP) 2021-2030. This plan provides targeted guidelines to support multisectoral partnerships in strengthening health system resilience to climate change. It includes strategies for preventing climate-related health impacts and establishing public health support mechanisms.

The HNAP aims to reduce illness, minimize health-related costs, and position Thailand as a regional leader in managing climate-induced health risks. Together with the broader NAP, the HNAP offers comprehensive and specific measures for implementing climate adaptation in the health sector.

The guidelines are grounded in the principle of categorizing direct and indirect climate-related health risks across key diseases, with a focus on vulnerable populations—including children, the elderly, pregnant women, individuals with chronic conditions, farmers, laborers, and the underprivileged.

Despite the comprehensive framework and specific guidelines provided in the NAP and the HNAP, the implementation of climate adaptation measures in Thailand's health sector remains limited, according to survey conducted by the WHO South-East Asia Regional Office (WHO SEARO), 2024. While Thailand has made significant efforts to build climate-health resilience, the scale of the health system demands further partnerships and investments to accelerate progress. Notably, Thailand's Fourth National Communication (2022) to the UNFCCC reported that the health sector was one of only two out of six priority sectors that did not receive international support, either in terms of financial resources or project-based assistance.

Significant adaptation gaps, barriers, and challenges persist in the health sector, which must be addressed to effectively prevent and mitigate illnesses, injuries, and deaths resulting from climate-related health impacts. These challenges can be categorized into two levels:

- Individual Level: This includes limited awareness, limited access to health services, and low adaptive capacity among vulnerable populations.
- System Level: This involves policy and structural limitations, resource constraints, and coordination gaps across institutions.

Gaps/Needs On the Individual Level:
Key population groups vulnerable to climate-related health impacts—such as children and the elderly—along with relevant stakeholders (e.g., parents, teachers, caregivers, and health personnel), often lack one or more of the following:
1) Knowledge and Awareness: Understanding of climate change and its impacts, including health risks from extreme weather events and climate-related diseases.
2) Preparedness and Adaptive Capacity: Ability to cope with or adapt to the health impacts of climate change.
3) Early Warning Information: Timely alerts about impending extreme weather events or potential climate-related health threats.
4) Essential Support and Assistance: Resources and help provided before, during, or after extreme weather incidents.

Thailand's first Adaptation Communication, as part of the Fourth National Communication to the UNFCCC, identified several gaps at the individual level; health sector-specific gaps (Lack of knowledge and awareness among public health personnel regarding climate-related health impacts and adaptation measures), cross-sectoral gaps (Limited understanding of climate change impacts and adaptation measures among personnel responsible for implementing adaptation strategies, as well as among relevant stakeholders across all sectors), technological gaps (Lack of access to adaptation technologies for stakeholders).

Findings from the DOH's survey on environmental health literacy and protective behaviors related to climate change indicate that overall literacy among communities remains at low to moderate level, with significant gaps in accessing information, understanding health impacts, and verifying risk information. These limitations are evident across specific climate-related hazards:

- Air Pollution (Particulate Matter [PM] 2.5): Only 26.3% of respondents reported checking air-quality levels before leaving home, and 51% wore protective masks.
- Heat-Related Illnesses: Awareness of key risk factors—such as pre-existing hypertension, diabetes, cardiovascular disease, alcohol consumption, and outdoor work—remains low. Protective behaviors are limited, with only 40% wearing hats or breathable clothing and 38% checking weather forecasts before going outdoors.
- Floods: Preparedness is insufficient, as only 55.8% monitor flood updates and 54.2% prepare emergency contact numbers. Households in flood-prone areas often lack essential safety equipment—such as life vests or flotation devices—heightening the risk of injuries and drowning during heavy rainfall or severe flooding.
- Dengue: Knowledge and awareness of vector control measures remain limited. Gaps include understanding how to eliminate mosquito breeding sites, reduce human–mosquito contact, and implement school-based prevention practices. Environmental

factors—such as increased rainfall, irregular water supply leading to water storage, poor drainage systems, and inadequate sanitation—further elevate risks, while communities often lack awareness of how these conditions increase vulnerability to dengue infection and mortality.

Overall, these findings underscore the urgent need to strengthen hazard-specific health literacy, improve risk communication, and enhance community preparedness across all climate-related threats.

In addition, with regard to children, according to the recent teacher survey of UNICEF (August 2025) on the impacts of climate change experienced by schools and assistance needed to cope with extreme weather incidents of 318 primary and secondary schools in 14 provinces across all the regions in Thailand, the results indicated that the top three main impacts of extreme weather incidents experienced by schools and students in the past 3 years were 1) Restricted access to utilities, essential services, and basic necessities (74.77%), 2) Impacts on the health of students (including illnesses but excluding injuries and deaths) such as illnesses from extreme heat, vector-borne diseases (dengue), and water-borne diseases (diarrhea) (54.71%), and 3) Damage to school buildings and facilities (46.20%). Alarmingly, about half of the schools (49.85%) reported never receiving any assistance before, during, or after experiencing extreme weather incidents. The majority of schools anticipated more frequent or severe weather incidents to be extreme rainfall with floodings/landslides (65.96%) and heat waves (53.80%). The greatest impacts expected were on the health and lives of students, encompassing both illness, injury, and death (69.00%). Slightly more than half of the schools (52.58%) and slightly more than one-third of the schools (37.08%) assessed their current readiness and capacity to cope with extreme weather incidents as “moderate level”, and “low level”, respectively. The top eight areas of support most needed were 1) Training and learning activities for students on climate change and adaptation (69.00%), 2). Training for teachers on climate change and adaptation (62.92%), 3) Provision of reliable and timely warning information (60.18%), 4) Food, medicine, and essential supplies (59.88%), 5) Safe and clean drinking water (58.97%), 6) Nearby and rapid health service (56.84%), 7) Financial assistance before/after incidents for prevention, preparedness or recovery purposes (53.80%), and 8) Strengthening school infrastructure to withstand extreme weather incidents (43.16%).

This survey confirms that extreme weather incidents have already caused widespread impacts on schools in Thailand, particularly in terms of access to essential services, students’ health and damage to school infrastructure. The survey also confirms that the lack of knowledge and awareness, the lack of preparedness and capacity to cope with or adapt to impacts of extreme weather incidents, the lack of early warning information, and the lack of necessary support/assistance are main gaps to addressing the health impacts, on the individual level, experienced by students, teachers and schools.

Gaps/Needs On the System Level:
The gaps to addressing the health impacts indicated above by the UNICEF’s survey as mentioned above and by Thailand’s Fourth National Communication to the UNFCCC, on the individual level, also reflect gaps to addressing the health impacts, on the system level. The survey result on the top eight areas of support most needed, on the individual level, together with the result that half of the schools reported never receiving any assistance before, during and after experiencing extreme weather incidents indicate that, gaps to addressing the health impacts, on the system level, still remain within at least the following systems 1) Health impact-related early warning system which could provide reliable and timely warning information about the coming extreme weather incidents or potential climate-related diseases, 2) Education and capacity building system which could address the gap/need for training and learning activities for students and teachers on climate change, adaptation, and learning continuity. Thailand’s Fourth National Communication to the UNFCCC also indicated that there was a gap, on the system level, in the capacity building system which could address the gap, on the individual level, in terms of the lack of knowledge and awareness of climate-

related health impacts and adaptation measures of public health personnel, 3) Health system which could address the need for nearby and rapid health service, 4) Impact mitigation and rescue system which could address the need for food, medicine, essential supplies, and safe and clean drinking water 5) Infrastructure strengthening system which could address the need for strengthening school infrastructure to withstand extreme weather incidents, 6) Financing system for prevention, preparedness or recovery which could address the need for financial assistance before/after incidents for prevention, preparedness or recovery, and 7) Monitoring and evaluation system which could monitor the result about reports of never receiving any assistance before, during, or after experiencing extreme weather incidents, and could address the gap in terms of the lack of necessary support and assistance.

In addition, according to Thailand's first Adaptation Communication as part of the Fourth National Communication to the UNFCCC (2022), gaps to addressing the health impacts, on the system level, included lack of central database on the health impacts of climate change both at the national and local level, and limited research on the climate-related diseases. Besides, cross-sectoral gaps, on the system level, included lack of coordination and integration of data on climate change projection and impacts, and lack of continued financial support for the implementation of adaptation actions and projects. Also, cross-sectoral needs for support, on the system level, included international support for the data system for adaptation, the monitoring and evaluation system, and adaptation financial mechanisms which are essential for addressing the current constraint of the government budget. Normally, several adaptation actions require substantive upfront investments for climate-resilient infrastructure, and these may not yield immediate benefits due to the longer time frame associated with climate change envisaged by budget-related agencies. Moreover, adaptation investments, in nature, tend to be public goods that cannot easily leverage finance from the private sector unless they are directly impacted.

Similarly, according to a 2024 WHO SEARO Climate Change and Health Survey, identified gaps include the absence of an effective early warning system, limited capacity building for such systems, and inadequate preparedness of healthcare facilities.

In summary, key systemic gaps in addressing health impacts remain in at least the following areas: 1) Data and early warning systems; 2) Literacy and capacity-building systems; 3) Health service systems; 4) Impact mitigation and rescue systems; 5) Infrastructure strengthening systems; 6) Financing systems for prevention, preparedness, and recovery; and 7) Monitoring and evaluation systems.

According to the HNAP, adaptation measures required in the health sector can be grouped into six areas: 1) Infrastructure; 2) Knowledge; 3) Data and warning; 4) Finance; 5) Laws, regulations, and standards; and 6) Management to foster multi-stakeholder collaboration and engagement. These six adaptation areas are essential to address gaps across the seven systems mentioned above. For example, measures related to infrastructure, data and warning, knowledge, and finance are needed to strengthen infrastructure, improve early warning systems, enhance education and capacity-building, and secure financing for prevention, preparedness, and recovery. Similarly, measures promoting multi-stakeholder collaboration and engagement are critical for improving impact mitigation, rescue systems, and monitoring and evaluation. Finally, measures in laws, regulations, and standards are necessary to strengthen health service systems. In short, comprehensive action across these six adaptation areas is required to close gaps in the seven key systems.
The gaps and needs identified at both individual and system levels, along with the six priority areas, underscore the additional actions required for Thailand to accelerate adaptation efforts in addressing the health impacts of climate change, beyond the measures already in place.

Challenges and Opportunities: Strengthening Climate Resilience at the Municipal Level Through a Participatory Approach to Adaptation:

Central to the Belém Health Action Plan (BHAP), the municipalities and communities play a pivotal role in climate adaptation, serving as the frontline actors in building resilience to climate-related health risks. The proximity to local populations enables municipalities to design and implement context-specific strategies that address unique vulnerabilities. Through participatory governance, inclusive planning, and community engagement, local authorities can foster climate-smart policies that are both equitable and effective.

A focus on municipalities is increasingly important given Thailand's rapid urbanization, with the urban population rising from 29% in 2007 to 53.6% in 2023 and projected to reach 60.8% by 2037. Municipalities, as local government entities responsible for urban areas, are on the front lines of climate-related risks such as flooding, heat stress, and vector-borne diseases like dengue.

This focus aligns with the NPDMP (2021–2027), which emphasizes building local capacity and fostering community engagement. As the closest institutions to vulnerable populations, municipalities play a critical role in addressing climate challenges. National policies may not fully capture the diverse and localized nature of climate impacts, making empowering municipalities essential for strengthening resilience and enabling tailored, area-specific responses.

Municipalities in Thailand are increasingly taking on responsibilities in public health and, to some extent, education, as part of the country's decentralization reforms outlined in Section 249 of the 2017 Constitution. These reforms have empowered municipalities to engage in climate resilience planning. In the health sector, the transfer of local (sub-district) health promotion hospitals (LPHCs) to local administrative organization (LAO) has resulted in 4,537 out of 9,878 LPHCs being placed under LAO authority, mainly Provincial Administrative Organization (PAO).

Several municipalities have begun developing climate change mitigation plans that include strategies for supporting vulnerable populations during disasters. These efforts often involve coordination between village health volunteers (VHVs) and private community networks to assist groups such as the elderly and persons with disabilities. However, preparedness levels vary across municipalities, and coordination between national policies and local needs remains a challenge.

Strengthening the capacity of municipalities and improving alignment with national frameworks is essential to enhance local resilience and better support vulnerable populations in the face of climate risks.

The next section will provide an overview of current initiatives and related baseline projects, while the subsequent section will outline the objectives of the proposed project and explain how it will address the identified gaps and needs.

Existing initiatives and baseline projects relevant to the proposed project

Existing studies/initiatives, activities and projects including ongoing and announced projects as well as completed projects of relevance to this proposed project, and related projects which received support from international funds, bilateral organizations, and/or other partners are summarized below following the 6 areas where needs were indicated in the previous section.

1) Infrastructure

Health Infrastructure:
The NAP identifies improving public health infrastructure in climate-vulnerable areas as a key adaptation measure.

Data from the DDPM show that hospitals and health facilities in Thailand have been significantly affected by extreme weather events such as heavy rainfall, storms, and flooding. In 2025 (data as of July 2025), a cumulative total of 322 hospitals and healthcare facilities were reported damaged, with estimated losses amounting to 315 million baht.

Other Physical Structures Housing Health-Risk Population Groups
According to data from the DDPM, physical structures that accommodate health-risk population groups—such as schools—are repeatedly damaged by heavy rainfall, storms, and flooding each year.

Education Infrastructure:
Between 2017 and 2024, approximately 3,812 schools in Thailand were affected by flooding (ranging from 200 to 800 schools annually), disrupting the education of at least 400,000 students and causing nearly USD 23.5 million in repair costs for damaged buildings and replacement of essential learning materials, including books and classroom equipment. These recurring disasters have not only damaged school infrastructure but have also exacerbated the country's existing learning crisis.

Despite these significant impacts, there have been no initiatives or projects aimed at inspecting such infrastructure (including health facilities and schools), providing preventive warnings or advice for structures that are not climate-resilient, or supporting direct efforts to strengthen these facilities against climate risks. One reason may be that climate-resilient infrastructure requires substantial upfront investment, which does not yield immediate benefits. In Thailand, school buildings also serve as temporary shelters during disasters, meaning damage to school infrastructure further undermines community resilience and emergency response capacity.

2) Knowledge

The NAP outlines two key measures related to knowledge and capacity building:
1.Strengthening public capacity by enhancing knowledge, understanding, and awareness of climate change-related health impacts, and promoting public participation in appropriate climate change adaptation and management.
2.Strengthening the capacity of public health officials at all levels—including VHVs—by equipping them with the skills to proactively address health problems associated with climate change.

According to the draft NAP action plan prepared by the Department of Climate Change and Environment (DCCE), Ministry of Natural Resources and Environment (MONRE), several ongoing initiatives and projects—both directly and indirectly related to climate change—aim to build the capacity of various groups. These include public health officials, the general public, municipal communities, and children.

Public Health officials:
Several ongoing initiatives and projects have focused on strengthening the capacity of health officials in broader areas or specific issues; however, these efforts have not been primarily directed at climate change-related health impacts.

- The Department of Disease Control (DDC), MOPH has been implementing a project aimed at strengthening the capacity of health officials in disease and health hazard surveillance, prevention, and control. The project targets provincial, district, and sub-district staff, offering a series of training courses, field exercises, and on-the-job mentoring. It also promotes the use of standardized surveillance tools and risk communication guidelines. By the end of the project, participating areas are expected to have enhanced early warning systems, accelerated outbreak investigations, and improved coordination with local authorities and communities.

- In addition, the DOH has strengthened the capacity of environmental health operation teams to support public health emergency response and protect community health. These teams play a critical role in assessing environmental health risks, monitoring water and air quality, managing waste and sanitation during emergencies, and providing technical support to local authorities during events such as floods, droughts, disease outbreaks, and chemical incidents. By 2025, all sub-district staff have been trained to ensure that environmental health operation teams can respond rapidly, collaborate effectively with other sectors, and minimize the impact of public health emergencies on communities.
- Since 2020, the Department of Medical Services (DMS), through Nopparat Rajathani Hospital, has been implementing a project to develop health officials and networks for both on-site and online pollution clinics to address health problems related to pollution, particularly PM2.5. Currently, there are approximately 121 on-site pollution clinics and 263 online pollution clinics operating across various regions in Thailand.
- The DOH launched a project to support municipalities in building their capacity by introducing awards for cities that meet the “Healthy Cities” criteria. These criteria are based on three core elements: Healthy Environment, Healthy Settings, and Healthy People. By 2027, Thailand aims to have at least 1,000 cities recognized as Healthy Cities. These elements are designed to ensure that urban development promotes better living conditions, resilience, and sustainability as cities continue to grow. This structured approach helps maintain high standards of health and well-being in urban areas. As of 2025, 693 LAOs have been certified as Healthy Cities across 12 Regional Health Promotion Centers (RHPCs) in 75 provinces.

The General Public:

- The DCCE, in collaboration with the Faculty of Public Health, Mahidol University, has introduced free online two-day courses for the general public on climate change-related disaster risk assessment, management, and preparedness.
- TMD is implementing a project to raise public awareness about climate change.
- The DDC is carrying out initiatives to enhance public health literacy on the prevention of vector-borne diseases and to develop communication models that promote health literacy for disease prevention.
- In addition, DDC has also launched a project to develop reporting systems for symptoms and diseases related to air pollution, vector-borne illnesses, and heat-related conditions.
- The DOH has focused on knowledge development and health literacy enhancement, as well as promoting public participation in addressing PM2.5 exposure and heat-related illnesses, particularly among vulnerable groups.
- Additionally, the Department of Women’s Affairs and Family Development plans to implement a project in 2026 on preparedness for coping with and adapting to climate change, incorporating a gender-sensitive approach.

People in the Municipality:

At the municipal level, the DOH has implemented initiatives to strengthen environmental health risk management for flood events. The project supports municipalities to; Assess flood-related risks and map vulnerable areas and populations, Integrate event-based surveillance and early warning systems (e.g., rainfall and river-level triggers) with clear Standard Operating Procedures for response, Implement Water, Sanitation, and Hygiene (WASH) and infection-prevention measures, including safe water supply, household water treatment, emergency chlorination, sanitary latrines, solid-waste and debris management, mold remediation, and vector control, Ensure continuity of essential health services and supplies, such as vaccines, essential medicines, and flood-safe operations in clinics and shelters, Strengthen risk communication and community participation through trained municipal health officers and village health volunteers.

Additionally, the project aims to build Special Health Emergency Response Teams (SEHRT) at the sub-district level as a mechanism for local emergency response.

Priority is given to vulnerable groups, including children, older adults, people with chronic diseases, pregnant persons, persons with disabilities, and low-income households in flood-prone zones. Furthermore, the DCCE has highlighted the need to raise awareness among government agencies and local communities. The draft NAP action plan prepared by the DDCE has highlighted the need to raise awareness among government agencies and local communities.

Health-risk Population Groups - the Elderly:
The DOH has implemented a training program for caregivers (CGs) and care managers (CMs) to improve the quality of care for dependent elderly individuals. The program covers basic elderly care, health monitoring, emergency response, and person-centered care.

In 2024, a total of 7,665 CGs and 3,421 CMs from community health centers and local authorities completed the training. Additionally, specific curricula on air pollution and heat have been developed to enhance understanding of health impacts and self-protection.

However, the current training package does not fully address all climate change–related hazards or high-risk areas. Gaps remain in climate change awareness, disaster preparedness, environmental risk assessment, and adaptive strategies. This underscores the need to integrate climate change and environmental health content into future training modules to strengthen resilience and ensure comprehensive care for dependent elderly populations.

Health-risk Population groups - Children:
According to UNICEF's 2024 Climate Change Landscape Analysis of Thailand's education sector, multiple agencies across several ministries are implementing environmental and climate-related education initiatives. Key efforts include:

•The Office of the Basic Education Commission (OBEC) under the Ministry of Education (MoE), has been implementing Environmental Education for Sustainable Development (EESD) programme. The training on green education framework and manuals for educators has been carried out during 2024–2025. But, so far it has been limited to UNICEF-supported Educational Service Area Offices due to resource constraints.

•The Institute for the Promotion of Teaching Science and Technology (IPST) has also advanced environmental science and climate literacy through the Global Learning and Observations to Benefit the Environment (GLOBE) Thailand initiative.

•In parallel, other ministries are implementing related programmes, such as the Comprehensive School Safety Framework on disaster risk reduction led by NGOs and Department of Disaster Prevention and Mitigation (DDPM) and eco-school initiatives led by the Ministry of Natural Resources and Environment.

Despite these efforts, implementation remains fragmented and uneven nationwide, with varying levels of coverage, thematic depth, and consistency. Integration across core curricula, extracurricular activities, and applied learning is limited, resulting in a patchwork of approaches rather than a coherent, system-wide strategy. Strengthened leadership by the MoE is therefore critical to improve coordination across agencies and to establish standardized, comprehensive guidelines for integrating climate change, disaster risk reduction, and health literacy within the education system.

While incorporating climate and disaster-related content into school curricula is essential for raising awareness, curriculum reform alone is insufficient to ensure meaningful DRR or learning continuity during emergencies.

This was underscored by the recent UNICEF teacher survey (August 2025) on climate change impacts and extreme weather challenges in 318 primary and secondary schools across 14 provinces in Thailand.

Key findings include:

- 85.71% of teachers reported moderate-to-high knowledge of climate change, yet 80.85% had never received formal training, relying mainly on self-learning (54.89% online).
- 95.44% of schools teach climate change topics—causes, impacts, and preparedness—through core subjects, supplementary activities, or specific courses, but students' knowledge remains low to moderate (85%).
- Top areas where schools need support: 1. Student training and learning activities (77.61%), 2. Modern and sufficient teaching materials (77.30%), 3. Teacher training (70.25%).

The survey highlights that although climate change education is present, teachers lack formal training and resources remain insufficient. Therefore, climate education must be complemented by investments in school safety, emergency planning, teacher capacity-building, and continuity-of-learning systems to ensure children are protected and can continue learning during disasters. Additional support from relevant agencies is urgently needed.

3) Data and Early Warning

NAP identifies one key adaptation measure related to data and warning systems: developing surveillance and forecasting systems for climate change-related health impacts, including warning mechanisms to report the situation and provide health information on morbidity and mortality, as well as guidance on how to address these issues.

According to the draft NAP action plan prepared by the DCCE, several projects aimed at developing surveillance and forecasting systems for climate change-related health impacts are planned and currently in progress.

- The Office of the Permanent Secretary (OPS), under the MOPH, has established a public health emergency management system to address all hazards, including biological events (e.g., communicable disease outbreaks), chemical incidents, natural and environmental events (e.g., disasters and extreme weather), radiological events, and explosion or trauma events. Relevant departments—DOH, DDC, and DMS—have been assigned to implement this system and support decision-making for effective health service preparedness.
- In addition, the DOH is implementing a surveillance and awareness-raising project for air pollution management and sustainable quality of life.
- The DDC is developing an information technology and data management system for disease and health hazards, along with a system for surveillance, screening, and response to health hazard information.
- The GISTDA is implementing a project to develop geo-informatics innovations for public health services, targeting communicable and non-communicable diseases affected by climate change.
- Furthermore, the draft NAP action plan highlights gaps and needs in developing warning systems for local communities, such as installing devices to measure key weather data (temperature, humidity) and air quality.

Beyond health-related data and warning systems for climate change and extreme weather, the TMD has long maintained a comprehensive weather data and forecasting system, issuing public warnings on disasters and high-risk areas for heavy rainfall. The DDPM disseminates emergency alerts and disaster warnings—including extreme weather events such as heavy rain, storms, and floods—via cell broadcast text messages to all mobile users in affected areas. The DDPM also

maintains a disaster impact database, tracking statistics on floods, droughts, and other hazards, including the number of people affected, injuries, fatalities, and infrastructure damage. However, significant gaps remain in linking these systems to targeted, shock-responsive social protection measures that can deliver timely financial or in-kind support to affected children, families, and vulnerable groups.

Thailand is set to implement an internationally funded project under the Climate and Health Co-Investment Facility Coordination Program, to be supported by the Green Climate Fund (GCF), supported by the United Nations Development Program (UNDP) and WHO. This initiative aims to strengthen the capacity of 14 countries across Africa, Southeastern Europe, and Asia—including Thailand—to mitigate and respond to the health impacts of climate change. The five-year project, expected to be approved and launched in 2026, will be implemented by the DOH and the DCCE, piloting in climate-vulnerable areas, only in Chiang Rai province and Bangkok. Its objectives include introducing innovative climate solutions to enhance mitigation & adaptation and promote low-carbon healthcare systems, with emphasis on vector-borne diseases, heat-related illnesses, air pollution, and floods/droughts. One key national output involves establishing an Early Warning System (EWS) as part of a broader package to strengthen climate-resilient, low-carbon health systems. This package will integrate early warning mechanisms, parametric climate insurance, last-mile preparedness and capacity building of healthcare workforce, and low-carbon pilots at healthcare facilities, targeting risks from vector-borne diseases, extreme heat, and air pollution.

4) Finance

The NAP identifies one measure related to financing support systems: improving the quality and effectiveness of the health insurance system to cover all population groups exposed to climate-related risks and vulnerabilities. According to the draft NAP prepared by the DCCE, only one existing project currently addresses this issue.
The previously mentioned GCF-funded project includes a national output focused on developing and designing a financing support system, specifically a parametric insurance system. This activity involves:

- Development and preliminary design of a parametric health and climate insurance framework through stakeholder consultations, based on available data
- Study of a sandbox-based parametric insurance model, including analysis of premiums, co-payments, and integration with EWS activation.

The NAP indicated one measure related to financing support system, that is, improving the quality and effectiveness of the health insurance system to cover all groups of the population with climate-related risks and sensitivity. According to the draft NAP action plan prepared by the DCCE only one existing project is addressing the issue of health insurance system.

The GCF-funded project mentioned earlier includes one related national output of the project of four activities, one of which is related to developing and designing financing support system (i.e., parametric insurance system). This activity includes: 1) Development and preliminary design of a parametric health and climate insurance framework through stakeholder consultations based on data availability, and 2) Studying a sandbox-based parametric insurance, including studying premiums, and co-payments, and EWS activation.

5) Laws, Regulations, and Standards

The NAP identifies one adaptation measure related to health system standards: developing emergency response standards for public health issues arising from climate change. According to the draft NAP action plan prepared by the DCCE, there is currently no existing project addressing laws, regulations, or standards related to climate-related health impacts. To fill this gap, the DCCE has proposed amendments to the Public Health Act and the Communicable Diseases Act to address potential increases in diseases caused by environmental changes and

to strengthen disease control and public health protection during emergencies, including disasters linked to climate change.

6) Management for Multi-stakeholder Collaboration and Engagement

The NAP includes several adaptation measures aimed at strengthening multi-stakeholder collaboration and public participation. According to the draft NAP action plan prepared by the DCCE, a number of existing projects address these objectives.

- However, the draft NAP prepared by the DCCE identifies a key gap: the need to promote mechanisms for monitoring, evaluation, and lesson-learning from operations in each area to inform policies that are flexible and responsive to future crises.
- The previously mentioned GCF-funded project includes one national output related to environmental management and emergency response systems, comprising four activities. These include: Capacity building for climate adaptation, improving gender-sensitive environmental management and emergency response systems, targeting local communities and health personnel, training of trainers for simulation exercises and up-scaling, developing local readiness plans for emergency response and conducting exercises using the enhanced EWS, targeting health and climate agencies, local authorities, and health personnel.
- The DOH launched a project to support municipalities in building their capacity by introducing awards for cities that meet the “Healthy Cities” criteria, based on three core elements: Healthy Environment, Healthy Settings, and Healthy People. By 2027, Thailand aims to have at least 1,000 cities recognized as Healthy Cities. These elements are designed to ensure urban development fosters better living conditions, resilience, and sustainability.
- As of 2025, 693 LAOs have been certified as Healthy Cities across 12 RHPCs in 75 provinces.
- In addition, DOH has been implementing policies for older persons under the Age-Friendly Communities/Cities framework, promoting environments that support healthy, safe, and high-quality living for the elderly. These policies focus on improving accessibility, public spaces, health services, social participation, and community safety, enabling older persons to live independently and with dignity.
- However, there is still a lack of systematic integration of climate change considerations into the Age-Friendly Cities framework, particularly in addressing climate-related risks such as extreme heat, flooding, and air pollution, which increasingly affect vulnerable older populations.
- In parallel, the MONRE has been advancing policies and initiatives on sustainable cities and environmental management under the Sustainable Green City Program, which is built around four components: Healthy Living, Well-being, Environmental Sustainability, and Learning and Good Governance. These efforts emphasize climate-resilient urban development, green infrastructure, sustainable land-use planning, pollution control, and greenhouse gas (GHG) emission reduction. The initiatives promote environmentally friendly urban systems through the development of green spaces, sustainable transport, effective waste and water management, and ecosystem-based adaptation. While these measures primarily contribute to GHG mitigation and long-term environmental sustainability, the adaptation dimension—particularly actions explicitly designed to protect the health and well-being of vulnerable groups such as older persons in the context of climate change—remains underdeveloped and is not yet fully integrated with Age-Friendly Cities and healthy ageing policies.

Project/Programme Objectives:

The proposed project's overall objective is to reduce the health impacts of climate change in Thailand, including deaths and illnesses from heatwaves, dengue, COPD, and flooding injuries and deaths, by at least 5% compared to the past 5-year average values, by improving health-climate resilience in municipalities in Thailand through addressing adaptation gaps/needs in four key areas indicated in the previous section.

By strengthening climate-informed planning, early warning systems, and response capacities, the project will enable municipalities to better anticipate and manage both expected and unforeseen climate-related disaster risks. This will reduce vulnerability and help sustain progress in lowering climate-related deaths and illnesses well beyond the project period.

The project has 3 specific objectives, with a Monitoring and Evaluation (M&E) mechanism, aimed at addressing the indicated gaps and needs:

Objective 1: the proposed project aims to strengthen health-climate resilience and promote health and climate literacy of municipalities in Thailand through improving related policies and support mechanisms and systems at the national level.

Objective 2: the project aims to implement pilot health-climate-resilient municipalities in selected high-risk and vulnerable provinces through four key strategies: 1) Establishing a health-related database and an efficient health-impact surveillance and early warning system at the municipal level, 2) Improving or adapting infrastructure and public spaces to ensure they are health-climate-resilient, 3) Enhancing the capacity of vulnerable populations, relevant personnel, and stakeholders through training and education at the municipal level, equipping them with sufficient knowledge, understanding, awareness, and skills to cope with and adapt to health impacts, 4) Fostering multi-stakeholder collaboration and community support networks at the municipal level.

Objective 3: the project aims to share knowledge and lessons learned to other municipalities and relevant national stakeholders in the country as well as other countries globally.

Target Vulnerable Populations
While multiple vulnerable populations merit consideration, this project will prioritize two groups identified as most at risk according to the Ministry of Public Health's definition: children and young people, and elderly people aged 60 years and above.

Rationale for Prioritization. The project focuses on these two populations for several key reasons:

1. Alignment with the 5% target objective
Focusing on these groups supports the project's 5% target goal, as they represent the populations with the highest levels of vulnerability and the greatest need for immediate intervention. Given that the project is in its initial implementation phase, concentrating efforts on two clearly defined groups enhances operational efficiency, strengthens coordination with local partners, and increases the likelihood of achieving measurable outcomes before scaling to additional population groups in subsequent phases.

2. Higher overall risk despite broader climate-related vulnerabilities
Although the project acknowledges the heightened exposure of other vulnerable groups—such as outdoor workers and farmers who face elevated risks of heat stress—these populations present significant implementation challenges. Factors such as employment under private entities, high workforce mobility, and the dispersed nature of outdoor work limit consistent accessibility for project activities. Moreover, while outdoor workers face specific hazards related to heat exposure, children and older adults remain the most vulnerable across

a wider spectrum of climate-related health impacts, including respiratory conditions, vector-borne diseases, and extreme weather events. As a result, prioritizing these populations offers the greatest potential for immediate and sustained health impact. Outdoor workers, farmers, and other high-risk populations will still benefit indirectly from strengthened climate-informed planning, early warning systems, and overall improved community resilience resulting from this project. These groups will also be considered as primary beneficiaries in future phases, once foundational capacities and systems have been successfully established through the initial focus on children and older adults.

Project/Programme Components and Financing:

Project/Programme Components	Expected Concrete Outcomes	Expected Concrete Outputs	*Government executing agencies*	Amount (US$)
1. National Policy Frameworks, Support Mechanisms and Systems Component:	1.1 National policy framework/strategy and data support system for health-climate surveillance and early warning improved	1.1.1 Improving national climate-health-related data system. This includes integration of data systems of climate vulnerability maps and area-based health data to ensure efficient identification of most affected areas and populations 1.1.2 Developing national public health-climate surveillance and early warning policy framework and strategy or relevant studies. Promoting cross-sectoral collaboration among relevant ministries and stakeholders to design implementation guidelines for effective relief, social protection measures and anticipatory interventions.	MOPH (PS, DOH, DDC) Supporting agencies: MSDHS, DCCE, DDPM, TMD, DLA	1,200,000
	1.2 National policy framework and guidelines for promoting health-climate-resilient infrastructure and public areas enhanced	1.2.1 Enhancing national policy framework/measures for the integration of health-climate resilience into the planning and upgrades of infrastructure and public areas 1.2.2 Developing national guidelines for promoting health-climate-resilient health and education infrastructure and public areas, including technical infrastructure inspection, infrastructure upgrades (e.g., resilient design or materials), and/or improved operations (e.g., improved water, sanitation, and waste management)	1.2. MoPH (DoH)	350,000
	1.3 National policy framework for promoting climate-education, literacy, and information enhanced	1.3.1 Enhancing national policy framework for the integration of climate education to enhance health and climate literacy into existing education system (e.g., into school curricula)	1.3.1 MoE (OEC, OBEC) Supporting agencies: DoH, DLA, DCCE	500,000
		1.3.2 Developing national policy framework for promoting health-climate literacy and improvement of health-climate information and communication within the healthcare system and local agencies	1.3.2DOH Supporting agencies: MSDHS, DLA, DCCE, Local hospitals	200,000

Project/Programme Components	Expected Concrete Outcomes	Expected Concrete Outputs	*Government executing agencies*	Amount (US$)
	1.4 Collaboration framework or guideline developed outlining roles, responsibilities, and processes for multi-stakeholder cooperation across national, local, and community levels. This output addresses policy gaps and barriers in the area of multi-stakeholder collaboration and engagement, and include the following activity	1.4.1 Strengthening collaboration among multiple stakeholders to support health–climate resilience in municipalities, including fostering cooperative mechanisms and coordination between national, local, and community levels.	1.4 DOH, DLA (pilot municipalities)	116,590
2. Strengthening Municipality-Level Health-Climate Resilience in High-Risk Areas through Pilot initiatives	2.1 Health-related database and an efficient health-impact surveillance and early warning system at the municipality level enhanced and Risk Map	2.1.1 Developing health-related data system at the municipality level through passive data collection, active surveillance survey, and systematic data analysis and interpretation to identify potential risks or outbreaks 2.1.2 Developing and implementing efficient surveillance and early warning system and through developing mechanisms for rapid detection, establishing protocols for alerts and targeted interventions/actions, and demonstrating practical use of the developed system 2.1.3 Developing coordinated response mechanism and data sharing between health and education systems delivering risk-informed at municipality level i.e. health early warning systems integrated with school communication channels to enable timely alerts and coordinated response.	2.1 DOH), DLA (Pilot Municipalities) Supporting agencies: MSDHS, MoE, DCCE	1,400,000
	2.2 Health and school infrastructure and public areas within municipality improved to be health-climate-resilient	2.2.1 Improving health infrastructure and public areas within a pilot municipality to be health-climate-resilient through national guidelines dissemination, technical infrastructure inspection, infrastructure upgrades (e.g., resilient design or materials), and/or improved operations (e.g., improved water,	2.2 DOH), DLA (Pilot Municipalities), MoE (ESAOs)	3,105,000

Project/Programme Components	Expected Concrete Outcomes	Expected Concrete Outputs	*Government executing agencies*	Amount (US$)
		sanitation, and waste management) 2.2.2 Improving education infrastructure within a pilot municipality to be health-climate-resilient		
	2.3 Capacity of vulnerable populations and relevant personnel and persons at the municipality level enhanced to have climate and health literacy, and communication	2.3.1 Conducting community-based risk and vulnerability and need assessments to identify specific characteristics, needs, and existing coping mechanisms of vulnerable groups, incorporating local knowledge and perspectives on the health impacts 2.3.2 Developing and delivering tailored health-climate educational or communication program for the elderly and relevant persons as well as for key personnels including (health personnel, and municipality personnel). Utilizing the capacity of VHVs and existing local capitals such as elderly clubs to advocate their communities on climate-health risks, emergency preparedness, and adaptation strategies 2.3.3 Developing and delivering tailored climate educational program to promote health and climate literacy for children and youth, education personnel, teaching assistants for CWDs and relevant stakeholders. Including support climate knowledge hubs in selected universities to promote youth engagement in local climate governance to enhance climate and health actions 2.3.4 Systemize joint simulation exercises with local governments, emergency services, and health institutions, communities to test climate adaptation response protocols especially with the focus on vulnerable population	2.3. DOH), DLA (Pilot Municipalities) ESAOs, OBEC	1,200,000

Project/Programme Components	Expected Concrete Outcomes	Expected Concrete Outputs	*Government executing agencies*	Amount (US$)
	2.4 Multi-stakeholder collaboration and shared responsibilities for health-climate resilience at the municipality level fostered	2.4.1 Organizing meetings to promote understanding and shared responsibility in addressing the health impacts, and to foster dialogue and collaboration between communities, local government, and other stakeholders in order to enhance community engagement 2.4.2 Organizing workshops to provide municipal leaders and personnel and community network leaders with the knowledge, resources, and authority to implement necessary measures and to empower them to take ownership of health-climate resilience efforts to strengthen their local leadership 2.4.3 Developing and implementing an integrated, multi-sectoral municipality action plan for health emergency preparedness and adaptation that are rooted in local realities involving diverse stakeholders and community support networks including children, young people and elderly at the local level	2.4 DOH, DLA (Pilot Municipalities), local hospitals	500,000
3. Up-Scaling and Knowledge Management and Sharing Component	3.1 Existing knowledge-exchange platforms and mechanisms to share knowledge and lessons learned from pilot municipalities strengthened	3.1.1 Improving existing knowledge-exchange platforms and mechanisms to share knowledge and lessons learned from pilot municipalities	3.DoH, DLA (Pilot Municipalities), local hospitals, Supporting agencies: ESAOs, provincial MSDHS, DCCE	100,000
	3.2 Training and field visit programs delivered to share knowledge and lessons learned from pilot municipalities	3.2.1 Developing and delivering training and field visit programs for other municipalities/provinces and key national stakeholders to share knowledge and lessons learned from pilot municipalities		300,000
4. Monitoring, Evaluation, and Learning Component	4.1 Evaluability study completed, and monitoring systems established with baselines, indicators, and reporting mechanisms		4. WHO, UNICEF	245,000

Project/Programme Components	Expected Concrete Outcomes	Expected Concrete Outputs	*Government executing agencies*	Amount (US$)
	4.2. Midterm evaluation conducted			
	4.3 Terminal evaluation completed			
	5. Total activities and Project/Programme Execution Cost			9,216,590
	6. Project/Programme Cycle Management Fee charged by the Implementing Entity			783,410
	Amount of Financing Requested			**10,000,000**

Projected Calendar:

Milestones	Expected Dates
Start of Project/Programme Implementation	1 June 2027
Mid-term Review (if planned)	December 2028 (Month 18)
Project/Programme Closing	June 2032 (closing)
Terminal Evaluation	May 2032 (terminal evaluation report)

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.

As mentioned previously, the proposed project's overall objective is to reduce the health impacts of climate change in Thailand, including deaths and illnesses from heatwaves, air pollution, vector borne diseases (in specific dengue), and flooding injuries and deaths, by improving health-climate resilience in municipalities in Thailand through addressing adaptation gaps/needs in four key areas indicated in the previous section.

The project has 3 specific objectives (with M&E mechanism) aimed at addressing the indicated gaps/barriers:

First, the proposed project aims to strengthen health-climate resilience and promote health and climate literacy of municipalities in Thailand through improving related policies and support mechanisms and systems at the national level.

Second, the project aims to implement pilot health-climate-resilient municipalities in selected high-risk and vulnerable provinces through four key strategies: 1) Establishing a health-related database and an efficient health-impact surveillance and early warning system at the municipal level, 2) Improving or adapting infrastructure and public spaces to ensure they are health-climate-resilient, 3) Enhancing the capacity of vulnerable populations, relevant personnel, and stakeholders through training and education at the municipal level, equipping them with sufficient knowledge, understanding, awareness, and skills to cope with and adapt to health impacts, 4) Fostering multi-stakeholder collaboration and community support networks at the municipal level.

Third, the project aims to share knowledge and lessons learned to other municipalities and relevant national stakeholders in the country as well as other countries globally.

The project comprises four components. The first two components address the initial two specific objectives: the first focuses on policy development at the national level, while the second emphasizes piloting/implementation at the municipal level. The third component is dedicated to knowledge sharing and scaling through national and regional/global networks, and the fourth component ensures robust monitoring and evaluation to confirm that the project's objectives are achieved.

Component 1: Improving policy framework, support mechanisms, and systems at the national level to strengthen and promote health-climate-resilience of municipalities.

This component aims to address adaptation policy-related gaps and barriers to prevention and mitigation of illnesses, injuries and deaths from the climate-related health impacts on the system level in 4 key areas outlined in the previous section (i.e., data and warning, infrastructure, knowledge, and multi-stakeholder collaboration and engagement) by strengthening policy frameworks, support mechanisms, and systems at the national level. In essence, this component will develop or enhance national policies, strategies, guidelines, and support systems to close these gaps and barriers, thereby promoting and reinforcing health-climate resilience in municipalities across Thailand.

This component focuses on strengthening and enhancing 1) policy framework and support system for health-climate surveillance and early warning, 2) policy framework and strategy for promoting health-climate-resilient infrastructure and public spaces, 3) policy framework for advancing climate education to improve health and climate literacy and access to information, and 4) policy framework/mechanism for promoting multi-stakeholder collaboration and shared responsibility for health-climate resilience.

This component will build upon the existing initiatives and baseline projects outlined in the previous section and will integrate practical experiences, knowledge, and lessons learned from Component 2, which is implemented at the municipal level. These on-the-ground insights will serve as critical inputs for policy refinement and development.

Regarding the policy framework and support system for health-climate surveillance and early warning, this component will coordinate with and build upon existing initiatives and planned projects. These include the upcoming project by the OPS, MOPH to develop a disaster surveillance system for public health emergencies covering all hazards, as well as ongoing projects by the DDC focused on developing information technology and data management systems for disease and health hazards, and establishing systems for surveillance, screening, and response to disease and health hazard information.

For the policy framework promoting health-climate-resilient infrastructure and public spaces, this component will coordinate with key agencies, including the Department of Public Works and Town & Country Planning (DPT) under the MOI.

Regarding policy initiatives for climate education to enhance health and climate literacy and communication, this component will build on existing efforts by the MOE to integrate climate change into the education system, as well as initiatives by the MOPH focused on health literacy and information dissemination.

For the policy framework promoting multi-stakeholder collaboration and shared responsibility for health-climate resilience, the project will leverage existing policy work by the MOPH and coordinate with, among the others, the DDPM.

Expected outcome:
The expected outcome of this component is consistent with the aim and title of this component.

Outcome 1. Improved policy framework, and support mechanisms and systems at the national level to strengthen health-climate-resilience and promote health and climate literacy of municipalities.

Expected outputs:
This component includes the following 4 expected outputs, each of which addresses each one of the 4 areas where gaps and barriers remain.

Output 1.1: National policy framework/strategy and data support system for health-climate surveillance and early warning improved. This output addresses policy gaps and barriers related to data and early warning and comprises the following two activities.
1.1.1 Improving national climate-health-related data system. This includes Integration of data systems of climate vulnerability map and area-based health data to ensure efficient identification of most affected areas and populations.
1.1.2 Developing national public health-climate surveillance and early warning policy framework and strategy. Promoting cross-sectoral collaboration among relevant ministries and stakeholders to design implementation guidelines for effective relief, social protection measures, and interventions.

Output 1.2 Enhanced national policy framework for promoting health-climate-resilient infrastructure and public spaces.

This output addresses policy gaps and barriers in the area of infrastructure and comprises of the following 2 activities.
1.2.1 Enhancing the National Policy Framework for Health–Climate Resilience. Strengthen national policies and measures to integrate health–climate resilience into the planning and upgrading of infrastructure and public spaces. This includes conducting vulnerability and adaptation assessments for all relevant health infrastructure to ensure preparedness for climate-related risks. In parallel, establish national standards for municipal planning and design that embed health emergency preparedness protocols (SOPs) through inclusive stakeholder engagement at all levels.
1.2.2 Developing national guidelines for promoting health-climate-resilient health and education infrastructure and public spaces, including technical infrastructure inspection, infrastructure upgrades (e.g., resilient design or materials), and/or improved operations (e.g., improved water, sanitation, and waste management) In disaster and emergency situations, schools are not only learning spaces, they become essential community shelters during climate-related disasters, making them a frontline asset in local resilience and emergency response.

- Development of guideline for school self-assessment of infrastructure resilience. Integration of the self-assessment of school infrastructure resilience with Disaster-risk reduction to Comprehensive School Safety Framework.
- Strengthening of Education Data System to track the number of schools including school infrastructures affected by climate risks and disasters.

Output 1.3 Enhanced national policy framework and national smart education platform for promoting health-climate education literacy, and information. This output addresses policy gaps and barriers in the area of knowledge and includes the following activities.
1.3.1 Enhancing national policy framework for the integration of climate education to enhance health and climate literacy into existing education system (e.g., into school curricula).

- Map and curate a standardized national Climate Change Education Curriculum Framework that outlines essential learning outcomes, competencies, and age-appropriate content for climate science, adaptation, mitigation, and sustainability.
- Develop teaching manual of climate education, including student understanding and protection from climate-diseases such as dengue and heat stroke, for intra-curricular and extra-curricular
- Promote innovative climate education through the development of a National Climate-Smart Education Platform that offers comprehensive teaching resources, interactive learning modules, and teacher training modules on climate- and health-related risk events.

1.3.2 Developing national policy framework for promoting health-climate literacy and improvement of health-climate information and communication within the healthcare system and local agencies
Output 1.4 Collaboration framework or guideline developed outlining roles, responsibilities, and processes for multi-stakeholder cooperation across national, local, and community levels.

This output addresses policy gaps and barriers in the area of multi-stakeholder collaboration and engagement include the following activity.
1.4.1 Strengthening collaboration among multiple stakeholders to support health–climate resilience in municipalities, including fostering cooperative mechanisms and coordination between national, local, and community levels.

These outputs and activities are designed to address policy-related gaps and barriers, on the system level and at the national level, to building health-climate resilience of municipalities in the 4 key areas as indicated and will thus contribute to improving and promoting health-climate resilience of municipalities.

Component 2: Strengthening Municipality-Level Health-Climate Resilience in High-Risk Areas through Pilot initiatives

This component aims to address implementation-related gaps and barriers—both at the individual and system levels—in adapting to, preventing, and mitigating illnesses, injuries, and deaths caused by climate-related health impacts within pilot municipalities. It focuses on the four key areas outlined in the previous section: data and early warning, infrastructure, knowledge, and multi-stakeholder collaboration and engagement.

In other words, this component will implement pilot health-climate-resilient municipalities by addressing four key strategies essential for achieving resilience. In this project, a health-climate-resilient municipality is defined as one that can withstand, respond to, and adapt to the health impacts of climate change. Each strategy addresses implementation gaps and barriers within one of the four key areas identified earlier, aligning with the policy outputs of Component 1. These strategies include: 1) Enhancing health-related databases and developing health-impact surveillance and early warning systems at the municipal level, 2) Improving health and education infrastructure and public spaces within pilot municipalities to ensure climate resilience, 3) Building the capacity of vulnerable populations and relevant personnel through climate education to strengthen health and climate literacy and provide information for adapting to health impacts, 4) Fostering multi-stakeholder collaboration and community support networks within pilot municipalities to promote health-climate resilience.

This component will build upon the DOH's existing project on enhancing environmental health management efficiency to prevent risk factors for healthy cities, as well as other initiatives and baseline projects outlined in the previous section. To strengthen the implementation of the NAP, it also aims to improve health-related data sharing, surveillance, and coordinated response between the health and education sectors at the municipal level, protecting children and communities from climate-induced health impacts. Furthermore, this component will generate knowledge and lessons learned through the implementation of the four key strategies, providing critical inputs to support Component 1 in refining or developing national policy frameworks, support mechanisms, and systems, and to assist Component 3 in knowledge sharing and scaling up efforts within the country and across the region.

A critical aspect of this component is its emphasis on participatory engagement. By actively involving local communities, youth, municipal representatives, and relevant stakeholders in both the planning and implementation phases, the project ensures that strategies align with the actual needs of the population. This collaborative approach empowers local governments to identify specific vulnerabilities—such as those affecting the elderly or persons with disabilities—and to build resilience in ways that are contextually appropriate and responsive.

Regarding the enhancement of health-related databases and health-impact surveillance and early warning systems at the municipal level, this component will coordinate with and build upon existing initiatives and planned projects. These include efforts by municipal administrations and provincial and district public health offices in pilot municipalities and provinces, as well as national-level projects such as the OPS, under the MOPH's development

of a disaster surveillance system for public health emergencies covering all hazards. Additionally, it will align with projects by the DDC focused on developing information technology and data management systems for disease and health hazards, and establishing systems for surveillance, screening, and response to disease and health hazard information.

For improving health and education infrastructure and public spaces within a pilot municipality to make them health-climate-resilient, this component will collaborate with key stakeholders, including municipal administrations, the Provincial Office of Public Works and Town & Country Planning, the Educational Service Area Office (ESAO) under the OBEC, provincial and district public health offices, healthcare facilities, hospitals, schools, and childcare centers in the selected pilot municipalities and provinces.

Regarding the enhancement of capacity among vulnerable populations and relevant personnel within pilot municipalities to acquire health-climate education, literacy, and information for adapting to health impacts, this component will coordinate with and build upon existing initiatives. These include efforts by municipal administrations; the ESAO of the OBEC on integrating climate change into school curricula; the DCCE on climate change educational programs; the Department of Older Persons (DOP), which promotes welfare and rights for the elderly—one of the most health-vulnerable groups; and provincial and district public health offices in pilot municipalities and provinces on health literacy and information dissemination.

With regard to fostering multi-stakeholder collaboration and community support networks within a pilot municipality for health-climate resilience, the project will coordinate with all stakeholders in the public and private sectors, civil society and communities in pilot municipalities/provinces and will also coordinate with and build on existing work of, among others, Municipality Administrations, the Provincial and District Public Health Offices, ESAO, DDPM, Provincial Social Development and Human Security Office, youth and community networks and councils, and universities in pilot municipalities/provinces.

At this concept stage, 10 preliminary pilot provinces were selected and proposed for piloting. The selection of pilot provinces was based on the following considerations:

1. Historical Health and Disaster Data
Analysis of national data from the MOPH and the DDPM, Ministry of Interior on provinces with relatively high numbers of illnesses and deaths related to: COPD, Extreme heat, Dengue fever, Flood-related injuries and fatalities. This includes provinces with high morbidity and mortality rates over the past five years.

2. Projected Risk Data
Identification of provinces projected to have a high risk of COPD, Extreme heat events, Dengue outbreaks, Heavy rainfall and flooding in the future.

3. Population Vulnerability
Provinces with high population density among targeted vulnerable groups, specifically, Children and Elderly individuals.

To ensure comprehensive coverage, 10 provinces were selected and proposed, representing a balanced geographical distribution across Thailand’s regions. Proposed provinces include Southern: Songkhla, Phuket, Northern: Lampang, Kamphaeng Phet, Central and Eastern: Nakhon Sawan, Lopburi, Chon Buri , Northeastern: Nakon ratchasima, Khonkean, Udonthani.

Additional Criteria for Shortlisting 5 Provinces (and Municipalities): To further narrow down the selection from 10 provinces to 5 pilot provinces for resource prioritization, the following additional criteria will be applied during the full proposal development:

4. Health Impacts on Children
Data from the UNICEF survey on climate change impacts and support needs in schools, focusing on the 14 provinces previously identified, to determine provinces with the highest health impacts on students.

5.Healthy City Readiness
Provinces that meet the Gold Level Healthy City criteria, as specified by the Department of Health. Among the top 10 initially selected provinces, 7 meet at least one of these criteria. These provinces will be further assessed for their potential and readiness to implement pilot models of health-climate-resilient municipalities. During the preparatory phase, consultations will be held with municipal administrations in these provinces to evaluate their capacity and commitment.

6.Geographical Representation
To ensure nationwide coverage, one province will be selected from each of the five regions.

Based on these criteria, the top 5 provinces will be selected as pilot sites. During the full proposal development, field visits will be conducted to assess the readiness of the municipalities in these provinces to participate in the project.

Expected outcome:

Outcome 2. Municipality level health-climate resilience strengthening through pilot initiatives,

Expected outputs:
This component includes the following 4 expected outputs, each of which addresses one of the 4 strategies and areas.

Output 2.1 Enhanced health-related database and health-impact surveillance and early warning system at the municipality level.
This output addresses implementation gaps and barriers indicated in the area of data and early warning and includes the following 3 activities.
2.1.1 Develop health-related data systems at the municipal level using passive data collection, active surveillance surveys, and systematic data analysis and interpretation to identify potential health risks or outbreaks. In parallel, collaborate with municipalities through the existing Healthy Cities network to create comprehensive city profiles that include risk assessments, climate-resilient urban planning action plans, health emergency preparedness strategies, SOPs, and recovery (‘build back’) plans, with a strong focus on vulnerable populations based on their specific climate risks.
2.1.2 Developing and implementing efficient surveillance and early warning system and through developing mechanisms for rapid detection, establishing protocols for alerts and targeted interventions/actions, and demonstrating practical use of the developed system.
2.1.3 Developing coordinated response mechanism and data sharing between health and education systems delivering risk-informed at municipality level i.e. early health warning systems integrated with school communication channels to enable timely alerts and coordinated response, which will also benefits parents and local communities

Output 2.2 Health and school infrastructure, along with public spaces within municipalities, are improved to be resilient to health and climate risks.
This output addresses implementation gaps and barriers indicated in the area of infrastructure and includes the following 2 activities.
2.2.1 Improve health infrastructure and public spaces in a pilot municipality to ensure health and climate resilience through national guideline dissemination, technical inspections, resilient design and materials, and improved operations (e.g., water, sanitation, waste management). Concurrently, develop and implement a pilot model for climate-resilient, disaster-ready hospitals in high-risk provinces, integrating architectural, engineering, and retrofit solutions to

enhance structural safety, environmental sustainability, and continuity of essential health services during emergencies.
2.2.2 Improve education infrastructure within a pilot municipality to be health-climate-resilient. Implementation of guidelines for school self-assessment of infrastructure resilience. Integration of the self-assessment of school infrastructure resilience with Disaster-risk reduction to Comprehensive School Safety Framework.

- Training schools how to implement school assessment on climate resilient infrastructure guideline,and/or improved operations (e.g., improved water, sanitation, and waste management)

Output 2.3 Strengthen the capacity of vulnerable populations and municipal personnel to build knowledge, awareness, and skills for coping with and adapting to health impacts of climate change. This output addresses implementation gaps and barriers indicated in the area of knowledge and includes the following activities.
2.3.1 Conducting community-based risk and vulnerability and need assessments to identify specific characteristics, needs, and existing coping mechanisms of vulnerable groups, incorporating local knowledge and perspectives on the health impacts.
2.3.2 Developing and delivering tailored health-climate educational or communication program for the elderly and relevant persons as well as for key personnels including (health personnel, and municipality personnel). Utilizing the capacity of VHVs network and existing local capitals such as elderly clubs to advocate their communities on climate-health risks, emergency preparedness, and adaptation strategies.
2.3.3 Developing and delivering tailored climate educational program to promote health and climate literacy for children and youth, education personnel, teaching assistants for children with disabilities (CWDs) and relevant stakeholders. This includes supporting climate knowledge hubs in selected universities to promote youth engagement in local climate governance to enhance climate and health actions.
2.3.4 Systemize joint simulation exercises with local governments, emergency services, and health institutions, communities to test climate adaptation response protocols especially with the focus on vulnerable population.

Output 2.4 Fostered multi-stakeholder collaboration and shared responsibility at the municipality level. This output addresses implementation gaps and barriers indicated in the area of multi-stakeholder collaboration and engagement and includes the following 3 activities.
2.4.1 Organizing meetings to promote understanding and shared responsibility in addressing the health impacts, and to foster dialogue and collaboration between communities, local government, and other stakeholders in order to enhance community engagement.
2.4.2 Organizing workshops to provide municipal leaders and personnel and community network leaders with the knowledge, resources, and authority to implement necessary measures and to empower them to take ownership of health-climate resilience efforts to strengthen their local leadership.
2.4.3 Developing and implementing an integrated, multi-sectoral municipality action plan for health emergency preparedness and adaptation that are rooted in local realities involving diverse stakeholders and community support networks at the local level.
This component addresses implementation gaps and barriers to preventing and mitigating health impacts in pilot municipalities at both individual and system levels across four key areas, thereby strengthening health–climate resilience. It also supports Component 1 in advancing national policy frameworks and systems, and Component 3 in knowledge sharing and scaling within the country and region, contributing to broader municipal health–climate resilience.

Component 3: Knowledge management, sharing and up-scaling
This component will scale up Components 1 and 2 within pilot provinces and beyond, through knowledge sharing on outputs, strengthening ministries and agencies, and leveraging existing exchange platforms. It will manage and disseminate lessons learned nationally, regionally and globally via training programs and field visits, promoting broader health–climate resilience.

Expected outcome:
Outcome 3 Knowledge and lessons learned from the project, managed, shared and scaled-up to other municipalities in the country and other countries in the region. This component includes the following 2 expected outputs.

Output 3.1 Strengthened existing knowledge-exchange platforms and mechanisms to share knowledge and lessons learned from pilot municipalities. This output includes the following activity.
3.1.1 Improving existing knowledge-exchange platforms and mechanisms to share knowledge and lessons learned from pilot municipalities.

Output 3.2 Delivered training and field visit programs to share knowledge and lessons learned from pilot municipalities. This output includes the following activity.
3.2.1 Developing and delivering training and field visit programs for other municipalities/provinces and key national stakeholders to share knowledge and lessons learned from pilot municipalities including communication campaigns.

Knowledge, experiences, and lessons from Components 1 and 2 will be integrated into Component 3 and shared across national and regional networks. These outputs and activities will strengthen health–climate resilience in municipalities and provinces within the country and across the region.

Component 4: Monitoring and Evaluation
The project will regularly monitor progress across all components to ensure indicators are met, timelines and budgets are adhered to, and adjustments or opportunities are proactively addressed to maximize adaptation benefits from the Adaptation Fund grant. An independent terminal evaluation will be conducted at project completion to capture best practices and lessons learned for future initiatives.

Expected Outcome:
4. Adequate and effective monitoring of all project indicators

Expected Outputs:
4.1. Evaluability study completed, and monitoring systems established with baselines, indicators, and reporting mechanisms
4.2. Monitoring and midterm project evaluation
4.3. Terminal project evaluation

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 Adaptation Fund.

Economical, social and environmental benefits

As noted in the previous section, the overall objective of the project is to prevent and reduce the health impacts of climate change, including illnesses and deaths from extreme heat (heat-related diseases), dengue, and direct injuries and fatalities caused by extreme rainfall and flooding. The project also identifies children and older adults as key vulnerable populations who have experienced these impacts and are prioritized in its interventions.

The illnesses and deaths from extreme heat, and dengue, and direct injuries and deaths from extreme rainfall and floodings incur economic impacts and costs such as increased direct individual health costs and public health costs incurred at hospitals and health facilities, and could also result in the decreased productivity or the inability of those ill, injured, or dead persons to continue to study, work or to generate family income, which could lead to associated social costs and social problems (e.g., poverty, unemployment, displacement, lack of education continuity, and child labor). In this regard, the project will provide key economic and social benefits through reducing the individual health costs and public health costs, reducing health burdens and improving work productivity, and reducing the associated social costs and social problems. Besides, the project will provide economic benefits through reducing economic costs of maintaining or reconstructing damaged infrastructure and reducing indirect economic costs of the disruption of health and education infrastructure damaged from extreme rainfall and floodings, and through creating jobs in the project activities such as infrastructure upgrades and training programs. Moreover, the project will provide social benefits through enhanced equitable and inclusive access to health services by targeting and including the vulnerable groups, equitable and inclusive access to education and capacity building by also providing to diverse groups (including personnels and persons relevant to the vulnerable groups) and enhanced multi-sector collaboration and community and youth networks empowerment in pilot municipalities.

In addition, in order to prevent and reduce illnesses, injuries and deaths from these health impacts especially from dengue, the project aims to also address the environmental causes of these health impacts as described earlier in the environmental context section through both individual and public infrastructure upgrades (e.g., resilient and environmental design or materials), and/or improved environmental operations (e.g., improved water, sanitation, and waste management). In this regard, the project will provide environmental benefits through implementing infrastructure upgrades and/or improved environmental operations.
All the project components will together contribute to the overall objective of the project, namely, the reduction of illnesses, injuries, and deaths from these health impacts. While Component 2 of the project (Pilot models of health-climate-resilient municipalities), which targets and focuses on children and the elderly, will provide economic, social and environmental benefits directly and particularly to these vulnerable groups in selected pilot municipalities and provinces, as direct beneficiaries, Component 1 and Component 3 of the project (i.e., the policy work and knowledge sharing work) will benefit the country as a whole, including the targeted vulnerable groups, and the whole population with health-risks, as indirect beneficiaries. In addition, the policy frameworks and support systems to be developed or improved of Component 1 could support in addressing other emerging crucial health impacts posed by both climate change factors and non-climate change factors such as illnesses and deaths from PM 2.5, respiratory diseases and water-borne diseases, and their associated economic, social and environmental impacts.

Apart from the initial self-screening and assessment to determine the environmental and social categorization of the risks for the project in the concept stage, including completing the checklist provided later in this section of the concept note, in the project design and preparation, the project will also conduct a detailed screening to identify project-related risks or potential adverse impacts associated with the 15 principles indicated in the ESP and the GP of the Adaptation Fund. After the screening process, the project will carry out an environmental and social impact assessment to assess the magnitude of the risks and potential adverse impacts and how to mitigate and manage them. Risks and/or impacts that are identified and determined will be captured in an environmental and social management plan which will be developed in the project design phase. The environmental and social management plan will include the risk mitigation measures and activities that will be taken to avoid and mitigate negative impacts in compliance with the ESP Principles and the GP of the Adaptation Fund. Examples include, for instance, as for environmental safeguards: all infrastructure upgrades will undergo environmental screening to avoid adverse impacts such as habitat disruption, pollution, or resource overuse, as for social safeguards: Community

consultations will be conducted to ensure that no group is excluded or adversely affected. Special attention will be given to marginalized populations. Transparent and accessible grievance redress system and mechanisms will be established in each pilot municipality to address concerns related to environmental or social impacts.

In addition, as gender impacts often manifest by reinforcing inequalities or neglecting the specific needs of marginalized groups, this project will adopt a gender-transformative approach aligned with WHO and UNICEF goals, aiming to promote gender equality as a fundamental human right.

To minimize the potential negative impacts of the project interventions, the project will use WHO's Gender Mainstreaming Tool (GERD) to guide the integration of gender-sensitive measures throughout the project cycle, ensuring gender equity is embedded in all aspects of the intervention.

In expected outcomes 1 and 2, a gender expert will be invited to lead discussions and guide stakeholders at both the national and municipal levels to ensure gender considerations are central to decision-making from the start using the above-mentioned tool. The project will also consult with women's groups, gender-diverse individuals, and rights-based organizations to incorporate diverse perspectives and ensure inclusivity at all stages.

At the community level, a municipal gender analysis will identify using available data on the distinct vulnerabilities and capacities of women, men, girls, boys, and gender-diverse groups within health and education systems. This will inform gap and feed to the resilience strategies to ensure equitable access to climate-resilient health services, safe learning environments, early warning systems, and emergency support based on each unique context.

In expected outcome 3, for knowledge management and dissemination of the pilot, the project will prioritize the meaningful participation of women's groups, teachers, caregivers, youth representatives, and all-gendered health workers in decision-making processes. For implementation, the interventions will focus on reducing gender-specific burdens—such as caregiving roles, mobility constraints, and access to disaster-related information—and promoting equitable access to resources. This inclusive approach will strengthen resilience, advance gender-equitable outcomes, and ensure that the benefits of climate adaptation are shared equally across all genders and vulnerable groups.

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

Despite the comprehensive framework and specific guidelines/measures for the implementation of adaptation action provided in the NAP and the HNAP, the implementation of adaptation measures in the health sector in Thailand is still limited in action, and Thailand requires financial assistance from the Adaptation Fund to scale-up progress and speed-up action to ensure that the country becomes health-climate resilient at a rate which is more than that of increasing and intensifying health impacts of climate change. This financial assistance is essential to 1) strengthen national policy frameworks for promoting national scaling of health-climate resilience in municipalities across the country, 2) create replicable and scalable pilot models of health-climate resilient municipalities for replication and up-scaling to the national and regional levels, and 3) support dissemination of lessons from the project as well as national and regional scaling of pilot models. Each one of these is essential to achieving the overall objective of the project, namely, preventing and reducing illnesses, injuries and deaths from the health impacts. A logical explanation of the selected approach and scope of the project is provided below to address the cost effectiveness of the project.

As the health of the populations and the impacts of climate change on the health are long-term issues, it requires long-term investments in order to address these long-term issues

sustainably and continuously. This project, with the AF grant, will therefore target to support long-term adaptation investments which will generate long-lasting and sustained benefits rather than short-term investments with immediate but temporary and discontinuous benefits. The project will support long-term adaptation investments in 4 key areas required for building long-term health-climate resilience, including data and health early warning, infrastructure strengthening, education/capacity building, and multi-stakeholder collaboration and community support networks. To illustrate the previous statements, investment in health-climate education especially for the vulnerable groups such as children and in national policy development and integration for promoting health-climate resilience in this project is a long-term investment with high and wide impact, and with long-lasting and sustained benefits, rather than immediate and ephemeral benefits. The long-term, integrated, and multi-sector approach (e.g. health and education sectors) of the project reduces the need for separate interventions and creates synergistic and long-term benefits across sectors. In addition, the scalable and replicable models of pilot municipalities serve as demonstration sites for national scaling. This scalable and replicable pilot approach combined with the policy-driven approach ensures that initial investments yield long-term national benefits, making the project highly cost-effective. In addition, the 4 key areas are selected where key adaptation gaps/needs exist. Besides, pilot municipalities are selected based on, health hazard exposure (extreme heat, dengue, and extreme rainfall and floodings), health vulnerability (morbidity/mortality rates), and population density of key vulnerable groups such as children and the elderly. This selected scope ensures that resources are directed where they will have the greatest impact, making the project highly cost-effective.

The selected scope and approaches address both the local, national and regional levels, integrating altogether national policy component, pilot local implementation component, and national and regional scaling component. These 3 components are inter-connected and each one of these is essential to achieving the overall objective of the project. Compared to alternative options or interventions of implementing only one or two of these components such as only Component 2 without Component 1 and 3, or only Component 2 and 3 without Component 1, or an option of not implementing any of these components, the project presents the most cost-effective and sustainable option.

To demonstrate the cost effectiveness from a sustainability point of view, the costs of implementing the project (i.e., the AF grant cost) are compared against the costs of inaction, which include the economic burden of climate-related diseases and damage, or against the expected long-term benefits and outcomes of the project or the avoided costs as presented below.

Table 2: Total annual direct health cost and total 10-year health cost of two climate-related diseases (Option: no proposed project)

Climate -related diseases	Annual average number of illness cases (person)	Average health cost per illness case (USD)	Total annual health cost (USD)	Total 10-year health cost (USD)
Dengue	90,000	260	23,400,000	234,000,000
Heat-related disease	287	281 (including loss of productivity)	80,647	806,470
COPD (as of Oct 2025)	202,610	385	78,004,850	780,048,500
Total			**101,485,497**	**1,014,854,970**

Table 3: Total avoided annual health cost and total 10-year avoided health cost of two climate-related diseases (Option: implementing the proposed AF project and achieving only 5% reduction of the annual average illness cases)

Climate -related diseases	Annual average number of illness cases (person)	Average health cost per illness case (USD)	Total avoided annual health cost (USD)	Total 10-year avoided health cost (USD)
Dengue	4,500	260	1,170,000	11,700,000
Heat-related disease (2024)	14.35	281	4,032.35	40,323.5
COPD (as of Oct 2025)	10,130.5	385	3,900,242.5	39,002,425
Total				50,742,748.5

These above tables shows that with the option of implementing the proposed AF project of 10 million USD and achieving the reduction of illness cases by at least 5% per year compared to the past 5-year average values, that is, reducing the number of dengue illness cases from 90,000 to 85,500 cases per year, and the number of heat-related illness cases from 200 to 190 cases per year, from a 10-year perspective, the total 10-year avoided health cost is estimated to be 11.7 million USD and is already higher than the proposed project cost of 10 million USD. Thus, with the proposed project and the illness reduction target of 5%, the proposed project is already cost effective, compared to the option of no proposed project. However, if the project aims to achieve the illness reduction target more than 5%, the project would be highly cost-effective. It should be noted that this calculation only includes the total 10-year avoided health cost of these 2 diseases and does not include the avoided cost of reducing dengue, heat-related and flooding-fatalities, and flooding-injuries, as part of the project's objective.

Moreover, the option of no proposed project also incurs the damage cost of infrastructure such as school and hospital infrastructure.

Table 4: Total annual damage cost and total 10-year damage cost of infrastructure (Option: no proposed project)

Type of infrastructure	Annual average number of infrastructure damaged (unit)	Average damage (or recovery) cost per unit (USD)	Total annual damage (recovery) cost (USD)	Total 10-year damage (recovery) cost (USD)
School	500	6,162	3,081,000	30,081,000
Hospital*	322	N/A	approx. 10 million	approx. 100 million
Total			**Approx 13,081,000**	**1 approx 30,081,000**

Note: Damages were caused by flooding based on approximate data from MOPH and MOE.
*Data as of July 2025. In November 2025, there was a major flooding in Songkla, costs are still being estimated.

The above tables shows that with the option of implementing the proposed AF project of 10 million USD and achieving the reduction of infrastructure damaged by at least 50% per year, that is, reducing the number of schools damaged from 500 to 250 per year, from a 10-year perspective, the total 10-year avoided damage cost is estimated to be 14.7 million USD and is already higher than the proposed project cost of 10 million USD. Thus, with the proposed project and the school damage reduction target of 50%, the proposed project is already cost effective, compared to the option of no proposed project. Combining the total 10-year avoided health costs of the two climate-related diseases, and the total 10-year avoided infrastructure damage cost, the project is highly cost-effective compared to the option of no proposed project. It should be also noted that the project also provides other benefits such as reducing other avoided economic, social, and environmental costs as described earlier.

D. Describe how the project/programme is consistent with national or sub-national sustainable development strategies, including, where appropriate, national adaptation plan (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.

Thailand has mainstreamed climate change agenda including climate change adaptation and mitigation into its national strategies and plans: the 20-Year National Strategy, National Economic and Social Development Plans, Climate Change Master Plan, and NAP. Furthermore, Thailand's Fourth National Communication to the UNFCCC is a medium for Thailand to communicate its commitment to fulfilling the obligations under Article 4.1 and 12.1 of the UNFCCC. The fourth chapter on vulnerability and adaptation also serves as Thailand's first adaptation communication.

Thailand's 20-Year National Strategy (2018-2037) is the country's long-term development framework, established under the 2017 constitution to guide the nation toward being "a developed country with security, prosperity and sustainability" in accordance with the philosophy of sufficiency economy with the ultimate goal being all Thai people's happiness and well-being. It comprises six key strategies: national security, competitiveness, human resources development, social equality, environmental quality of life, and public administration. The strategy is a first-level plan supported by second-level Master Plans, like

the medium-term National Economic and Social Development Plans (e.g., the 13th plan for 2023-2027), and third-level Operational Plans.

The proposed project which addresses, among others, unpredictable climate change threats such as disease outbreaks, epidemic and emerging diseases that require more effective healthcare surveillance, health protection, vulnerable groups, human capacity building, and improved environmental management, is consistent with the 1st, 3rd, 4th, and 5th strategies of the 20-year National Strategy.

In orientating the direction of the 13th National Economic and Social Development Plan in order to empower the country to overcome challenges and reach the stage when “Thailand becomes a developed country with security, prosperity and sustainability in accordance with the Sufficiency Economy Philosophy” in the spirit of the National Strategy, the following four principles were adopted including 1. Sufficiency Economy Philosophy 2. Resiliency 3. Sustainable Development Goals (SDGs) 4. Bio-Circular-Green Economy Model. To pursue the objectives, the five main development targets of the 13th plan are determined including 1. Restructuring the manufacturing and service sectors towards an innovation-based economy, 2. Developing human capital for the new global era, 3. Creating a society of opportunities and fairness, 4. Ensuring the transition of production and consumption towards sustainability, and 5. Enhancing Thailand’s capability to cope with changes and risks in the new global context

The proposed project which addresses, among others, unpredictable climate change threats such as disease outbreaks, epidemic and emerging diseases that require more effective healthcare surveillance, health protection, vulnerable groups, human capacity building, and improved environmental management, is consistent with the 2nd, 3rd, and 5th development targets of the 13th National Economic and Social Development Plan.

In addition, the proposed project is fully aligned with Thailand’s following national climate change and development plans, particularly those focused on adaptation, public health, and education. It supports the country’s long-term vision for sustainable development and resilience building.

1. Climate Change Master Plan (2015–2050)
This long-term plan provides a national framework for climate change adaptation, mitigation, and enabling environments.
The project contributes to the adaptation pillar by addressing the pulbic health sector, and health impacts of climate hazards as mentioned earlier in the first section

2. Thailand’s National Adaptation Plan (NAP) (2021–2030)
The NAP serves as Thailand’s strategic framework for climate change adaptation across six priority sectors: water management, agriculture and food security, tourism, public health, natural resources management, and human settlements.
The project directly supports the public health and human settlements sectors by enhancing urban health systems and infrastructure, integrating climate adaptation into local planning.
The project’s emphasis on community engagement and education aligns with the NAP’s goals of raising awareness and building adaptive capacity.

3. Health National Adaptation Plan (HNAP) Phase 1 (2021–2030)
Thailand’s HNAP outlines strategies to reduce climate-related health risks and position Thailand as a regional leader in climate-health resilience.
The project supports all four HNAP strategies:

- Strengthening community resilience and health literacy
- Integrating multi-sectoral resources
- Enhancing public health preparedness
- Developing health systems to international standards
- The pilot municipalities will serve as demonstration sites for HNAP implementation, especially in vulnerable urban areas.

4. Thailand's Fourth National Communication to the UNFCCC
Thailand's Fourth National Communication outlines its commitments under the UNFCCC, including adaptation actions and vulnerability assessments.

- The project contributes to Thailand's adaptation communication by demonstrating concrete actions to protect vulnerable populations.
- It supports Thailand's reporting obligations and enhances transparency in climate-health adaptation.

5. National Education Plan (2017-2036)
The National Education Plan is guided by three development frameworks: the Sustainable Development Goals (SDGs), the Sufficiency Economy philosophy, and the 21st Century Skills. The project supports and aligns with National Education Plan Strategies below:

- Education for national security: Builds climate resilience and disaster preparedness through education systems that safeguard learning continuity during crises.
- Learning society for all ages: Encourages lifelong learning and community awareness on climate adaptation and sustainable living.
- Equal educational opportunities: Ensures vulnerable groups, including children with disabilities and those in high-risk areas, have equitable access to safe and climate-resilient education.
- Education for environmentally friendly life quality: Directly aligns with NAP's goal to promote sustainable lifestyles and behavioural adaptation to environmental change.

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 Adaptation Fund.

National technical standards relevant to activities under the project (e.g. infrastructure upgrade activity) include:

1.Environmental Impact Assessment (EIA) and Environmental Health Impact Assessment (EHIA) regulations under the Enhancement and Conservation of the National Environmental Quality Act (2018).

Thailand's EIA/EHIA is a process required by the Environmental Quality Act of 2018 for projects that may have significant environmental and health impacts. These regulations require: screening of projects based on type, size, and location, public participation in the assessment process, and mitigation and monitoring plans for environmental and health impacts. Its main purpose is to evaluate potential positive and negative effects, establish mitigation measures, and ensure that decision-makers consider environmental factors for sustainable development. Projects requiring an environmental impact assessment (EIA) in Thailand include certain industrial projects, infrastructure development projects (e.g., dams or reservoirs, expressways and new railway routes, airports and ports for cruise/sport ships, large-scale land development for residential or commercial use, and highways), and building projects (large commercial and residential buildings), especially those in sensitive locations like national parks or near water bodies.

The proposed project is not designed to be among industrial projects, infrastructure development projects, and building projects requiring an EIA/EHIA. However, infrastructure upgrades or operation improvements in pilot municipalities as part of Component 2 of the project will undergo environmental screening to avoid adverse impacts related to air, water, and noise pollution, wastewater, and solid waste. In addition, community consultations will be conducted to ensure that no group is excluded or adversely affected and special attention will be given to marginalized populations. In the project design and preparation, the project will

conduct a detailed screening to identify project-related environmental risks or potential impacts. After the screening process, the project will carry out an environmental and social impact assessment to assess the magnitude of the risks and potential adverse impacts and how to mitigate and manage them. Risks and/or impacts that are identified and determined will be captured in an environmental and social management plan which will be developed in the project design phase. The environmental and social management plan will include the risk mitigation measures and activities that will be taken to avoid and mitigate negative impacts.

2. Building Control Regulations under the Building Control Act, B.E. 2522 (1979)
This Act authorizes the Minister of Interior and local officials to regulate building construction, alteration, removal, and usage. The regulations under the Act aim to ensure safety, structural integrity, and appropriate land use. A building permit is legally required for constructing, altering, demolishing, or changing the use of a building and must be applied to local municipality. The regulations also stipulate specific safety and structural standards.
In this project, if infrastructure upgrades in pilot municipalities involve altering of buildings specified in the regulations, the project will work with Local Administrations of pilot municipalities and ensure that a pilot municipality itself also apply for a building permit from its municipality and that the upgrade activities comply with safety and structural standards.

3.Building Energy Code (BEC)
Thailand's Building Energy Code (BEC) is a set of minimum standards for energy efficiency in buildings, applying to new buildings with a total floor area of 2,000 square meters or more since 13 March 2023. It sets performance requirements for the building envelope, lighting, air conditioning, and hot water systems, and includes standards for overall energy consumption and the use of renewable energy. The BEC is designed to conserve energy, reduce greenhouse gas emissions, and is a key part of Thailand's climate action strategy.
Infrastructure improvements in pilot municipalities involving altering of buildings of Component 2 of the project are expected to be upgrades of only existing buildings and not to be constructions of new buildings. However, the project will ensure that upgrades of existing buildings meet the energy efficiency standards, where applicable and possible.

4.Occupational safety and health regulations
Thailand's primary occupational safety, health, and environment regulations are established by the Occupational Safety, Health and Environment Act (2011), which outlines responsibilities for employers and employees to ensure a safe working environment. This act is supported by numerous ministerial regulations that set specific standards for various hazards and equipment, such as those concerning machinery, cranes, boilers, radiation, and heat, light, and noise. The regulations require employers to provide a safe workplace, appoint safety officers, establish a safety committee, composed of government officials, employer representatives, and employee representatives, and comply with detailed standards on risk management and employee safety, with penalties for non-compliance. Employers must also report occupational diseases and environmental illnesses to health officers within a specified timeframe. Employees are required to cooperate with safety measures.

The project will work with Local Administrations of pilot municipalities and ensure that any potential infrastructure upgrade activities and other relevant activities to be implemented in pilot municipalities comply with occupational safety and health standards.

The ESP of the AF:
As mentioned earlier, in the project design and preparation, the project will also conduct a detailed screening to identify project-related risks or potential impacts associated with the 15 principles indicated in the ESP of the AF. After the screening process, the project will carry out an environmental and social impact assessment to assess the magnitude of the risks and potential adverse impacts and how to mitigate and manage them. Risks and/or impacts that are identified and determined will be captured in an environmental and social management plan which will be developed in the project design phase. The environmental and social

management plan will include the risk mitigation measures and activities that will be taken to avoid and mitigate negative impacts in compliance with the ESP Principles

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

The proposed project has been carefully designed to complement existing climate adaptation initiatives in Thailand and avoid duplication with other funding sources. It fills critical gaps in municipality health resilience and climate change education, particularly for vulnerable populations in municipalities. The proposed project will mainly build on the following projects/initiatives:

The GCF project (yet to be approved by GCF board):
As previously noted, the proposed GCF project to be implemented by DOH and DCCE is limited to only two locations in Thailand—Chiang Rai and Bangkok. In addition, the GCF project primarily targets healthcare facilities, focusing on developing climate-resilient health facilities and establishing a mitigation-oriented GHG emissions management platform. This focus differs from the Adaptation Fund (AF) project, which emphasizes municipality-level, community-engaged interventions. In contrast, the AF project aims to develop national policies and frameworks and pilot them across five provinces, with a clear vision for nationwide scale-up. This AF project is independent and does not rely on, nor duplicate, any existing or planned initiatives under the GCF project.

Climate education initiatives by the MOE:
There are two existing key initiatives under government funding that support environmental learning: Environmental Education for Sustainable Development (EESD) and the GLOBE Programme.

EESD Programme, implemented by Office of Basic Education Commission:

- EESD provides guidance for integrating environmental studies into teaching and school environment, enabling schools to implement activities such as applying the Sufficiency Economy Philosophy to support the SDGs, promoting environmental awareness, developing green schools, with initial strengths on waste and energy management. Education Service Area Offices (ESAOs) operationalize EESD by providing mentoring support to schools.

GLOBE Programme:

- Implemented by the Institute for the Promotion of Teaching Science and Technology (IPST) under MOE, to build student and teacher capacity to conduct small-scale environmental research based on local issues using scientific methods and to strengthen understanding of local–global environmental systems.

While EESD and GLOBE provide important foundations for environmental learning, both programmes face significant constraints that limit their ability to advance comprehensive climate change and resilience education. Current government budgets are stretched across multiple MOE priorities, leaving insufficient resources for technical support, updated materials, and systematic training for teachers and students.

The existing programmes primarily emphasize general environmental awareness rather than the more complex and urgently needed competencies in climate science, adaptation, mitigation, and resilience planning. Schools and teachers lack dedicated practical tools, and sustained capacity-building to deliver these topics effectively.

The education component integrated under outcome 1.3 and 2.3 of this concept note will adopt an incremental and system-strengthening approach that builds on existing Ministry of Education mandates, consolidates proven practices, and introduces innovations where gaps

are evident such as teaching and learning platform for climate and health literacy and linking national climate-health data and early warning system to education system to better health outcomes and local preparedness.

Content enhancement – The project aligns with and supplements existing curriculum content across science, health, and disaster risk education by explicitly integrating health impacts of climate hazards (such as heat stress, flooding, and air pollution), areas that are currently addressed in a fragmented or implicit manner.

Strengthening teaching – place-based and practice-oriented learning builds on established competency and participatory teaching methods, enabling teachers and students to apply climate and health knowledge to real-world actions. Digital and simulation-based tools will be introduced selectively to enhance learning where appropriate, particularly in resource-limited or remote settings.

Capacity development – Teacher training will be integrated into existing professional development and promotion systems and education service area structures, ensuring scalability and sustainability rather than creating parallel project-based mechanisms.

This investment would help build a strong national foundation that the government can sustain and scale in the long term, ensuring that Thailand's education system is better equipped to prepare children and youth for escalating climate risks.

Healthy City by the MOPH:
The activities proposed under this AF initiative are designed to complement—not duplicate—the ongoing efforts of the DOH's Healthy Cities Project. While the Healthy Cities framework has made significant progress, resilience was not originally included as a key criterion for assessing the capacities of cities, their environments, or their populations. Currently, the DOH focuses on three core areas:
1) Healthy Environment – promoting healthy public spaces, effective waste management, access to safe water and clean air, and emergency preparedness.
2) Healthy Settings – ensuring hygiene standards in public places and establishments.
3) Healthy People – fostering social engagement and health literacy to support healthy lifestyles.

As of 2025, approximately 693 municipalities in Thailand have been officially recognized as Healthy Cities, with the DOH aiming to expand this number to 1,000 certified cities by 2027.

This AF project will build on the existing Healthy Cities network by incorporating resilience into planning and assessment processes, directly addressing the current gap in adaptation planning. A key feature of the initiative is the development of an integrated data framework that combines vulnerability assessments, social factors, and climate data. This comprehensive approach will serve as a model for cities, demonstrating the importance of robust, integrated data systems for effective decision-making in the face of rapidly emerging environmental challenges.

Additionally, the project will strengthen cross-sector collaboration beyond health, with a particular focus on engaging the education sector—a critical partner in sustaining climate-responsive and community-driven adaptation plans. This cross-sectoral approach represents an innovative step within the Healthy Cities framework and is expected to significantly enhance both the quality and impact of the project.

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

Component 3 (Knowledge management, sharing and up-scaling) of the project is dedicated to be a key part of the project for knowledge management, sharing and up-scaling. Component 1 (National Policy Component) of the project will also support in up-scaling, while Component 2 (Pilot models Component) will also support in disseminating knowledge. The project will manage and disseminate knowledge through the following 3 key processes and approaches: 1) Knowledge capture, documentation, and sharing within the project, 2) Knowledge dissemination and exchange within the country, and with other countries in the region, and 3) Up-scaling to the national and global levels.

Knowledge capture, documentation, and sharing within the project
Each Component will capture and document its own knowledge and lessons through its outputs and activities and will share them to other Components of the project chiefly through technical sub-committees or working groups. The technical working groups will be established, among other purposes, to enhance internal linkages and interactions between each Component of the project, to regularly and continuously keep track and capture knowledge, experiences and lessons to be gained from the implementation of each Component of the project, and to analyze them to enrich existing knowledge on adaptation and enhance understanding about what kind of interventions work. These interactions and linkages between each Component through technical working groups will allow each Component to also complement and benefit each other and enhance the efficiency and effectiveness of the implementation of each Component.

For instance, as for interactions between Component 1 (Policy Component) and 2 (Pilot models Component), knowledge, experiences and lessons to be obtained through the implementation of Component 2 related to creating pilot models of health-climate-resilient municipalities, will be shared with Component 1 for the development of national policy framework for strengthening and promoting health-climate resilience of municipalities. Component 2 will capture and document its own knowledge and lessons through its activities such as case studies to be developed for each pilot municipality to assess changes, for instance, in health outcomes, infrastructure resilience, and community capacity and to highlight best and successful practices, challenges, lessons, and innovations.

On the other way around, practical issues associated with national policy frameworks to be developed through Component 1 will be captured and documented through its activities and shared with Component 2 for the implementation of Component 2 related to the pilot models at the municipality level. Besides, Component 4 (Monitoring and Evaluation Component) will systematically collect, analyze and share results and information, for instance, from the mid-term evaluation of the project, including lessons learned and best practices as well as evidence on cost-effectiveness, equity, and impact, to Component 1, 2 and 3 through these technical working groups. Also, knowledge, experiences, and lessons to be learned from Component 1 and 2 will be integrated as content of Component 3 for sharing outside the project through activities of Component 3.

Knowledge dissemination and exchange within the country, and with other countries in the region
Component 3 of the project will provide opportunities for interactions and for exchanging and sharing knowledge, experiences and lessons between the project and other municipalities/provinces and stakeholders in the country as well as other countries in the region. Component 3 will disseminate and exchange knowledge, experiences and lessons through two key activities including improved existing knowledge-exchange tools, platforms and mechanisms and training programs (including workshops) to be developed and tailored for specific audience such as local administration organizations from all 5 regions in Thailand, key national stakeholders, organizations from other countries in the region.
As for the first output and activity of Component 3, existing knowledge-exchange tools, platforms and mechanisms will include, for instance, online platforms such as websites (e.g., Ministry of Public Health, Ministry of Education, WHO Thailand, and UNICEF Thailand), regular weekly or daily blog posts, and social media streams (e.g., Facebook and Twitter.)

reflecting on progress, lessons, plans, milestone events and other aspects of the project that enable implementers to simultaneously engage in knowledge sharing and publicity/communications. These platforms can be created to link with regional and global platforms, including WHO Southeast Asia Regional Office (SEARO), UNFCCC adaptation networks, and the Adaptation Fund's own knowledge exchange mechanisms. Examples of products to be included in these tools and platforms include photos, videos, PowerPoint presentations, toolkits, training materials, and policy briefs developed through the project. In addition to these tools and platforms, communication activities such as the development and implementation of a media outreach strategy will be included.

Project progress and outcomes will be also shared through global platforms, such as the Alliance for Transformative Action on Climate and Health (ATACH), as well as WHO regional platforms, including the WHO Thematic Working Group on Climate Change.

With regard to the second output and activity of Component 3, training and knowledge-exchange programs will be developed and tailored for various specific audience such as local administration organizations (e.g., municipality offices) from all 5 regions in Thailand, key relevant national stakeholders, organizations from other countries in the region. Training and knowledge-exchange programs will include, for instance, workshops to facilitate peer-to-peer learning exchanges between pilot and non-pilot municipalities to promote replication and scaling of successful models, and national workshops and forums to share and exchange experiences and lessons from the project with government agencies, UN partners, academia, and civil society.

In addition to Component 3, Component 2 will also include capacity building activities to several stakeholders, including, for instance, municipal staff, health personnel, educators, community leaders. These stakeholders could help disseminate knowledge and lessons further to other relevant stakeholders. Besides, youth networks and local universities will be engaged in research and innovation, contributing to long-term knowledge generation.

Up-scaling to the national and global levels
The project is designed to provide various channels for scale-up at different levels (local, provincial, national, and regional levels), by including project partners that are both local, provincial and national government agencies with their relevant national committees and mandates for up-scaling, as well as UN partners with regional coverage, academia, and civil society. Component 1 (Policy component at national level) of the project will provide input to these national government agencies with their relevant national committees and mandates for the development and implementation of national policy framework for strengthening and promoting health-climate resilience of municipalities in Thailand, which will facilitate and support replication in other provinces and up-scaling to the national level. Component 1 will also provide input to our UN Implementing Entities with regional coverage to help facilitate up-scaling to the regional level.

With the established internal linkages between each Component of the project, documentation of knowledge within each Component, knowledge dissemination and exchange activities of Component 3, policy input from Component 1, and established channels through various partners for scale-up at different levels, this knowledge management and up-scaling approach of the project is expected to contribute significantly to the overall impact of the project.

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 Adaptation Fund.

National various stakeholder consultations relevant to the project which were undertaken during project preparation, include:

First Stakeholder Consultation on the proposed project on 27 August 2025
Participation included core working group from WHO, UNICEF, DOH, OBEC, OEC and the DCCE. WHO, UNICEF, together with the leading government agencies, met to present the initial discussion and receive feedback from relevant stakeholders. The meeting focused on the inclusion of vulnerable populations as defined by each government stakeholder to ensure the project leaves no one behind. These groups include women, children, the elderly, disabled individuals, and people living in poverty. However, due to constraints, the project cannot focus on all of these groups and will instead select those with the highest health impact.
The discussion also addressed the inclusivity of the pilot sites selection process, emphasizing that it should not only be geographically and physically inclusive but also culturally sensitive. Both direct beneficiaries from the community and indirect beneficiaries who will be impacted by the project's outcomes were considered during the meeting.

Consultation with Municipalities under the WHO SEARO Healthy Cities Network in Thailand on Health Emergency Preparedness for Climate Change on 10 October 2025
Participation included representatives from 5 municipalities Bansuan Municipality, Chonburi, Banphai Municipality, Khon Kaen, Sadao Municipality, Surat Thani, Kalasin Municipality, Kalasin, Bua Yai Municipality, Nakorn Ratchasima.
WHO Thailand hosted a session with the WHO SEARO Healthy Cities Network to discuss climate change resilience and readiness with the existing five municipalities. The findings from the focus group discussion revealed that while each municipality faces a variety of disaster risks, most are dealing with regular flooding, and some even experience multiple disasters simultaneously. All municipalities have action plans to help vulnerable populations, particularly the elderly and bedridden individuals, who are most at risk during emergencies. These municipalities have developed networks of local stakeholders to coordinate disaster responses and recovery.
However, the discussion also highlighted several gaps in the system. There is a lack of alignment in policies and priorities across different municipalities, and there are no consistent data collection systems to monitor broader disaster risks such as heatwaves and emerging diseases. While flood management is a primary focus, other disaster types are not given as much attention. The implementation of action plans varies significantly between municipalities, with some LAOs demonstrating stronger preparedness than others. Moreover, the interventions tend to be more focused on immediate response and recovery actions, with less emphasis on long-term protection and building resilience for future climate impacts.

Second Stakeholder Consultation on the proposed project on 3 November 2025
Participations: Leading agencies including DOH, OBEC, DCCE, WHO, and UNICEF. Supporting agencies including OEC, DDC, DLA, and MSDHS.
The consultation aimed to align relevant actors to ensure that planned activities address existing gaps and complement, rather than duplicate, ongoing initiatives. It also sought to promote a participatory approach and secure stakeholder buy-in from the outset.
All stakeholders expressed no objections to the proposed activities and are open to further discussions as the project moves forward, recognizing that it will significantly strengthen Thailand's preventive systems.
The consultation concluded that a comprehensive database on vulnerable groups—linking social vulnerability, health, and climate change—is essential for the government to design effective preventive plans. Currently, available data remain fragmented, and there is a critical need for projections of climate impacts in areas with high concentrations of vulnerable populations. The design of early warning systems also requires careful consideration, particularly for individuals without access to smartphones or those with disabilities. In the education sector, special attention is needed for migrant children who are not enrolled in schools or registered in public centers.

Youth consultations with vulnerable groups (i.e., youths) on climate and environmental issues (July-September 2025)

The consultations were conducted during July-September 2025 across all regions in Thailand, gaining insights from 340 young people. Youth participants identified following interconnected environmental challenges directly and profoundly impact their well-being:

- Health: Youth reported rising physical health risks—including respiratory, vector-borne, waterborne, heat-related, and skin conditions—alongside substantial mental health impacts such as stress, anxiety, and depression, especially after disasters. Medical expenses further burden families.
- Education: Climate disruptions frequently interrupt learning through school closures, damaged education materials, and displacement. Declining household income from climate-affected livelihoods can push youth out of school, while pollution and poor environmental conditions harm learning environments.
- Livelihoods: Environmental decline undermines both current and future economic security, with losses in agriculture, fisheries, and tourism reducing income, limiting job opportunities, and driving migration.
- Safety: Youth face persistent risks from floods, landslides, storms, and other hazards, intensified by weak preparedness systems, as well as long-term exposure to pollution. Many expressed a strong sense of uncertainty and insecurity about their future.

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

As mentioned in the project component description, the project is designed with activities to address 4 key areas/strategies (i.e., data and early warning system, infrastructure, knowledge, and multi-stakeholder collaboration) where key adaptation gaps/needs exist and which were also indicated as key requirements for building health-climate resilience in Thailand. In addition, the project is designed with 2 components to address up-scaling with regard to these 4 areas to the national level (i.e., National Policy Component focusing on vertical scaling), and Knowledge Sharing Component focusing on horizontal scaling). Addressing the 4 key areas both at the local level and at the national level is relevant in building resilience of municipalities and the country to the health impacts of climate change, including illnesses, deaths, and injuries from heatwaves, dengue, air pollution, and floodings, therefore, the activities of the proposed project are relevant in addressing the adaptation objectives and the overall objective of the project (i.e., reducing the health impacts). In other words, when climate-health data and early warning system is improved to be efficiently functional, infrastructure and public areas or associated operations are improved to be health-climate resilient, populations especially vulnerable ones are equipped with health-climate literacy, and multi-stakeholder collaboration is built and strengthened, resilience to the health impacts of climate change will be built, and the health impacts of climate change will be reduced, addressing the project objective.

Existing initiatives and baseline projects described earlier in the previous section do not address all of the four key areas/strategies, and do not address systematic up-scaling to the national level and will therefore not be likely to reduce the health impacts in the country effectively. The proposed project to the AF will be the first project to address all the four key areas as well as address systematic up-scaling to the national level and will thus be relevant in reducing the health impacts in the country effectively. Without additional funding from other sources, the activities of the proposed project to the AF, taken solely, will help deliver its outcomes and outputs and achieve the overall objective of the project, regardless of the success of other projects. In addition, as mentioned earlier regarding the cost-effectiveness of the proposed project, achieving the overall objective of the proposed project by reducing the health impacts in terms of deaths, illnesses and injuries by at least 5 %, the associated health costs avoided by proactive and preventive adaptation measures of the proposed project will already outweigh the full cost of adaptation or the project cost to the AF. Therefore, in the context of achieving the adaptation objective of the project, the AF funding for the proposed project can be justified both in terms of the full cost of adaptation reasoning and the cost-effectiveness reasoning, i.e., the proposed project can achieve the adaptation objective of the

project regardless of other existing projects, and the avoided health costs or the costs of inaction (i.e., no proposed project) can significantly outweigh the full cost of adaptation (i.e., the project cost).

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

The project has been designed with a strong emphasis on long-term sustainability, ensuring that its benefits continue beyond the funding period. Sustainability is addressed through institutional, financial, and operational integration into existing government systems. Core functions such as data coordination, early warning dissemination, and curriculum integration are intentionally designed and assigned to existing agencies (MOPH, MOE, local authorities), avoiding the creation of parallel structures. This will be achievedthrough the followings: institutional integration, community ownership, capacity building, and alignment with national strategies.

1. Institutional Integration

- The project is carefully crafted to align with Thailand's HNAP, which will last until 2030 before transition into phase 2. It also aligns with the long-term Climate Change Master Plan that will guide the country's climate resilience efforts through 2050 and with Thailand's National Education Plan (2017–2036) and national climate adaptation strategies, enabling formal policy anchoring. This approach ensures that the project's outcomes are not only effective in the short term but are also embedded in Thailand's national frameworks for sustainable development, with a focus on lasting impact and adaptability to future climate challenges.
- Moreover, key policies, tools, and systems developed—including health risk databases, early warning systems, and climate education curricula—are planned to be institutionalized within relevant ministries and municipal governments to ensure they become permanent fixtures of Thailand's public health and climate adaptation infrastructure.
- The project's commitment to sustainability is further reinforced through collaboration with international and national agencies like WHO and UNICEF Thailand, and other government bodies. Their technical support and expertise ensure that the project's strategies are not only effective but also continuously updated and refined to meet evolving challenges.

2. Capacity Building and Local Ownership

Municipal staff, health workers, educators, and community leaders will undergo comprehensive training to equip them with the skills needed to manage and maintain key components of the project. This capacity-building ensures that these vital systems will continue to function effectively long after the initial project phase, fostering local ownership and sustainable management at the community level.

To further reinforce sustainability, community-based support networks—including youth groups and the VHVs—will be actively engaged and empowered to carry forward awareness campaigns and resilience-building activities. These networks will serve as local champions of climate adaptation, ensuring that the knowledge and practices developed through the project are passed down and maintained within the community. By tapping into existing local structures, the project ensures that resilience efforts remain deeply rooted in the fabric of society, long after external support ends.

The project will enhance the existing network within the municipality by expanding its reach and effectiveness through the integration of peer support practices.

Additionally, climate change education will be integrated into school curricula, ensuring that future generations are equipped with the knowledge and adaptive behaviors needed to thrive in a changing climate.

3. Financial and Operational Sustainability

During the project period, a costed transition plan will be developed identifying recurrent costs along with responsible budget holders at national and municipal levels. These costs will be proposed for inclusion in MOPH and MOE annual budgets and planning cycles. Systems will

be embedded into routine surveillance, health and education planning, and disaster preparedness functions, among others.
-The project promotes cost-effective interventions (e.g., nature-based solutions, education, and preventive health measures) that reduce long-term public health and disaster response costs. Municipalities selected for the pilot are those with Gold-Level Healthy City status, indicating strong governance and operational capacity to sustain project outcomes. The project will explore co-financing opportunities and local budget allocations to maintain infrastructure and services post-project.

4. Knowledge Management and Scaling
Lessons learned will be documented and disseminated nationally to support replication in other municipalities. A post-project roadmap will be developed to guide scale-up and integration into future national adaptation planning cycles. The project contributes to Thailand's National Communications to the UNFCCC, reinforcing its role in regional and global climate-health leadership.

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

The proposed project has been screened for potential environmental and social risks in accordance with the Adaptation Fund's ESP. The project is expected to have overall positive impacts, particularly for vulnerable populations, but some risks have been identified, and mitigation measures are in place.

1. Environmental Impacts and Risks
Potential Risks:
- Infrastructure retrofitting - related impacts during infrastructure upgrades (e.g., noise, dust, waste generation).
- Disturbance to local ecosystems during green space development or drainage system installation.
- Resource use (e.g., water, energy) during facility retrofitting.

Mitigation Measures:
- Use of eco-friendly construction practices and nature-based solutions (e.g., permeable surfaces, native vegetation).
- Implementation of waste management plans and energy-efficient designs in line with Thailand's Building Energy Code.

2. Social Impacts and Risks
Potential Risks:
- Exclusion of marginalized groups from decision-making or benefits.
- Disruption to services during retrofitting (e.g., temporary closure of schools or clinics).
- Gender-based barriers to participation in training or leadership roles.

Mitigation Measures:
- Inclusive stakeholder consultations with free, prior, and informed consent, especially for vulnerable groups.
- Scheduling of retrofitting to minimize service disruption and ensure continuity of care and education.
- Implementation of a gender action plan to promote equal participation and benefit-sharing.
- Establishment of a grievance redress mechanism in each pilot municipality.

3. Risk Categorization

Based on preliminary screening, the project is classified as Category B under the Adaptation Fund's ESP:

- Moderate risk: Potential adverse impacts are site-specific, reversible, and manageable with mitigation measures.

4. Environmental and Social Management System (ESMS)

An ESMS will be developed to:

- Monitor compliance with ESP and national standards.
- Track environmental and social indicators.
- Respond to grievances and adapt project activities as needed.

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
Compliance with the Law	Project aligns with Thai laws and regulations, including EIA/EHIA requirements.	
Access and Equity		Risk of unequal access to project benefits, especially for overlooked marginalized or low-income communities. Mitigated through inclusive planning, community outreach, and ensuring equitable access to resources and information.
Marginalized and Vulnerable Groups		Risk of exclusion; urban areas have a lot of hidden population who may or may not have residency in the cities who could be impacted more than others, e.g. those who cannot receive warning, having physical, social and financial difficulties, etc., project plans to address the problem through targeted engagement of vulnerable populations.
Human Rights	Project promotes health, education, and safety for all.	
Gender Equality and Women's Empowerment		Risk of gender-based barriers to participation; and unequal opportunities in decision making process driven by male-dominated leadership and the unequal participation of women and men at municipality stakeholders' composition. Mitigated through gender action plans, capacity

		development for women, youth, and LGBTQ+ groups, and ensuring gender balance in stakeholder meetings and decision-making bodies.
Core Labour Rights	All activities will comply with national labor laws and international standards.	
Indigenous Peoples	No indigenous communities are directly affected in pilot areas.	
Involuntary Resettlement		Risk of unintended displacement or resettlement during infrastructure development. Mitigated through careful planning to ensure no land acquisition is required and community consultation to address potential disruptions.
Protection of Natural Habitats		Risk of disturbance to natural habitats during infrastructure upgrades (e.g., construction, land clearing). Mitigated through environmental impact assessments, environmental screening, and the use of nature-based solutions to enhance ecosystem resilience.
Conservation of Biological Diversity		Risk of biodiversity loss in urban green spaces and nature-based interventions. Mitigated through eco-sensitive designs, biodiversity assessments, promoting green infrastructure.
Climate Change	The project enhances climate adaptation across health and education systems and generates long-term mitigation co-benefits through behavioral change and sustainable practices	
Pollution Prevention and Resource Efficiency		Risk of infrastructure retrofitting-related pollution and resource use including waste generation and energy consumption; mitigated through green building standards, renewable energy consumption, and waste management plans.
Public Health	Project enhances public health systems and reduces climate-related	

	health risks.	
Physical and Cultural Heritage	No heritage sites are expected to be affected; final pilot site selection during full proposal development will ensure full compliance with national and international cultural heritage protection standards.	
Lands and Soil Conservation		Risk of soil erosion during infrastructure retrofitting; mitigated through proper site planning and drainage systems.

PART III: IMPLEMENTATION ARRANGEMENTS

WHO will be the AF Implementing Entity for the project and will be responsible for overseeing, monitoring, and evaluating the implementation of the overall project. UNICEF will be an Implementing partner, overseeing, monitoring, and evaluating the implementation of the project specifically related to education outputs. The project execution will be undertaken through multiple partnership/contractual arrangements between WHO/UNICEF and selected national and local entities with relevant mandates and capacities.

The Executing Entities include

- the Ministry of Public Health, Department of Health,
- Ministry of Education; The Office of Education Council (lead) and the Office of Basic Education Commission (support),
- Municipal Offices in selected pilot municipalities (to be shortlisted during the full proposal development phase).

These Executing Entities will be supported by supporting entities from various ministries/departments and organizations listed in the table below.

The DOH will act as an executing entity for Component 1, 2, and 3 with outputs related to health. The OEC will act as an executing entity for Component 1 with the output related to policy framework and national education platform for promoting health-climate education, while the OBEC will act as an executing entity for Component 2 and 3 with outputs related to education. Municipal Offices in selected pilot municipalities will also act as an executing entity for Component 2.

To ensure cross-sectoral alignment, transparency, and to provide strategic and operational guidance and oversight, a Project Steering Committee (PSC) will be established. The PSC will also be consulted on matters relating to project budget and work plans. The PSC will be chaired by the MOPH, and vice-chaired by the MOE, and will include representatives from relevant ministries, including MONRE (DCCE), MOI (DDPM and DLA), and MSDHS. The PSC will establish one or two technical sub-committee(s) to provide technical and expert inputs, review technical deliverables, and perform other assigned duties.

Function and roles of stakeholders in the project

Function	Stakeholders	Role in the project
Implementation Entity	World Health Organization (WHO)	The World Health Organization (WHO) is the specialized agency of the United Nations dedicated to promoting the highest attainable standard of health for all people. As outlined in its Constitution, WHO emphasizes disease prevention, the strengthening of public health systems, and the promotion of overall well-being. **Role in the Project** WHO will serve as the Implementation Entity for this project. In this capacity, WHO will oversee project execution, support the Government in

		implementing all Components, and take a lead role in Component 4: Monitoring and Evaluation. This includes coordinating both the independent mid-term review and the terminal evaluation of the project.
Implementing Partner	United Nations Children's Fund (UNICEF)	UNICEF is the agency of the United Nations that promotes the rights and well-being of children and adolescents, for every child to grow up in a safe, healthy and protective environment and reach their full potential. UNICEF Thailand works with government and partners on Early Childhood Development, Access to quality Education, Child protection, Young People's Resilience and Empowerment and Social Protection. **Role in the Project** UNICEF will act as the Implementation partner for the project, oversee the project, and take a lead role in managing Component 4: Monitoring and Evaluation. This includes coordinating the independent mid-term project review and terminal project evaluations.
Lead governmental executing entity	Department of Health (DOH)	DOH under Thailand's MOPH is primarily responsible for health promotion, disease prevention, and environmental health management. This project will build on DOH's existing work on Healthy Cities, which focuses on creating health-supportive environments, improving urban health governance, and fostering community engagement for sustainable well-being. **Role in the Project** The DOH will serve as the executing entity for Components 1, 2, and 3, delivering outputs related to health, including, development of climate-resilient health policies, capacity-building for local health systems, and integration of health considerations into climate adaptation planning. Other roles include coordinating with provincial health offices, facilitating stakeholder engagement, and ensuring alignment with national health strategies.
Lead government executing entity	Office of Basic Education Commission (OBEC)	OBEC is a governmental agency under the Ministry of Education responsible for setting guidelines and targets to ensure effective and efficient achievement of national education goals across schools under its jurisdiction. The OBEC Action Plan (2003–2027) emphasizes strategies to address climate change and environmental degradation by enhancing education quality to meet 21st-century challenges. It applies the

		principles of the Sufficiency Economy Philosophy and promotes education that safeguards learners from all forms of threats and hazards, while ensuring that school environments and physical conditions remain safe and conducive to learning. This project will build on existing work by OBEC on environmental education to advance climate education, disaster risk reduction, and health literacy. **Role in the Project** OBEC, a governmental agency under the Ministry of Education, promotes environmental, green, sustainability, and climate change education. In this project, OBEC will act as an executing entity for Components 2 and 3, delivering outputs related to education. Its roles include implementing education-focused activities in pilot municipalities, integrating project plans into national education priorities, and providing technical support for Component 1 to ensure alignment with policy frameworks.
Lead government executing entity	Office of Education Council (OEC)	The OEC is a governmental agency under the MOE that promote evidence-based decision-making and policies, through the preparation, execution and monitoring of the National Education Plan (2017 – 2036), which highlights the education strategies to leverage education quality to respond to changes in the 21st century, and to promote education that protects learners from all forms of threats and hazards. **Role in the Project** The OEC will act as an executing entity for Component 1 with the output related to policy framework for promoting health-climate education.
Local executing entity	Municipality Office (Local Administration Organization of pilot municipalities)	Under the Local Administrative Organization Decentralization Plan and Procedure Act B.E. 2542 (1999), LAOs were established to decentralize power from the central government to local levels, enabling municipalities to manage public services and development tailored to local needs. Municipality Offices are mandated to deliver local public services, manage development planning, infrastructure, health and education, and ensure disaster preparedness and community engagement under Thailand's decentralization framework. **Role in the Project** Municipal Offices in selected pilot municipalities will act as a local executing entity for Component 2.

		They will also establish local health-risk database and early warning systems, improve health, school, and public infrastructure for climate resilience, organize training for municipal staff, health workers, and communities, engage vulnerable groups and foster multi-stakeholder collaboration and develop and implement municipal action plans for health emergency preparedness.
Supporting entity	Department of Local Administration (DLA), MOI	The DLA, under the MOI, is mandated to supervise and support LAOs, enhance their capacity and governance, promote decentralization, develop modern administrative systems and IT, ensure efficient public service delivery, and foster public participation in local governance. **Role in the Project** DLA will supervise and support LAOs in implementing climate-health resilience measures, ensuring compliance with standards, and strengthening local governance and capacity.
Supporting entity	Department of Climate Change and Environment (DCCE)	DCCE is a governmental agency leading Thailand's National Climate Policies and Plans. **Role in the Project** Provide technical support to government executing agencies to align implementation plans with national climate adaptation priorities and frameworks.
Supporting entity	The Office of the Permanent Secretary (OPS) of the Ministry of Public Health (MOPH)	The OPS serves as the central administrative body within the MOPH. The OPS is responsible for administrative excellence, service quality, and technical support across Thailand's public health system, ensuring that policies are implemented effectively, and resources are managed efficiently. **Role in the project** The Office of the Permanent Secretary (OPS) of Thailand's Ministry of Public Health can play a pivotal role in supporting EWS for climate change and health, as well as disease surveillance. OPS oversees the 20-Year National Strategic Plan for Public Health (2017–2036), which emphasizes Promotion, Prevention, and Protection Excellence. This framework can incorporate climate-sensitive health risk monitoring and preparedness into national health strategies. Through its Digital Health Platform, OPS can integrate real-time climate and health data (temperature, air quality, rainfall) with disease

		surveillance systems to predict outbreaks of vector-borne and waterborne diseases. Promote interoperable health information systems for sharing data between hospitals, disease control departments, and meteorological agencies. OPS can act as a national coordination hub, linking health agencies with environmental, agricultural, and disaster management sectors to ensure climate-health alerts are disseminated quickly. Support community-based surveillance through village health volunteers, integrating local observations into national EWS. Support in the development of training programs for health personnel on climate-related health risks and early warning protocols. Strengthen regional health offices to implement localized EWS and rapid response mechanisms.
Supporting entity	Department of Disease Control (DDC), Ministry of Public Health	Core responsibilities of the DDC includes; Prevent and control communicable and non-communicable diseases nationwide through effective surveillance, risk assessment, and rapid response, Provide technical support and build capacity for provincial health offices and local health networks, Promote research and foster innovation in strategies for disease prevention and control, Manage emergency preparedness and response for epidemics and public health threats, including vector-borne diseases, emerging infections, and pandemics. **Role in the project** Enhance Disease Surveillance and Early Warning Systems Develop and strengthen IT-based systems for disease and health hazard surveillance. Implement screening and rapid response mechanisms for climate-sensitive diseases (e.g., dengue, heat-related illnesses). Support Data Integration and Risk Mapping Contribute to national and municipal-level health risk databases. Facilitate data sharing between health and education systems for timely alerts and coordinated responses. Provide Technical Expertise and Capacity Building Train provincial, district, and municipal health staff on outbreak investigation, emergency preparedness, and risk communication.

		Promote standardized surveillance tools and protocols. Policy and Strategic Input Participate in developing national frameworks for climate-health surveillance and early warning systems. Ensure alignment with Thailand's HNAP and international health security standards. Community Engagement and Health Literacy Implement initiatives to raise public awareness on vector-borne disease prevention and climate-related health risks. Develop communication models for risk awareness and preventive behaviors.
Supporting entity	Office of the Permanent Secretary of the Ministry of Social Development and Human Security (MSDHS)	The MSDHS plays a central role in identifying, supporting, and protecting vulnerable groups, including children, older persons, persons with disabilities, and low-income households in climate-related shocks. MSDHS strengthens social assistance systems, coordinates with local authorities to deliver timely relief and essential services and advances adaptive social protection measures that enhance community resilience to climate risks. MSDHS will be the supporting agency for outcome 1 under output 1.1. improving national climate-health-related data systems, by complimenting health data with vulnerable group data.
Supporting entity	Department of Disaster Prevention and Mitigation (DDMP), Ministry of Interior	The DDPM leads Thailand's national disaster risk management, including early warning, preparedness planning, emergency response, and post-disaster recovery. DDPM coordinates with provincial and local authorities to reduce disaster risks. DDPM will be the supporting agency for outcome 1 under output 1.1. improving national climate-health-related data system, by complimenting health data with hazards data.
Supporting entity	Department of Public Works and Town and County Planning (DPT), Ministry of Interior (MOI)	DPT will provide technical guidance and standards for climate-resilient urban planning and infrastructure upgrades in pilot municipalities, ensuring integration of land-use planning, disaster risk reduction, and sustainable development principles.
Supporting entity	Thailand Meteorological Department (TMD)	TMD, under the Ministry of Digital Economy and Society, is mandated to monitor, analyze, and forecast weather and climate conditions, issue early warnings for severe weather and natural

		hazards, support disaster risk management, and provide meteorological data for national planning and public safety. TMD will provide accurate weather and climate data, forecasts, and early warning services to support municipal-level risk mapping, health surveillance systems, and climate-resilient planning.
Supporting entity	Department of Older Persons (DOP), MSDHS	DOP is mandated to promote and protect the rights of older persons, enhance their quality of life through welfare and social services, develop policies and academic measures, and coordinate with local organizations and stakeholders to implement ageing-related programs and innovations. **Role in the project** DOP will support the project by promoting climate-health resilience initiatives for older persons, ensuring their inclusion in risk communication, preparedness activities, and community-based adaptation programs.
Supporting entity	Community Networks and Councils and Universities in pliot provinces	Local universities play a critical role in advancing climate resilience by generating localized research, providing technical expertise to municipalities, and supporting evidence-based planning. They also serve as platforms for youth climate action, mobilizing students to participate in climate risk assessments and community. outreach, innovation projects, and advocacy that strengthen local adaptation efforts. **Role in the project** Local universities will serve as key supporting agencies for Outcome 2, strengthening municipal capacities in high-risk areas. They will work closely with municipalities to advance health-resilient pilots while mobilizing and supporting youth-led climate and health actions.
Supporting entity	GISTDA	GISTDA is mandated to develop and operate space technology and geo-informatics systems, provide satellite data services, and apply these technologies to support Thailand's sustainable development and disaster management. GISTDA will support the project by providing geo-informatics data and satellite-based risk mapping to strengthen health–climate surveillance and early warning systems.

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

Project Objective(s)[1]	Project Objective Indicator(s)	Fund Outcome	Fund Outcome Indicator	Grant Amount (USD)
Overall project objective: To reduce the health impacts of climate change in Thailand, including deaths and illnesses, associated with heatwaves, air pollution, dengue and floodings.	-Annual and 5-year average rates of mortality and morbidity associated with heat exposure in pilot municipalities, and in the country (aligned with Global Goal on Adaptation (GGA) Indicator 1 and 3) -Annual and 5-year average incidence of dengue in pilot municipalities and in the country (aligned with Global Goal on Adaptation (GGA) Indicator 2) -Annual and 5-year average rates of mortality and morbidity associated with dengue in pilot municipalities and 5-year average rates in the country -Annual and 5-year average rates of mortality associated with floodings in pilot municipalities and in the country -Annual and 5-year average rates of mortality and morbidity associated with air pollution in pilot municipalities and in the country	Fund Outcome 2: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses	2.2. Number of people with reduced risk to extreme weather events 2.1. Number and type of targeted institutions with increased capacity to minimize exposure to climate variability risks	

Project Outcome(s)	Project Outcome Indicator(s)	Fund Output	Fund Output Indicator	Grant Amount (USD)
Project Outcome 1. Improved policy framework, and support mechanisms and systems at the national level to strengthen and promote health-climate-resilience of municipalities	-Number and type of national policy frameworks/strategies/ mechanisms improved to address health climate resilience of municipalities	Fund Output 7: Improved integration of climate-resilience strategies into country development plans	7.1. No., type, and sector of policies introduced or adjusted to address climate change risks	Total for Outcome 1: 2,366,590USD
	-Development of national climate-health data and early warning system	Fund Output 1: Risk and vulnerability assessments conducted and updated at a national level	1.2 Development of early warning systems 1.1. No. and type of projects that conduct and update risk and vulnerability assessments	
	-Annual and 5-year average number or percentage of damaged health facilities and public areas in the country (aligned with Global Goal on Adaptation (GGA) Indicator 5) -Number or percentage of health facilities and public areas upgraded to be climate-health-resilient in the country (aligned with Global Goal on Adaptation (GGA) Indicator 6) -Framework or Guideline developed for education infrastructure to be climate-health-resilient in the country -Annual and 5-year average number of damaged education infrastructure in the country	Fund Output 4: Vulnerable physical, natural, and social assets strengthened in response to climate change impacts, including variability	4.1.1. No. and type of health or social infrastructure developed or modified to respond to new conditions resulting from climate variability and change (by type) 4.1.2. No. of physical assets strengthened or constructed to withstand conditions resulting from climate variability and change (by asset types)	

	-Annual number or percentage of health personnels in the country trained to be equipped with climate-health literacy (aligned with Global Goal on Adaptation (GGA) Indicator 10) -Annual number or percentage of students in the country trained to be equipped with climate-health literacy -Annual number of individuals including relevant and vulnerable groups such as the elderly in the country trained to be equipped with climate-health literacy	Fund Output 2.1: Strengthened capacity of national and regional centers and networks to respond rapidly to extreme weather events Fund Output 2.2: Targeted population groups covered by adequate risk reduction systems	2.1.1. No. of staff trained to respond to, and mitigate impacts of, climate-related events 2.2.1. Percentage of population covered by adequate risk-reduction systems	
Project Outcome 2. health-climate-resilience of pilot municipalities strengthened	-Development of operational health-climate early warning systems in pilot municipalities (aligned with Global Goal on Adaptation (GGA) Indicator 8) -Number and type of trainings, and workshops organized at the municipality level to strengthen capacity of pilot municipalities - Number of simulation exercises conducted to operationalize the plan, with lessons learned and bottlenecks documented -Developing and implementing an integrated, multi-sectoral municipality action plan for health emergency	Fund Output 3: Targeted population groups participating in adaptation and risk reduction awareness activities	3.1.1 No. and type of risk reduction actions or strategies introduced at local level	Total for Outcome 2: 6,205,000USD

	preparedness and adaptation at the municipality level in pilot municipalities -Annual number or percentage of health facilities and public areas upgraded to be climate-health-resilient in pilot municipalities (aligned with Global Goal on Adaptation (GGA) Indicator 6) -Number or percentage of education infrastructure operational improved/adopt the guideline to be climate-health-resilient in pilot municipalities -Annual number or percentage of health personnels in pilot municipalities trained to be equipped with climate-health literacy (aligned with Global Goal on Adaptation (GGA) Indicator 10) -Annual number or percentage of students in pilot municipalities trained to be equipped with climate-health literacy -Annual number of individuals including relevant and vulnerable groups such as the elderly in pilot municipalities trained to be equipped with climate-health literacy			
Project Outcome 3 Knowledge and lessons learned from the project,	-Number and type of trainings, and knowledge sharing activities organized for	Fund Output 3: Targeted population groups	3.1.1 No. and type of risk reduction actions or strategies	Toal for Outcome 3: 400,000USD

managed, shared and scaled-up to other municipalities in the country and other countries in the region	other municipalities in the country and other countries -Development of operational knowledge exchange national and global platforms and their number of users and registrations	participating in adaptation and risk reduction awareness activities	introduced at local level	
Project Outcome 4. Monitoring and evaluation system established and utilized to generate evidence and learning and ensure the project objective is met	-Development of operational monitoring and evaluation system and their uses to generate and share lessons learned and ensure the project objective is met			Total for Outcome 4: 245,000USD

[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 CERTIFICATION BY THE IMPLEMENTING ENTITY

A. **Record of endorsement on behalf of the government**[2] *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:*

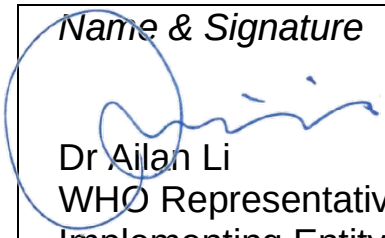
(Enter Name, Position, Ministry)	Date*: (Month, day, year)*

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 (Thailand's Climate Change Master Plan 2015-2050, National Adaptation Plan 2021-2030, National Health Adaptation Plan 2021-2030) 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.

[6.] 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.

<table>
<tr><td colspan="2">Name & Signature

Dr Ailan Li
WHO Representative to Thailand
Implementing Entity Coordinator</td></tr>
<tr><td>Date: (Month, Day, Year)

December, 8, 2025</td><td>Tel. and email:

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Public Health Support Officer (Health Promotion and Determinants)</td></tr>
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URGENT
No. 0804/ 341

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Tel./Fax. (+66) 2 298 5646

3 February B.E. 2569 (2026)

To: The Adaptation Fund Board

Subject: Endorsement for Building Climate-Resilient Municipalities in Thailand: Integrating Health Adaptation and Climate Change Education (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 World Health Organization in collaboration with the United Nations Children's Fund and executed by Thailand's Department of Health in collaboration with the Office of the Education Council and the Office of the Basic Education Commission.

Yours sincerely,

R. Bhu.

(Mrs. Raweewan Bhuridej)
Permanent Secretary
Ministry of Natural Resources and Environment

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

P. Saiyasitpanich

(Mr. Phirun Saiyasitpanich)
Director General
Department of Climate Change and Environment
Primary Contact Point of the Designated Authority to the Adaptation Fund

Adaptation Fund Board Secretariat
c/o Global Environmental Facility,
Mail stop: N 6-600
1818 H Street NW
Washington D.C.

Revised PFG Submission Form[1] (additions in red)

Project Formulation Grant (PFG)

Submission Date: 9 February 2026

Adaptation Fund Project ID:
Country/ies: Thailand
Title of Project/Programme: Building Climate-Resilient Municipalities in Thailand: Integrating Health Adaptation and Climate Change Education
Type of IE (NIE/RIE/MIE): MIE
Implementing Entity: World Health Organization
Executing Entity/ies: Ministry of Public Health – Department of Health (DOH);
Ministry of Education – Office of the Education Council (OEC) & Office of the Basic Education Commission (OBEC);
Municipal Offices in selected pilot municipalities.

A. Project Preparation Timeframe

Start date of PFG	1 March 2026 (or upon AFB approval)
Completion date of PFG	30 November 2026

B. Proposed Project Preparation Activities ($)

List of Proposed Project Preparation Activities	Output of the PFG Activities	US$ Amount	Budget note[2]
A1. National & subnational stakeholder engagement (5 shortlisted provinces), inclusive consultations with vulnerable groups; translation & accessibility	Stakeholder Consultation Report; provincial readiness & risk summaries; evidence of inclusive participation	27,000	Workshops (8), travel & per diem (teams of 3), facilitation, Thai translation & accessible materials; meeting venues & logistics
A2. Evaluability baseline & M&E design aligned to AF core indicators & GGA	Evaluability/Baseline note; draft results framework (indicators,	20,000	Two national consultants (M&E, data) for 45 person-days; data cleaning

[1] As presented in AFB/PPRC.33/40 Annex 1.
[2] The proposal should include a detailed budget with budget notes indicating the break- down of costs at the activity level. It should also include a budget on the Implementing Entity management fee use.

	baselines, targets); MEL plan incl. learning		
A3. Climate–health surveillance & EWS technical design (health–education data sharing, risk maps, alert protocols)	Systems design specification incl. data architecture, interoperability, SOPs; prototype risk maps	23,000	National IT/data specialist; small visualization/prototyping costs
A4. Infrastructure pre-feasibility (rapid climate risk screening for hospitals & schools; shortlist interventions; O&M outline)	Pre-feasibility and options report; cost ranges; safeguards screening inputs	23,000	Engineering/architect (national); site appraisals in 5 provinces; local travel & basic surveys
A5. Education component co-design (curriculum mapping; platform scoping; ToT outline)	Education design package: climate-smart education framework, draft ToT module outlines	15,000	Curriculum specialist; co-creation workshops with OBEC/OEC; content adaptation
A6. Economic & financial analysis + AF-compliant budget (incl. costs & fees tables)	Costing model; cost-effectiveness note; detailed budget & budget notes (Components, EC, IE fee)	11,000	Economist; consultations with EEs; price references; inflation & exchange-rate assumptions
A7. Environmental & Social + Gender scoping (ESMP & GAP outlines) incl. GRM design	Initial risk categorization; draft ESMP/GAP outlines; Stakeholder Engagement Plan; GRM design	12,000	ES/Gender consultant (25 pd); targeted focus groups (elderly, children incl. CWDs, migrants); translation
A8. Formulation project management & logistics	PFG progress updates; consolidated full proposal package ready for submission	7,000	Coordinator (part-time), admin & communications, document production, translations, local couriering
Implementing Entity (WHO) management fee	Project cycle management for PFG (oversight, quality assurance, supervision, reporting)	12,000	Capped at ≤8.5% of activities subtotal per AF costs & fees guidance; applied at 8.0% of total PFG
Total Project Formulation Grant		150,000	

Please describe below each of the PFG activities and provide justifications for their need and for funding required:

A1 is required to validate municipal selection, capture local climate–health risks, and ensure inclusive, gender-responsive design with children and older persons prioritized.

A2 establishes a robust evaluability baseline and AF-aligned indicators so the full proposal can credibly track reductions in COPD-/heat-/dengue-/flood-related health outcomes.

A3 defines the municipal early warning architecture and health–education data sharing needed to operationalize Outcome 2.1 in the concept note.

A4 conducts rapid due diligence to shortlist feasible, climate-resilient recommendations for hospitals, schools and public spaces under Outcome 2.2.

A5 co-designs the climate-smart education package and training approach aligned to MOE systems for Outcome 2.3.

A6 develops the detailed budget, financing plan and cost-effectiveness analysis aligned with AF formats.

A7 delivers initial Environmental & Social risk screening and Gender Action Plan.

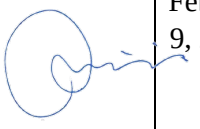
A8 coordinates the formulation process, documentation and submission-ready full proposal.

For LLA Projects only:

Not applicable.

C. Implementing Entity

This request has been prepared in accordance with the Adaptation Fund Board's procedures and meets the Adaptation Fund's criteria for project identification and formulation

Implementing Entity Coordinator, IE Name	Signature	Date (Month, day, year)	Project Contact Person	Telephone	Email Address
Dr Ailan Li, WHO Representative to Thailand		February, 9, 2026	Teeranee Techasrivichien, Public Health Support Officer (Health Promotion & Determinants)	+66 61-384-9083	techasrivichient@who.int