

UNDP Funding Proposal to GCF: Enhancing climate resilience in Thailand through effective water management and sustainable agriculture

Financial Analysis

I. Introduction

1. Thailand is one of the 16 countries identified globally as being in the ‘extreme risk’ category of those most vulnerable to future climate change impacts over the next 30 years.¹ The Greater Chao Phraya basin is Thailand’s largest watershed and covers approximately 35 percent (or around 160,000 km²) of the country’s land area. As climate change impacts upon seasonal rainfall patterns, bringing shorter and more intense precipitation events, the Chao Phraya River Basin is increasingly faced with flood and drought occurrences. Undertaking comprehensive climate change adaptation actions in the Yom and Nan River basin (part of the Chao Phraya river basin) is of critical importance, given that such actions will in turn have co-benefits further downstream reducing flood impacts in the greater Chao Phraya River and the downstream urban areas that include metropolitan Bangkok.
2. RID already practices water management in the critical Chao Phraya River basin to stave off excess flooding during the wet season and to ensure water availability during the dry season, using canals and regulators, including reservoir operations. However, existing infrastructure in the proposed project area are no longer adequate to cope with the increasing pressures of climate change. With more intense wet seasons, this basin is increasingly unable to slow runoff to the central plains, and the greater Bangkok area. And with drier dry seasons, the water that the infrastructure is able to retain is insufficient to cover the irrigation needs of farmers for the extended period. The proposed GCF project responds to the climate risks, through a series of adaptation measures at the Provincial level and is supporting interventions at the national level. These are aimed at building climate change resilience in the Phitsanulok, Uttaradit, and Sukhothai provinces of Thailand, and climate risk-informed decision making in the agricultural and water sectors at the national level.
3. The GCF project will complement ongoing efforts of the Royal Thai Government (RTG) to enhance the resilience of the country and its citizens against climate change induced extreme weather events. GCF resources will be used to promote the application of ecological principles to water management to trigger a paradigm shift within the RID and RTG’s water management approaches towards more integrative solutions (including EbA) following a landscape-ecosystem approach based on the river system. More specifically, the GCF project will contribute to climate-risk informed decision making in the fields of water management and livelihoods planning processes through enhancing the knowledge-base on climate change, making information easily accessible for a spectrum of stakeholders and improve inter-ministerial coordination and information sharing. The project will thus catalyze a paradigm shift towards climate risk-informed and resilient development and will directly benefit 62,000 people in the targeted provinces and indirectly benefit 25 Million in the Greater Chao Phraya river basin.

II. Approach and Methodology

4. As indicated in the main proposal document, this project plans to deliver 3 outputs. These outputs are further divided into 8 activities as shown in Table 1 below.

¹ Nationally Determined Contribution (NDC) for Thailand, 2015
http://www4.unfccc.int/ndcregistry/PublishedDocuments/Thailand%20First/Thailand_INDC.pdf

Table 1 – Outputs, Activities and Sub-activities

Output 1: Enhance climate and risk informed planning in the water and agricultural sectors through improved climate information and cross sectoral coordination		Direct quantifiable financial savings / revenues?
Activity 1.1	Strengthening capacity to generate tailored climate information to inform water management and agriculture planning	NO
Activity 1.2	Facilitating inter-ministerial coordination for climate-informed and integrated planning	NO
Activity 1.3	Expanding access to climate information for application at the household level	NO
Output 2: Improve water management through strengthened infrastructure complemented by EbA measures, for greater resilience to climate change impacts		
Activity 2.1	Climate-informed engineering designs for the 13 schemes of the Yom-Nan river basin, and upgrade of 2 water infrastructure	NO
Activity 2.2	Complementing of grey infrastructure with EbA measures and integration of EbA approaches into water management policy and planning	NO
Output 3: Reduce volatility of agriculture livelihoods in drought and flood prone areas through strengthened extension support and local planning, investment in on-farm adaptation measures and greater access to finance and markets		
Activity 3.1	Application of climate information in household agriculture planning and strengthening of related support through extension services	NO
Activity 3.2	Implementation of on-farm climate resilient measures to improve drought and flood resilience and improved access to finance for sustainable agriculture	NO
Activity 3.3	Capacity building for farmers to support market access for climate resilient agriculture products	NO

5. This financial analysis has been carried out in accordance with the *Guidelines for the Financial Analysis of Projects of United Nations Development Program*. These guidelines clearly mandate that a financial analysis of project cash flows be computed and Financial Internal Rate of Return (FIRR) calculated only for those proposed project activities or outputs that can clearly result in direct and quantifiable financial revenue generation (incremental earnings from baseline) or a direct and quantifiable financial savings potential to the project owners or to the project beneficiaries over a measurable / identifiable period of time.
6. In all, there are 3 outputs and 8 activities that constitute this proposed project. However, as can be seen from Table 1 above, none of the activities or outputs clearly result in direct and quantifiable earnings or direct and quantifiable savings to the project owners or the project beneficiaries in a measurable / identifiable period of time. It is only pertinent to mention here that all the activities and outputs of this proposed project result only in non-attributable savings that are of public good in nature to the larger community of at-risk population in the targeted provinces of the Greater Chao Phraya river basin. Hence, a financial modeling-based analysis has not been conducted and an FIRR has not been calculated for any of these activities.

7. However, considering the GCF's minimum concession policy and in order to meet the terms and conditions laid out by the GCF board on concessionality, this project's proposed activities have been analyzed from a macro-economic and government perspective to assess the need for a GCF grant as the only feasible financial instrument to fund the project's proposed activities.

III. Financial Analysis

8. **Nature of Benefits warrant grant instruments** – The proposed activities under Output 1 – technical training to staff of RID and TMD, strengthening the climate forecasting and water management tool, dissemination and distribution of climate risk information to at-risk households through technology – aim to strengthen climate risk-informed planning, decision making and inter-ministerial cooperation, generating benefits which are of larger public good in nature such as making available easily consumable climate risk-information for households and significant improvement in capacities of government agencies. Similarly, public good nature of benefits will be generated from Output 3, which will train farmers on climate risk-informed decision making in their agricultural practices, provide technical training on building on-farm water management interventions for farmers and help farmers develop business skills for developing market access. While the proposed activities under Output 2 build grey infrastructure in the form of upgraded floodgates and canal embankments, the resulting benefits are larger good in nature without directly identifiable and measurable financial flows to either the project beneficiaries or the project sponsor. The increased storage capacity improves access to water for agriculture and public consumption during dry seasons and the increased drainage capacity mitigates / minimizes the impact on / losses to agricultural lands. It must also be noted here that the direct beneficiaries from the investment in grey infrastructure are the most-vulnerable groups in the region with little or no ability to afford increased cash outflows.

Therefore, the proposed project will not generate any “directly identifiable, attributable and quantifiable” incremental financial revenues or produce any “directly identifiable, attributable and quantifiable” tangible financial cost recovery/savings of resources to either the project owner (Royal Thai Government - RTG) or to the project beneficiaries (direct beneficiaries in the targeted project area) during and after implementation of the proposed project. Due to this larger public good nature of the benefits derived from this funding proposal, repayment of any kind of loan from the project benefits / beneficiaries is not feasible. For this reason, even a concessional loan with 0% interest rate cannot be repaid and hence grants are the ideal instruments to finance the proposed activities of this project.

9. **100% climate driver limiting other participants and zeroing in on GCF** – GCF involvement is critical for this proposal since there is an overwhelming evidence that amidst other potential factors such as increasing population, degradation of ecosystem and poor management of the grey infrastructure, climate change can be attributed as the major factor behind the increasing frequency and severity of extreme climate-related flooding and drought events in the project area of The Greater Chao Phraya river basin. In addition, alternative financing options to address transformative change for the most vulnerable farmers are limited as the planned interventions do not yield any aggregate, large scale financial reflows. Private sector participation in the geography and the sustainable agriculture and water management sector is limited to Corporate Social Responsibility (CSR) activities and spending budgets, which the project is already leveraging. Another potential option of Donor aid was explored but it typically does not include / understand evolving climate change threats and is usually focused on humanitarian activities. In addition, the alternative funding options (if any) do not understand the impact of climate change induced events and their impact on water infrastructure and rural livelihoods.

Hence, given its mandate for enhancing resilience of vulnerable communities to climate change, GCF is best positioned to reduce / close the existing financing and knowledge gaps and barriers to improved resilience of The Greater Chao Phraya province population to climate change induced hazards.

However, it must also be noted / acknowledge that Output 3 has the potential, through the various Technical Assistance (TA) and the other training programs, to attract private sector participation in the form of micro-loans, insurance etc. to the local small-holder farmers in the project region.

10. **Poor, Rural and Vulnerable target population that cannot pay for climate services** – This funding proposal aims to improve the resilience of about 62,000 people who are direct beneficiaries in the proposed project area and 471,561 indirect beneficiaries who are part of the proposed project districts. Many of the poor in these areas are highly dependent on agriculture as a livelihood option and for nutrition, whereas climate change impacts are likely to negatively impact the profitability of such livelihoods. Rural communities suffer significantly from agricultural losses due to climate change-induced natural hazards that aggravate already existing rural poverty and vulnerability. There is also a sizable difference between per capita income levels of average Thai population and the rural population in GCF targeted project areas. More specifically, average GDP per Capita (THB 84,892) in the GCF project region is 56% less than average GDP per Capita (THB 193,395) of Thailand.

In addition, the three selected provinces for the proposed project score poorly on all socio-economic indicators as measured by UNDP's Human Achievement Index (HAI) ². Of the 76 provinces on Thailand, the three selected provinces rank in the lowest quartile on most of the development indicators.

Table 2 – Ranking of GCF project provinces among 76 provinces of Thailand by UNDP Human achievement index indicators

	Uttaradit	Phitsanulok	Sukhothai
Health	66 th	60 th	68 th
Education	31 st	14 th	45 th
Employment	56 th	50 th	55 th
Income	39 th	57 th	36 th
Transport and Communication	30 th	26 th	41 st

As described above, the majority of victims from climate-induced events in the GCF project area come from economically disadvantaged rural areas, where people are mostly self-employed, running small-scale subsistence agriculture, heavily depending on local natural resource base and earning extremely low/no income. They are also disadvantaged in terms of access to roads, critical infrastructure, telecommunications systems and basic social services. Therefore, the target population will not be able to pay for climate service and without GCF funding to this project, the 62,000 direct beneficiaries and 471,561 indirect beneficiaries including the most vulnerable communities will remain at risk from the climate hazards.

11. **Substantial contribution from RTG and the catalytic nature of GCF's grants** – Of the \$31.38 millions of project's proposed budget, 52% or \$16.38 Million is proposed to be provided by the Royal Thailand Government (RTG) including a USD 0.11 Million contribution from a private sector partner (Krungsri bank). However, considering the \$17.26 Million in O&M commitment from the Royal Thailand Government, \$1 of GCF funding will attract \$2.22 in co-financing, thus demonstrating that the GCF grants are only tailored to the incremental cost required to make the investment viable and that the right amount of concessionality is sought.

² UNDP HAI Index <http://www.th.undp.org/content/thailand/en/home/presscenter/articles/2014.html>

Amidst significant challenges in raising capital from alternative funding sources, the Royal Thailand Government is bringing in substantial resources to the project, demonstrating its commitment to the project and more strongly its moral responsibility to provide water management as an essential service to the rural agricultural population. In this scenario, taking into consideration the challenges faced in attracting incremental loans by project sponsors, arranging / intermediating loans for the project beneficiaries, significant hurdles in involving private commercial actors and the poor affordability of target population for climate services, GCF's grant will act as a catalytic capital that will crowd in substantial investments from the Ministry of Agriculture and Cooperative (MOAC) and the private sector Krungsri bank.

In addition, the success of this project will demonstrate the capabilities of RTG in incorporating Ecosystem-based Adaptation (EbA) approaches in water management, placing RTG at an advantageous position to fund similar projects in future without the need for grants and through market borrowing programs or allocation from internal budgets.

IV. Recommendations and Conclusion

The financial analysis has been carried out in accordance with the *Guidelines for the Financial Analysis of Projects of United Nations Development Program*. These guidelines clearly mandate that a financial analysis of project cash flows be computed and FIRR calculated only for those proposed project activities or outputs that can reliably result in direct and quantifiable financial revenue generation (incremental earnings from baseline) or a direct and quantifiable financial savings potential to the project owners or to the project beneficiaries.

In all there are 3 outputs and 8 activities that constitute this proposed project. However, none of the activities or outputs clearly result in direct and quantifiable earnings or direct and quantifiable savings to the project owners or the project beneficiaries. It is only pertinent to mention here that all the activities and outputs of this proposed project result only in non-attributable savings that are of public good in nature to the larger community of the at-risk population in the proposed project area. Hence, a financial modeling-based analysis has not been conducted and an FIRR has not been calculated for any of these activities.

However, considering the GCF's minimum concession policy, this project's proposed activities have been analyzed from a macro-economic and government perspective to assess the need for GCF grant as the only feasible financial instrument to fund the project activities. Hence, taking into consideration the factors such as the public good nature of benefits arising out of the project, climate change being the key driver, disadvantaged socio-economic background of the target population, and the catalytic nature of GCF grants, we recommend the following:

- With 69% of budget coming from co-financing, GCF grant requested through the funding proposal is tailored to the incremental cost to make the total project investment viable and hence the right level of concessionality has been sought.
- Royal Thai Government (RTG) has no incremental ability to stretch its contributions either from internal budgets (due to the innovative, first-time nature of EbA-based project) or from external private capital participation (due to lack of tangible financial reflows)
- The nature of the benefits and the socio-economic background of the vulnerable population does not accommodate repayment of capital in whatever form or serviceability of a loan instrument.
- The nature of the beneficiaries and the level of essentiality of the water management service to their livelihood do not accommodate repayment of capital in whatever form or serviceability of a loan instrument.
- Hence, it is recommended that in order to reduce / close the existing financing and knowledge gaps and barriers to improve resilience of the at-risk population in the proposed



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Annex 3 (c) – Financial Analysis

GREEN CLIMATE FUND FUNDING PROPOSAL

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project area to climate change-induced hazards, catalytic capital in the form of GCF grants are essential.