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Lao People's Democratic Republic

Empowered lives.
Resilient nations.

Final Project Report

Effective Governance for Small-scale Rural Infrastructure and Disaster Preparedness in a Changing Climate

December 2017

PHOTO

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I. Executive Summary

The executive summary is a condensed version of the longer report. It is designed to give readers a quick preview of the report's contents. It should be written as if it was a standalone document. The reader should be able to grasp your over-arching point without having to read the entire document.

Some important things to keep in mind:

- *It should be 1-2 pages only*
- *NO CUT-AND-PASTE from the main report*
- *It should be clear, clean, and to the point*

Please delete this instruction box before final submission

II. Project Information

Project Title: Effective Governance for small scale rural infrastructure and disaster preparedness in a changing climate	
UNDP Award ID	00069456
UNDP Project ID	00084024
Project Duration	1st January 2013 – 31st December 2017
Implementing Partners National collaborating agencies	MONRE, MOHA
Other UN/International collaborating agencies	UNCDF
Cost-sharing third parties	LDCF (GEF)
National Project Director/Project Manager	Mr. Sangkhane Thiangthammavong/Mr. Vanxay Bouttanavong
UNDP Programme Officer/Programme Analyst	Ms. Chitlatda Keomuongchanh
UNDAF, MDG's, Country Programme Outcome, and UNDP Strategic Plan	By 2017, the Government and communities better adapt to mitigate climate change and reduce natural disaster vulnerabilities in priority sectors

Budget Period	Original Budget (USD)	Latest Signed Revision (USD)
Year 1: 1 January to 31 December 2013	618,099.00	162,091.51
Year 2: 1 January to 31 December 2014	1,376,607.00	532,522.08
Year 3: 1 January to 31 December 2015	1,557,371.00	1,776,724.95
Year 4: 1 January to 31 December 2016	1,427,922.00	1,689,206.04
Year 5: 1 January to 31 December 2017	0.00	819,455.42
Total Budget	**4,980,000.00**	**4,980,000.00**

Resources	Donor	Amount (USD)
Year 1	Donor 1 LDCF in cash	570,363.00
	Donor 2 UNDP-TRAC in cash	47,736.00
	Donor 3 UNDP-GPAR parallel	16,563,496.00
	Donor 4 ADB-IWRM parallel	1,052,500.00
	Donor 5 IUCN parallel	1,900,000.00
	Donor 6 GOL in kind	75,000.00
Year 2	Donor 1 LDCF in cash	1,284,871.00
	Donor 2 UNDP-TRAC in cash	91,736.00
	Donor 3 UNDP-GPAR parallel	2,647,200.00
	Donor 4 ADB-IWRM parallel	1,052,500.00
	Donor 5 IUCN parallel	750,000.00
	Donor 6 GOL in kind	75,000.00
Year 3	Donor 1 LDCF in cash	1,465,635.00
	Donor 2 UNDP-TRAC in cash	91,736.00
	Donor 3 UNDP-GPAR parallel	2,647,200.00

	Donor 4 ADB-IWRM parallel	1,052,500.00
	Donor 5 IUCN parallel	750,000.00
	Donor 6 GOL in kind	75,000.00
	Donor 1 LDCF in cash	1,379,130.00
	Donor 2 UNDP-TRAC in cash	48,792.00
Year 4	Donor 3 UNDP-GPAR parallel	0.00
	Donor 4 ADB-IWRM parallel	1,052,500.00
	Donor 5 IUCN parallel	750,000.00
	Donor 6 GOL in kind	150,000.00
Total Resources		**35,572,895.00**

Project Background and Objectives

This project is about increasing climate resilience in rural communities in the two southern provinces of Sekong and Saravane, which have some of the highest poverty rates in Laos. These communities are vulnerable to floods and drought, as well as extreme climate events such as storms and flash floods, which occur at increasing frequency in the region. The project combines improved infrastructure design and construction with ecosystem-based adaptation within watersheds, contributing to sustaining water resources, as well as protecting infrastructures from storms, erosion and flash floods.

Lao PDR is prone to a number of climate hazards, with floods and droughts being the most recurrent, which disproportionately affect the large number of people dependent on agriculture for their livelihood. Recent climate change projections show increasing temperatures, increasing intensity of rainfall and longer dry periods which can give rise to longer droughts and more extreme flooding. Climate risks are not well integrated into rural and agriculture development policies. Institutional mandates for disaster management are divided, and standard operating procedures for early warning and data management are weak at both national and provincial levels

In line with Outcomes 1 and 5 of the UNDP Strategic Plan, The project will help to improve environmental sustainability and strengthen Lao PDR's resilience to climate shocks, including reducing impacts from natural disasters. UNDP will provide policy advisory and technical support to improve natural resource management and climate adaptation policy development.

The further project supports the 8th National Socio-Economic Plan (NSEDP) OUTCOME 3: "Natural resources and the environment are protected and sustainably managed, green growth is promoted, disaster preparedness is enhanced and climate resilience is developed", and the new UNDP Country Programme Document (CPD) for the period 2017-2020, Outcome 2: "Forests and other ecosystems are protected and enhanced, and people are less vulnerable to climate-related events and disasters".

The climate induced problem that the project sought to address from the onset was that local administrations were finding it increasingly difficult to supply and maintain critical small-scale rural infrastructure for rural communities in the face of more frequent flood and drought events.

The key to adaptation in most instances is competent, capable, accountable local administrations that understand how to incorporate adaptation measures into most aspects of their works and departments.

The Project Objective is to improve local administrative systems affecting the provision and maintenance of small-scale rural infrastructure (including water and disaster preparedness) through participatory decision making that reflects the genuine needs of communities and natural systems vulnerable to climate risk

This was to be achieved through three project outcomes:

- Outcome 1: Capacities provided for local administrative institutions to integrate climate risks into participatory planning and financing of small-scale rural water infrastructure provision

- Outcome 2: Incentives in place for small-scale rural infrastructure to be protected and diversified against climate change induced risks (droughts, floods, erosion and landslides) in the 12 districts of Sekong and Saravane provinces
- Outcome 3: Natural assets (such as wetlands, forests and other ecosystems in sub-catchments) are managed to ensure maintenance of critical ecosystem services to sustain critical rural infrastructure, especially water provisioning, flood control and protection under increasing climate change induced stresses, in Sekong and Saravane provinces

III. Project Performance and Key Results

Status Summary at Outcome level

Since the project started in 2013, both the Paris Agreement and the global Sustainable Development Goals (SDGs) have entered into force globally. Lao PDR was the first ASEAN country to ratify the Paris Agreement (September 2016), and has also mainstreamed the SDGs into planning processes such as the 8th NSEDP for the period 2016-2020 as part of the development priorities for the country. There is an increased understanding that development gains achieved over recent decades may be reversed by the impacts of climate change and overexploitation of natural resources, and thus threaten the intentions of Lao PDR to graduate from Least Developed Country Status by 2020.

The general awareness of climate change issues has thus increased significantly since project inception, at least in certain sections of government.

There is also an increased appreciation in Lao PDR of the role of nature (e.g. forests and wetlands) for increased climate resilience in the country. Guidelines on "Ecosystem-based Adaptation to Climate Change in Lao PDR" were published in December 2013. The project has used these Guidelines as the "point of entry" for combining infrastructure resilience with ecosystem-based adaptation for rural water infrastructure.

The project has contributed to the raised awareness of climate change issues at provincial and district levels in the two target provinces of Saravane and Sekong. At the community level, awareness on climate change issues and nature-based solutions such as forest rehabilitation and management, and wetland conservation, has been increased significantly in beneficiary communities.

Finally, the project has contributed to raise the profile of Lao PDR internationally. At the UNFCCC Conference of Parties, held in Bonn, Germany, in November 2017 (the COP23), the project organized a Side Event together with Timor Leste on South-South Cooperation for climate resilient infrastructure planning and implementation, including an emphasis on nature-based solutions to climate change. At the COP23, Lao PDR was also highlighted for its potential for circular economy approaches to sustainable, climate-resilient and low-carbon development.

Status Summary at Output level

Outcome 1	Capacities provided for local administrative institutions to integrate climate risks into participatory planning and financing of small-scale rural water infrastructure provision	
Indicator 1.1	Percentage change in the ability of local and some national officials to apply methodologies to analyze climate risks and identify CC vulnerabilities in 12 districts *Baseline: No officials apply methodologies to analyze climate risks and vulnerabilities*	0 %

	50% of sub-national officials and 10% of national officials are able to analyze climate risks for their districts on a macro level (V&A analysis) and are able to identify specific vulnerabilities and adaptation options at village level (CRVA)	50 %
	Actual Target (as at end of project)	>50%
Indicator 1.2	Procedures are in place to integrate CC resilient advice and investment for small-scale rural water infrastructure into district planning	
	Baseline: No procedures in place	0 districts
	Planned Target: All 12 target districts are applying a climate resilient planning mechanism including project identification, site assessment, approval, execution and M&E.	12 districts
	Actual Target (as at end of project)	12 districts
Indicator 1.3	Number of district development plans available, reflecting costs for adaptation in the water sector	
	Baseline:	0 district development plans
	Planned Target (YYYY) (as stated in the project document)	12 district development plans
	Actual Target (as at end of project)	12 district development plans
Key results	A capacity needs assessment was carried out in 2014, which was then the basis of implementation of capacity –building activities throughout the remaining part of the project. These were mainly carried out as 'on-the-job' events and linked to implementation of specific project activities. For instance, the Climate Risk and Vulnerability Assessment (CRVA) was carried out in 2016 as a key activity of Outcome 1, and of the project. A large element of capacity building was part of the CRVA implementation, with the aim to transfer CRVA skills to local officers and communities. Similarly, the project Infrastructure Specialist worked with district engineers during the project design phase with the aim to increase capacity for climate resilient planning and design. Throughout the life-time of the project, and particularly during the early period (2014-15), a lot of effort was put into building capacity with district authorities in the District Development Fund (DDF) mechanism and its associated planning processes. The project Financial Management Specialist along with staff from the MOHA NGPAR programme were instrumental in ensuring that the needed capacity in this area was built and maintained. The project National Infrastructure Specialist worked together with district engineers and other technical staff to build capacity in climate resilient infrastructure design and construction. Again, this was done mainly in an "on-the-job" setting, i.e. during the planning and design of the infrastructure projects funded though the project. A challenge that was identified early during project implementation was to better link infrastructure resilience (Outcome 2) with ecosystem-based adaptation measures (Outcome 3). Better integration of the two Outcomes was facilitated through the planning and implementation of joint capacity building activities between the infrastructure specialist and the ecosystem specialist.	
Outcome 2	**Incentives in place for small-scale rural infrastructure to be protected and diversified against climate change induced risks benefitting at least 50,000 people in 12 districts of Sekong and Saravane**	
Indicator 2.1	Number of districts routinely investing in climate resilient measures to improve village level water harvesting, storage and distribution systems	
	Baseline:	0 districts

	Planned Target (YYYY) (as stated in the project document)	12 districts
	Actual Target (as at end of project)	12 districts
Indicator 2.2	Number of people benefitting from investments in small-scale water infrastructure systems to increase their resilience against climate change risks	
	Baseline (YYYY)	0
	Planned Target (YYYY) (as stated in the project document)	50,000 community beneficiaries
	Actual Target (as at end of project)	38,000 community beneficiaries
Indicator 2.3	District level fiscal and administrative incentives are introduced that incorporate climate resilient measures for small-scale rural infrastructure	
	Baseline)	Not yet introduced
	Planned Target (YYYY) (as stated in the project document)	Introduced
	Actual Target (as at end of project)	Introduced

Key results

During the project, the total target of infrastructure projects to be implemented was reduced from 48 projects to 28 projects. This was based on several considerations. Firstly, the original number of 40 projects was unrealistic as it implied four funding cycles (years), and one project in each district per year. However, it was never possible to fund any projects in year one when the project was starting up, and was out of phase with the annual financial cycle of the District Development Fund (DDF) planning mechanism. Secondly, a cautious approach was taken during the first funding cycle in order to ensure quality and build up experiences in the process. Therefore, only four projects were funded during the first round of funding, in 2014. These projects were identified from the Vulnerability Assessment that was undertaken as part of project formulation, and which included a long-list of potential projects for consideration during project implementation.

The total grant (2 mill USD) was not changed as part of the reduction of the number of projects. This meant that, with fewer projects than planned, some slightly bigger projects could be supported. In total, 29 infrastructure projects have been funded, including irrigation systems (14 projects), water supply (6 projects), flood gate improvements (2 projects), community bridges (5 projects), and check dams (2 projects). The following infrastructure projects have been implemented:

2015: (1) Nong Deng Irrigation Project, Saravane District; (2) Naphrabangyai Water Supply, Lakhonpheng District; (3) Ban Mo Irrigation Project, Lamarm District; (4) Songkhone Irrigation Project, Kaleum District

2016: (5) Hang Heng Irrigation Project, Khongsedone District; (6) Sa O dike construction Project, Khongsedone District; (7) Lakhonesy Reservoir Project, Lakhonpheng District; (8) Culvert construction Project, Laongam District; (9) Beung Xai Irrigation Project, Saravane District; (10) Bridge construction Project, Ban Kengnoy, Vapi District; (11) Upgrading Ban Pihai Irrigation Project, Samouay District; (12) Upgrading Ban Patem Irrigation Project, Ta Oy District; (13) Ban Kamkok water Supply Project, Thateng District; (14) Ban Louay water supply Project, Kaleum; (15) Ban Dak Treup water supply Project, Dak Cheung; (16) Ban Naver Irrigation Project, Lamarm District.

2017: (17) Upgrade of Huay Chaluay Irrigation System, Phanoune Village, Saravane District; (18) Upgrade of Chohai Irrigation System, Ta Oi District; (19) Huayhai Bridge construction, Houywa Village, Toum Lan District; (20) Huay Lapong Bridge construction, Donehue Village, Lakhonpheng District; (21) Construction of Reservoir Dike at Beung Sa Ae, Nalaong Village, Vapi District; (22) Hang heng Pumping Irrigation Scheme, Khongsedone District; (23) Upgrade of wooden bridge and associated road, Keb Pheung Village, Laongam District; (24) Lahang Irrigation System, Samouy District; (25) Huay Koung system, Beng Village, Lamarm District; (26) Kongtasing Village water supply, Kaleum District; (27) Tatalang Village water

	supply, Dakcheung District; (28) Huay Dam Irrigation system, Thateng District; and (29) Upgrade Village Water Supply at Katao Village in Toum lan District.
Outcome 3	Natural assets (wetlands, forests and other ecosystems in sub-catchments) over at least 60,000 ha are managed to ensure maintenance of critical ecosystem services, especially water provisioning, flood control and protection under increasing climate change induced stresses, in Sekong and Saravane provinces
Indicator 3.1	Number of management /action plans developed and under implementation, which protect natural assets through local scale ecosystems based adaptation measures to improve the resilience of small- scale rural infrastructure against floods and drought *Baseline:* 0 management plans *Planned Target (YYYY) (as stated in the project document)* up to 9 management plans *Actual Target (as at end of project)* 9 management plans
Indicator	xxx *Baseline (YYYY)* xxx *Planned Target (YYYY) (as stated in the project document)* xxx *Actual Target (as at end of project)* xxx
Key results	Two ecosystem areas were identified early on in project implementation (mid 2014) as potential areas for ecosystem interventions, the degraded watershed forest of Phu Ta Yeune, in Thateng District of Sekong Province, and the Sa O Wetland in Khongsedone District of Saravane Province. These two areas were considered pilot ecosystem areas in terms developing a process for ecosystem interventions, which included: (1) community consultations, (2) participatory land use planning, (3) development of ecosystem management plan, including rules and regulations, and - where feasible – (4) identification of specific ecosystem-based adaptation measures. Subsequently, an additional 7 areas were identified based on the CRVA results, and modelled around the two pilot ecosystem areas. The seven additional ecosystem areas include: watershed forest area upstream of Naver village, Lamarm District; (2) watershed forest upstream of Songkone village, Kaleum District; (3) watershed forest upstream of Loy village, Kaleum District; (4) watershed forest upstream of Dark Treub village, Dakcheung District; (5) Beung Ae Wetland, Vapi District; (6) watershed forest upstream of Johai village, Ta Oy District; (7) watershed forest upstream of Pihai village, Samuay District

IV. Implementation Review

Partnerships

The project was implemented through a partnership between Ministry of Natural Resources and Environment (MONRE), Ministry of Home Affairs (MOHA), UNDP and UNCDF. MOHA has for many years implemented the National Governance and Public Administration Reform Project (NGPAR) with support from UNDP and UNCDF. Through this project, a mechanism for financing rural infrastructure through a District Development Fund (DDF) has been developed, the DDF Mechanism. The rationale for partnering with MOHA and UNCDF for the grant funding of local climate resilience projects was to use an existing funding mechanism for rural infrastructure, where additional funding to ensure climate resilience of the infrastructure could then be supported through the LDCF grant. This would support the sustainability of project outcomes, i.e. climate resilience measures would be incorporated into existing funding and planning mechanism and ensure sustainability and up scaling.

Monthly meetings were held throughout the life-time of the project in order to facilitate the partnerships and coordinate project activities of the different agencies.

Although the project benefitted from "tapping into" an existing mechanism, some circumstances constituted some major hindrance towards benefitting from such an existing mechanism. Firstly, the DDF mechanism, although having been implemented for 10 years, has still not been adopted by the Government as a funding mechanism for rural infrastructure. It is still seen as a project implementation mechanism rather than a mainstreamed, nation-wide government mechanism. Secondly, by the time the project started implementation in late 2014, the NGPAR project: GPAR SCSD was phasing out in the two provinces of Saravane and Sekong. It was therefore never possible to implement projects together with the NGPAR project, i.e. as envisaged by the Project Document, so that infrastructures funded through the Basic Block Grant of the NGPAR project could be made climate resilient through additional funds from the LDCF climate grants, i.e. the "Additionally Concept". As a result, most of the projects implemented by the project were "stand alone" full infrastructure projects, i.e. fully designed to be climate resilient. A few projects were implemented with government co-funding, in which cases, the additionally concept was, at least partly, applied.

A new phase of the NGPAR Programme, the "Governance for Inclusive Development Programme" (GIDP) is starting up from April 2017, with plans to revise the DDF mechanism and integrate it with government systems such as the 'Sam Sang' policy, so there is an opportunity to use the experiences from the LDCF project to integrate climate resilience into this new phase (see below).

Sustainability

The Project is designed to use the District Development Fund (DDF) mechanism as the funding mechanism for small-scale rural infrastructure. The aim was to "tap into" an existing funding mechanism rather than creating a new, project-specific one, thereby ensuring impacts beyond project life time. The DDF has been developed and tested over the past decade through the National Governance and Public Administration Reform (NGPAR) Programmet under Ministry of Home Affairs (MOHA) and with support from UNDP and UNCDF.

The incorporation of climate resilience criteria and planning processes into the DDF mechanism, which has been done as one of the outputs under the project, is therefore an important element of Sustainability that was already built into the project design.

The DDF mechanism will be taken forward and upgraded in the next phase of the NGPAR Programme: GIDP, which started in April 2017 as the "Governance for Inclusive Development Programme" (GIDP). Under this new programme, the DDF mechanism will be upgraded and better aligned with other government strategies and mechanisms such as the 'Sam Sang' devolution directive and newly established Provincial People's Assembly (PPA).

For sustainability and national up scaling, including integration with national funding streams and strategies, the LDCF2 project with its lessons learnt and recommendations for improvement captured towards the end of the project can therefore provide a basis for the upgrade of DDF mechanism under the new GIDP programme to ensure alignment and sustainability. The specific details on how to integrate climate issues into the GIDP programme and the review of the current inter-governmental fiscal transfer process and decision-making/approval process for the fund flows of DDF Climate Resilient Grants (DDF-CRG) involving multiple ministries at the central level as well as departments and offices at the local level was examined under the LDCF2 project. The findings of this

review could contribute to the upgrade of DDF during the GIDP inception period, and it is therefore important the project actively engage with the GIDP inception process.

In addition, national building codes and guidelines will also be reviewed with the aim to integrate climate resilience criteria and considerations. This will be done through consultations with relevant ministries, particularly Ministry of Public Works and Transport (MPWT), Ministry of Agriculture and Forestry (MAF), and Ministry of Health (MOH).

Climate Risk & Vulnerability Assessment (CRVA) has been piloted by the project. This process will be further integrated into national planning mechanism, including the upgraded DDF mechanism and Sam Sang process.

Ecosystem-based adaptation (EbA) and bio-engineering in relation to infrastructure resilience has been piloted by the project. These will also be integrated into planning and implementation processes for climate resilient infrastructure development. In addition, the existing EbA Guidelines under Department of Climate Change (DCC) in Ministry of Natural Resources and Environment (MONRE), has been updated with particular emphasis on rural infrastructure.

However, Ecosystem outcomes are long-term, and there may be needs for additional funds to consolidate impacts, and strengthen community (co-)benefits from ecosystem services.

V. Challenges and Response Strategies Adopted

Implementation through the DDF mechanism was hampered by the fact that the NGPAR programme: GPAR SCSD had been phased out in the two provinces by the time the LDCF project got started. It was therefore not possible to implement infrastructure projects jointly between NGPAR and LDCF, and thereby demonstrating the "additionally" concept of climate change adaptation. In this regard, it is also worth noting that the DDF mechanism has not yet been adopted as a government mechanism for local planning and funding. It is still seen as a project delivery system. The new phase of the NGPAR (Governance for Inclusive Development Programme – GIDP) is expected better integrate a revised DDF system into national planning frameworks such as the 'Sam Sang' policy. This offers an opportunity to integrate project outcomes and lessons learnt into the new GIDP programme, thereby ensuring integration of climate resilience criteria into national and local planning mechanisms.

Linking infrastructure and community resilience with ecosystem management is a new concept, and involves communication between specialties that are not used to communicate. Furthermore, infrastructures can be built in weeks or within a month, whereas ecosystem rehabilitation and management requires years, in some cases decades. This challenge was overcome by incorporating ecosystem considerations into the Climate Risk and Vulnerability Assessment (CRVA) process, so that it became a multi-scale assessment at three scales: (1) the infrastructure site, (2) the community and surroundings, (3) the larger-scale watershed. Also, a key element of this challenge was to ensure collaboration between key project specialists (infrastructure and ecosystem specialists), including organizing joint capacity building events, and joint field-work.

The project also faced a key challenge related to keeping key technical staff, particularly with regards to Infrastructure Specialist (NIS), and with the M&E specialist. The project have had three NIS and three M&E specialists during the four-year implementation period. Particularly infrastructure specialists are in high demand in Lao PDR, and private sector jobs in the mining and hydropower sector have been difficult to compete with.

After two rounds of advertising and recruitments, the project decided to go for output-based, part-time positions, and recruited the 3rd NIS from the National University of Laos (NUOL) on a part-time basis. Similarly, the M&E Specialist was recruited on a part-time basis from the National Economics Research Institute (NERI). This had the added advantage of establishing links to the university and research community in Lao PDR, i.e. the NIS will now be able to apply his experiences from the project with climate resilient infrastructure, bio-engineering and ecosystem-based adaptation, at the Faculty of Engineering at UOL, and possibly build climate resilience, bio-engineering and ecosystem-based adaptation into national cuccicula.

VI. Lessons Learned

How to integrate nature-based solutions with infrastructure design and engineering?

The use of nature-based solutions such as forest rehabilitation, ecosystem management, wetland restoration and management for building climate resilience of rural infrastructure and communities is a new approach to climate change adaptation. The lessons learnt from the project suggest that inter-agency coordination between infrastructure planning agencies and ecosystem management agencies is essential for such an approach to be successful. Specifically, infrastructure engineers must be able to communicate with, and incorporate ecosystem considerations into infrastructure design and implementation. And ecosystem specialists must be able to communicate the benefits of ecosystems for climate resilience to development agencies and infrastructure specialists.

In order to facilitate such integration and communication between different specialties, the project designed an integrated and multi-scale Climate Risk and Vulnerability Assessment (CRVA), starting from the infrastructure site (scale: ~100s m^2), to the community (scale: ~km^2), to the watershed (scale: ~10-100 km^2). Infrastructure specialists and ecosystem specialists both must be part of the CRVA team.

The project developed a detailed CRVA process covering all these three scales, and thereby integrates nature-based solutions with engineered infrastructure. The CRVA process can be replicated elsewhere in the country ensuring incorporation of ecosystem considerations into infrastructure planning and design. The project has also updated the "Guidelines on Ecosystem-based Adaptation to Climate Change in Lao PDR" with specific reference to small-scale rural infrastructure. These Guidelines will also be applicable across many sector agencies dealing with the design and implementation of rural infrastructure.

Impact Monitoring

The project document did not include a component for monitoring the community impacts of project interventions, i.e. measuring the impacts that specific infrastructure projects had on the climate resilience and livelihoods of the communities. This can be done as a cost-benefit analysis (CBA), and the project carried out CBA studies for five of the infrastructure projects to obtain data on project impacts, and test whether existing tools such as CBA can be used to measure impacts.

The project did the CBA study in five communities where infrastructure projects were implemented under the project, three in Saravane and two in Sekong. The communities were: (1) Polong community bridge (Laongam District), (2) Heng irrigation system and wetland dyke (Khongsedone District), (3) Beung Xay flood culvert and irrigation system (Saravane District) – all in Saravane

Province, as well as (4) Kamkok Water Supply (Thateng District) and (5) Dark Treub gravity-fed water supply (Dakcheung District) both in Sekong Province.

The study was based on community consultations, including gender-specific Focus Group Discussions in all five communities. The two main economic metrics measured in CBA are (1) Net Present Value (NPV), and Internal Rate of Return (IRR). Generally speaking, a positive NPV indicates that the project is economically feasible.

Community	NPV	IRR
Polong Village	86,000,000 Kip	4.15%
Hang Heng Village	4,800.000.000 Kip	20.56%
Beung Xay Village	9.900.000.000 Kip	92.75%
Kamkok Village	-389,000,000 Kip	-6.62%
Dark Treub Village	Not possible	Not possible

As can be seen in the Table above, it was not possible to calculate NPV and IRR based on data collected from Dark Treub Village. There are also significant doubts whether the collected data from all the communities appropriately capture the issue of climate resilience, and whether measures such as NPV and IRR fully capture the impacts. Measuring climate resilience, and impacts of climate interventions, is very complex, and CBA may not easily capture the full range of impacts. Additional measures may have to be designed that better capture the complexity of climate resilience.

The CBA study was carried out by a researcher from the National Economics Research Institute (NERI). The project recommends that future projects of similar nature could benefit from linking to national research institutes such as NERI to be involved in project impact research and monitoring, including the development of methods and tools for measuring community climate resilience.

GEF Small Grants Program (GEF-SGP)

Many of the communities benefitting from project interventions could benefit further from additional support in terms of maintenance and operations of infrastructures, building further resilience through livelihoods diversification, and building the long-term foundation for nature-based resilience of the communities. Such additional support is available in country through the GEF Small Grants Program. These grants, which are of a maximum of 50,000 US$ are allocated directly to community groups for specific, small projects, and therefore require capacity and organization within the community to manage the funds.

The project only got actively engaged with the GEF-SGP in-country coordinator at the later stages of project implementation, and there was therefore limited time to ensure that any of the participating communities could identify SGP projects, develop proposals, and be made ready to receive and manage the SGP grants.

The project recommends that future projects of similar nature should facilitate linkages to the GEF-SGP at the earliest stages of project implementation, and in a targeted manner to build community capacity for grant management, and assist communities in identifying and developing project proposals.

VII. Expenditures

Expenditures Summary

Output	Activities	Source of Funding	Activity Budget (USD)	Accumulated Expenditure (USD)	Delivery Rate (%)
Output 1 Capacities of local institutions	1.1 Technical capacity in climate resilience planning; 1.2 Village level water harvest, storage and distribution infrastructure adaptation solution identified, priority and integrated into district development plan; 1.3 Climate risk, vulnerability and assessment (CRVA) carried out at 48 project sites in 12 district; 1.4 Detailed CR project investments finalized and tender docs prepared in 12 districts, as well as associate dialogues to facilitate the implementation of annual dist. investment plans in 12 districts; and 1.5 Guidelines for climate resilient construction for small-scale rural infrastructure sectors	40000	75,892.60		
		62160	1,252,825.16		
Sub-total Output 1			**1,328,717.76**		
Output 2 Investments and Incentives	2.1 Incentive mechanism, rewarding district performing well in planning budgeting and implementation of CR, ecosystem base small-scale water infrastructure is developed, tested and under operation to drive the delivery of LDCF CR infra. Grants; and 2.2 At least 28 small-scale infrastructure investment projects, incl. components of water harvest, storage, distribution and/irrigation of the priority lists that have been CRVA assessment are implemented benefiting 50,000 people	40000	13,382.65		
		62160	2,217,394.00		
Sub-total Output 2			**2,230,776.65**		
Output 3 Ecosystem services	3.1 Up to nine ecosystem management and action plan with a coverage of at least 60,000 ha to project 48 small-scale CR rural infra. projects are designed, implemented and monitored for effectiveness; and 3.2 Awareness raising activities implement, learning materials developed and disseminated and regular dialogues held between communities and tiers of the local administration on the linking between ecosystem management and small-scale CR infrastructure solutions	40000	60,519.36		
		62160	922,636.84		
Sub-total Output 3			**983,156.20**		
Output 4 Project Management	4.1 Effective Project Management	40000	130,205.39		
		62160	307,144.00		
Sub-total Output 4			**437,349.39**		
Total:			**4,980,000.00**		

Expenditures by Donor

Donor	Source of funding	Project Output	Accumulated Expenditure (USD)	Delivery Rate (%)
Donor 1 LDCF	04000	Output 1 Capacities of local institutions	75,892.60	
Donor 2 UNDP-TRAC	62160		1,252,825.16	
Donor 1 LDCF	04000	Output 2 Investments and Incentives	13,382.65	
Donor 2 UNDP-TRAC	62160		2,217,394.00	
Donor 1 LDCF	04000	Output 3 Ecosystem services	60,519.36	
Donor 2 UNDP-TRAC	62160		922,636.84	
Donor 1 LDCF	04000	4 Effective Project Management	130,205.39	
Donor 2 UNDP-TRAC	62160		307,144.00	
Sub-total:	**04000**		**280,000.00**	
Sub-total:	**62160**		**4,700,000.00**	
Grand-total (04000+62160):			**4,980,000.00**	

VIII. List of Annexes

- Risk logs (final updated)
- Issue logs (final updated)
- List of publications
- Other relevant documents

PREPARED BY PM

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Date: 23/2/2018

APPROVED BY NPD

.....

Sangkhane THIANGTHAMMAVONG

Date: .....

23.2.2018

RECEIVED AND REVIEWED BY UNDP

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Date: .....