**Terminal Evaluation of Promoting Climate-Resilient Water Management and Agricultural Practices in Rural Cambodia**

**(NAPAFU Phase2)**

**Final Draft, November 19, 2015**

**Prepared for: UNDP Cambodia**

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**Executive Summary**

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| Project Title | **Promoting Climate-Resilient Water Management and Agricultural Practices in Rural Cambodia (NAPAFU Phase2)** | | |
| **UNDP Project ID:** | 0086715  PIMS 3867 | **Project financing** | ***at endorsement (Million US$)\**** |
| **ATLAS Project ID:** | 00056753 | Gov’t. of Canada financing: | $2,038,569 |
| **Country:** | Cambodia | IA/EA own: |  |
| **Region:** | Southeast Asia | Government: | $94,560.00in kind |
| **Focal Area:** | Climate Change | UNDP co-financing: | $187,000 |
| **GEF Focal Area** | Climate Change adaptation |
| **Executing Agency:** | Ministry of Agriculture, Forestry and Fisheries | Total Project Cost in cash: | **$2,225,569** |
| **Other Partners involved:** | Ministry of Water Resources and Meteorology, Ministry of Women's Affairs | ProDoc Signature (date project began): 1 July 2013 | |
| Planned closing date: 31 December 2015 | |

In 2009, the Royal Government of Cambodia (RGC) commenced the project “Promoting Climate-Resilient Water Management and Agricultural Practices in Rural Cambodia” with support from the GEF-managed Least Developed Countries Fund (LDCF). It was the first climate change adaptation project under the National Adaptation Programme of Action (NAPA, 2006). The project implemented specific measures aimed at reducing vulnerabilities from localized flood and drought in 16 vulnerable communes in two provinces – Preah Vihear and Kratie, both of which have been plagued with droughts and floods. In 2013, this project was extended into Phase 2 with funding under the Canada-UNDP Climate Change Adaptation Facility, and the addition of another 16 communes in the same provinces.

The Phase 2 project endeavored to refine the Phase 1 approach by adopting more of a ‘one village’ approach, placing greater emphasis on poor and vulnerable households, applying targeted gender assessment and design, and more firmly establishing the role of Farmer Water User Communities (FWUC) and other decentralized means of sustaining water management adaptation measures. The central problem that the project sought to address was to build on and expand concrete adaptation measures introduced in Phase 1 and to reduce the vulnerability of agriculture, in particular the capacity of households to retain rainwater for domestic and agricultural use, enhance/maintain the productivity of agriculture in a changing climate, and assist in diversifying livelihoods for the landless and land-poor families. The project design had three major outcome components related to (1) developing capacity to manage agricultural water resources, (2) demonstrating locally appropriate adaptation options, and (3) replicating lessons learned in other vulnerable areas of Cambodia.

This terminal evaluation concentrates on Phase 2 of the NAPA Follow-up project, but extensive overlap with Phase 1 also occurred. The terminal evaluation aimed for an evidence-based, transparent and participatory approach consistent with the *Guidance for Conducting Terminal Evaluations of UNDP-supported, GEF-financed projects* (2012). The evaluation methodology was based on (a) review of documents, reports and surveys that describe progress on project outputs, outcomes and objectives as per indicators in the project design, (b) self-assessment of project achievements by project staff, (c) interviews with project participants and stakeholders to verify achievements and to identify issues related to project design and implementation, (d) selective site visits and field observations in four communes to observe local achievements and to consult with beneficiaries and stakeholders, and (e) triangulation and corroboration of comments by project participants regarding project results, implementation and lessons.

The evaluation found that the project has been well organised and has effectively implemented the planned activities and outputs in a timely manner. The joint implementation by three ministries is a new approach that has had a substantial effect in raising awareness of climate change and adaptation options in 65 villages and 32 communes. Phase 2 mostly focused on 16 of the communes where, similar to the Phase 1 communes, farmers are now aware and trained to varying degrees in alternative activities (vegetable production, poultry/pig raising, integrated farming, post-harvest processing, etc.). Improved availability of water for domestic purposes and changes in farming practices, particularly the use of early maturing varieties and climate-resilient rice varieties, are the most evident changes. A summary of project achievements relative to targets and terminal evaluation comments is provided in Annex 6.

The project concept of rainwater harvesting and water source availability as a basis for improved agricultural productivity, diversity and resilience has generally proven to be viable and cost effective in water-scarce communities where local people are managing the facilities with external technical oversight. The primary benefits have been for domestic water supply in the dry season. The secondary benefits have been to provide water for home gardening, integrated farming, livestock development and expanded irrigated rice farming. Almost 3400 households have reportedly applied more than one adaptation measure (Phase 1 and 2). The extent to which these methods have been fully adopted by farmers has yet to be clearly confirmed but some lead farmers have demonstrated significant results, and others have shown a strong interest.

Climate resilient rice varieties, seed purification (and multiplication) and livestock development appear to have been readily adopted, while the use of integrated farming and SRI rice intensification methods have less evidence of acceptance (although data are lacking). The project included rehabilitation and expansion of five irrigation schemes which have only recently been implemented and there is insufficient experience to assess results. Future coordination of PWRAM, PDA and FWUC management and the necessary requirements for user fees, sustainability and oversight of these facilities is a concern.

Gender assessment and mainstreaming have generally been successful at raising awareness, ensuring equitable participation of women, targeting adaptation priorities for women, and promoting post-harvest processing of agricultural products. Women made up 60% of the participants in training sessions and workshops. The 65 community revolving funds that have been established (Phase 1 and 2) have had a high degree of participation and appear to have had a very positive effect on member savings and incomes, although data verifying the effects on household economic status and fund survival potential are still required. The 136 user groups that have been established have different levels of capacity and the Exit Strategy will be critical to promoting sustainability of these groups.

Project resources were spread very widely across more than 15 types of field interventions in 23 communes during Phase 1 and 2 of the project. The financial, economic and sustainability case for investment in water sources, storage and distribution still needs to be elaborated, especially for the 48 solar pumps installed by the project. The replication results expected under Outcome 3 for other vulnerable areas are not yet apparent and may have been too ambitious given the project scale and time frame. Overall, however, the project has been effectively and efficiently implemented and provided some meaningful results in a very short term through an array of field interventions and awareness raising activities. Ten recommendations are proposed for immediate action in the final few months of the project.

1. The NAPA Follow-up Project Management should finalize the provincial action plans within the Project Exit Strategy and formulate agreements with the responsible parties for implementation of the necessary actions specified in the strategy.
2. The NAPA Follow-up Project Management should ensure that the project community water infrastructure and irrigation schemes have approved Operations and Maintenance Plans prepared in collaboration with the water user groups. The roles and responsibilities of group members and government advisors should be specified.
3. National and provincial authorities should establish a clear institutional mechanism for technical support, oversight and reporting on the management of large irrigation schemes, particularly for the five rehabilitated schemes funded by the project. Each scheme should also introduce crop diversification activities with a clear plan and links to markets. This will require a coordinated management approach with technical backstopping from the line agencies.
4. The NAPA Follow-up Project Management and the Dept. of Cooperatives should further support the formation of Agricultural Cooperatives and strengthening of financial management procedures for user fees and revolving funds to maintain the community water infrastructure and related livelihoods development. Each association or farmer group should have a business plan addressing technical needs, quantity and quality of crop production, and market linkage to ensure all surplus product has a market for income generation. A two-year workplan should be developed as part of the project closure phase, including a mechanism and resources for implementation of the workplan.
5. The NAPA Follow-up Project Management should compile technical and financial performance data for the various water supply options (RWH tanks, hand pumps, solar pumps, wind pumps, farm ponds, community ponds, etc.) within a concise, practical guide to assist district and commune level climate change adaptation strategies and water supply business plans. This guide should be used to further promote these technologies and assist the implementation of the Agricultural Sector Strategic Development Plan 2014-2018.
6. The NAPA Follow-up Project Management should identify key lessons and opportunities for the IFAD ASPIRE and PADEE projects and for the new LDCF project, drawing upon project experiences (including potential measures to overcome barriers to integrated farming systems) and propose arrangements for IFAD project support to sustain the project FWUCs and other user groups in the two provinces. The lessons should draw upon the terminal evaluation, household survey and final workshop analyses.
7. MAFF should be encouraged to develop more technical guidance and extension packages for effective use of community ponds for domestic and agricultural water supply and farmer training opportunities in integrated farming systems, including guidance on compatible domestic and agricultural uses at these ponds. Technical guidelines for beneficiaries should be simple and recognize low literacy rates.
8. UNDP should update the Vulnerability Reduction Assessment guide based on project experiences in consultation with other climate change adaptation programmes in Cambodia and support from the new LDCF project, including consideration of enhanced subnational climate modelling scenarios, soil and water vulnerability attributes, customized adaptation measures for poor households, and standardizing the use of gender-sensitive risk assessment within the VRA methodology.
9. UNDP should identify lessons from the weather dissemination/EWS component of the project that have implications for the GEF project - *Strengthening climate information and early warning systems in Cambodia to support climate resilient development and adaptation to climate change,* particularly in regard to developing relevant crop-specific extension advice in relation to in-season weather forecasts and disaster warnings, use of crop calendars for planning of production and diversification, and project lessons on methods for communicating forecasts.
10. The national and provincial authorities should be encouraged, in conjunction with NCDD programmes, to further develop the Water-Agriculture team approach for engaging PDoWRM, PDA, PDoWA and PDRD in results-oriented initiatives to enhance domestic and agricultural water for climate change resilience in vulnerable communities.

**List of Abbreviations**

ALM Adaptation Learning Mechanism

CARDI Cambodian Agricultural Research and Development Institute

CCAF Canada-Cambodia Climate Change Adaptation Facility

CCBAP Cambodia Community-Based Adaptation Programme

CCCSP Cambodia Climate Change Strategic Planning

CIDA Canadian International Development Agency

CPAP UNDP country programme action plan

DOA District of Agriculture

EA Executing Agency

EWS Early Warning System

FAO UN Food & Agriculture Organisation

FWUC Farmer Water User Communities

GEF Global Environment Facility

HH Household

IA Implementing Agency

IDE International Development Enterprises

IFAD International Fund for Agricultural Development

IFS Integrated farming systems

IRDM Integrated Rural Development Module

IRR Internal rate of return

Kr Cambodian riel

LDCF Least Developed Countries Fund

LGCC Local Government and Climate Change Project (UNCDF)

M&E Monitoring and Evaluation

MAFF Ministry of Agriculture, Forestry and Fisheries

MoI Ministry of Interior

MoWA Ministry of Women's Affairs

MoWRAM Ministry of Water Resources and Meteorology

MRC Mekong River Commission

MTR Mid-Term Review

NAPA National Adaptation Program of Action

NAPA FU NAPA Follow Up Project Promoting Climate Resilient Water Management and Agriculture Practice in Rural Cambodia,

NCCC National Climate Change Committee

NCDD National Committee for Sub-National Democratic Development

NGO Non-Governmental Organization

O&M Operations and maintenance

PADEE Project for Agriculture Development and Economic Empowerment

PDA Provincial Department of Agriculture

PDRD Provincial Department of Rural Development

PDoWA Provincial Department of Women's Affairs

PDoWRAM Provincial Department of Water Resources and Meteorology

PIMD Participatory Irrigation Management and Development

PIR Project Implementation Report

PPCR Pilot Program for Climate Resilience

ProDoc Project Document

PSU Project Support Unit

RULIP Rural Livelihoods Improvement Project (IFAD)

RWH Rainwater harvesting

SCW Save Cambodia Wildlife

SGP UNDP/GEF Small Grants Programme

SIDA Swedish International Development Agency

SNV SNV Netherlands Development Organisation

SPCR Strategic Programme for Climate Resilience (ADB)

SNA Sub-national authorities

TE Terminal Evaluation

ToR Terms of Reference

UNDP United Nations Development Programme

VRA Vulnerability Reduction Assessment

WUG Water use group

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1. Introduction

**1.1 Purpose of the evaluation**

The Terminal Evaluation is an independent review that aims to determine progress made towards the achievement of outcomes; to identify the relevance, effectiveness, efficiency and timeliness of project implementation; to highlight issues requiring decisions and actions; and to present initial lessons learned about project design, implementation and management. The objective of this evaluation is to provide*a comprehensive and systematic accounting of performance, and assess project design, implementation, likelihood of sustainability and possible impacts.* The GEF and UNDP terminal evaluation guidelines specify five evaluative criteria, described as follows and further elaborated in **Annex 1: Terms of Reference**.

1. **Relevance.** Were the project’s outcomes consistent with the focal areas/operational program strategies and country priorities?
2. **Effectiveness.** Are the actual project outcomes commensurate with the original or modified project objectives? If the original or modified expected results are merely outputs/inputs, the evaluators should assess if there were any real outcomes of the project and, if there were, determine whether these are commensurate with realistic expectations from such projects.
3. **Efficiency.** Was the project cost effective? Was the project the least cost option? Was project implementation delayed, and, if it was, did that affect cost effectiveness? Wherever possible, the evaluator should also compare the costs incurred and the time taken to achieve outcomes with that for similar projects.

**4. Sustainability.** Can the beneficial project results be sustained?What is thelikely ability of an intervention to continue to deliver benefits for an extended period of time after completion?Projects need to be environmentally, as well as financially and socially sustainable.

**5. Impact.** What are the positive and negative, foreseen and unforeseen changes to and effects produced by a development intervention? Results include direct project outputs, short to medium-term outcomes, and longer term impact, replication effects and other local effects.

The above criteria and the questions and elements listed in the Terms of Reference are addressed under five headings for the evaluation report – 1) Project Formulation (including relevance, formulation and assumptions and risks) 2) Project Implementation (including effectiveness, efficiency, financial management, project management and monitoring and reporting), 3) Project Results (including achievements, sustainability, mainstreaming/ conformance, catalytic effect and impacts), 4) Lessons Learned (including implications for scaling-up), and 5) Conclusions and Recommendations.

The evaluation concentrates on Phase 2 of the NAPA Follow-up project but extensive overlap with Phase 1 also occurred so that it is difficult to differentiate effects within Phase 2 where two new districts were added as well as continuance of various activities within the Phase 1 villages.

This NAPA Follow-up project has also been being implemented in partnership with the IFAD/UNDP funded Rural Livelihood Improvement Project (RULIP) which focuses on improving the livelihoods through agriculture. RULIP project, which was implemented in 2007 -2014, as already operational in some of the NAPA Follow-up Phase 1 target areas, especially in Preah Vihear. Provincial staff that were involved in RULIP were also engaged in the NAPA-FU project.



**1.2 Background**

Cambodia is a least developed country with over 80% of its 13.4 million people living in rural areas. Its agricultural sector contributes to about 31% of GDP, forming the backbone of livelihoods for 60% of the rural population. Cambodia has the lowest levels of irrigation in the region; its agriculture is characterized by high dependence of rainfed agriculture with only 7% of agricultural holdings being irrigated in Preah Vihear and 31% in Kratie[[1]](#footnote-1). Furthermore, rice dominates the sector. 90% of arable land is dedicated to rice, yet rice yields per hectare also remain the lowest in the region. Although Cambodia has limited exposure to climate hazards, it has low adaptive capacity due to high levels of poverty. The combination of high poverty levels and dependence on single rice cropping cycle means that Cambodia is highly vulnerable to any changes in rainfall patterns and climatic events.

Several evaluation issues were identified during the inception stage:

* ‘One village’ approach aimed at a combination of activities adapted to the situation
* Expanded mainstreaming of climate change into commune development plans covered 32 communes alongside two sets of complementary activities
* Use and effectiveness of the increased weather information and related MAFF technical analysis and recommendations for crop selection and timing – extension support and farmer response;
* Type of project beneficiaries and use and uptake of customized climate change adaptation measures suitable for involvement by poor and vulnerable households;
* Use of weather forecasting information and EWS and effect in farmer decision making;

The market linkage and development, and information is still weak

* Reasons for previous failure of the Rehabilitated Irrigation Schemes and extent to which these factors have been addressed in the subsequent rehabilitation actions;
* Solar pumps and pump wells value chain enhancement, O&M factors and commercial viability for replication; what results data are available from these technologies?;
* Conditions that support and constrain the adoption of Integrated Farming methods by farmers;
* Farmer water user group leadership, capacity development and sustainability potential and the collection of water fees;
* Key mechanisms and pathways for replication outside of the project areas; effectiveness of the Outcome 3 implementation strategy;
* NAPA FU – PADEE knowledge platform use and results of collaborations;
* Role of south-south cooperation in disseminating new practices – extent of actual technologies/approaches shared and transferred during these exchanges.
* Mechanism for implementation of exit strategy by linking to funding agencies or other similar projects
* Lack of resources for coaching and mentoring and sharing expertise after project completion.

**1.3 Methodology of the evaluation**

The terminal evaluation aimed for an evidence-based, transparent and participatory approach consistent with the *GEF Monitoring and Evaluation Policy,* the *Guidelines for GEF Agencies in Conducting Terminal Evaluations (2008)* and the *Guidance for Conducting Terminal Evaluations of UNDP-supported, GEF-financed projects (2012).* The evaluation focused on the evaluation criteria and questions presented in the Terms of Reference. It also endeavored to compare the pre-project baseline conditions to current conditions. An Evaluation Inception Report and a summary of the status of project outcomes and outputs were prepared during the initial phase of the evaluation.

The evaluation methodology was based on (a) review of documents, reports and surveys that describe progress on project outputs, outcomes and objectives as per indicators in the project design, (b) self-assessment of project achievements by project staff, (c) interviews with project participants and stakeholders to verify achievements and to identify issues related to project design and implementation, (d) where feasible, group discussions to review project experiences and lessons learned, (e) selective site visits and field observations to compile evidence of local achievements and to consult with beneficiaries and stakeholders, (f) triangulation and corroboration of comments by project participants regarding project results, implementation and lessons.

Taking into account the limited systematic quantitative data and the need to validate the stated project results, the proposed approach aimed to generate a small sample of performance data from selected sites and beneficiaries. The field sampling focused on several core questions:

1. What specific changes in crop and livestock diversity and productivity, household incomes, and food security have occurred at representative project sites (Outcome 1)?
2. What specific change in the use of weather forecasts in farming practices have occurred at representative project sites (Outcome 2)?
3. What level of uptake of the project technologies (adaptation strategies) has occurred at non-project sites by farmers who received training or exposure to these strategies (Outcome 3)?
4. What financial, technical and community factors[[2]](#footnote-2) have influenced project results and sustainability at representative project sites?

The Interview Guide (**Annex 2**) assisted discussions with stakeholders. The site visits were organized to capture representative project sites and activities.

In all of the discussions, an emphasis was placed on collegial and constructive dialogue and compiling reliable observations project performance and lessons. The interviews, assisted by an Interview Guide, provided lead questions that facilitated consistency and triangulation of responses from those interviewed. The evaluation involved an objective and independent review of the *weight of evidence* compiled from reports, interviews/group discussions and site visits.

In accordance with UNDP/GEF evaluation requirements, the M&E systems, project results, implementation, and sustainability were rated in terms of:

*Highly satisfactory (HS).*The project had no shortcomings in the achievement of its objectives in terms of relevance, effectiveness, or efficiency.

*Satisfactory (S).*The project had minor shortcomings in the achievement of its objectives in terms of relevance, effectiveness, or efficiency.

*Moderately satisfactory (MS).*The project had moderate shortcomings in the achievement of its objectives in terms of relevance, effectiveness, or efficiency.

*Moderately unsatisfactory (MU).*The project had significant shortcomings in the achievement of its objectives in terms of relevance, effectiveness, or efficiency.

*Unsatisfactory (U).*The project had major shortcomings in the achievement of its objectives in terms of relevance, effectiveness, or efficiency.

*Highly unsatisfactory (HU).* The project had severe shortcomings in the achievement of its objectives in terms of relevance, effectiveness, or efficiency.

**1.4 Structure and limitations of the evaluation**

The evaluation structure focused on (i) project formulation (including relevance, formulation and assumptions and risks), (ii) implementation (effectiveness, efficiency, financial management, project management, monitoring and reporting), (iii) results (outcome achievements, capacity building) and (iv) sustainability (institutional, financial, etc.) based on the format recommended by UNDP and GEF guides for terminal evaluation.

Sections 1 and 2 provide background context for the project, including an outline of expected results.

In Section 3, the Evaluation Findings are organized into Project Formulation (3.1), Project Implementation (3.2) and Project Results (3.3), as required by UNDP evaluation guidelines.

The project performance Ratings, as per GEF rating method, and the reasons for the summary ratings are provided in Section 4. The Lessons Learned (Sec 5) and Conclusions (Sec 6.1) have important messages for future projects, while the Recommendations (Sec 6.2) provide for proposed actions as part of the project closure and follow-up activities.

The limitations to the evaluation included a lack of data on project results given the short period of implementation and the fact that many of the water infrastructure have only recently been completed in the last few months, with few crop cycle records to date. The evaluation team visited sites at only four communes out of the 32 communes where the project was located. There were also some difficulties isolating the activities carried out under Phase 2, the focus of this evaluation, because they sometimes overlapped with the Phase 1 activities in the same villages.

2. The Project and its Development Context

**2.1 Project history**

In 2009, the Royal Government of Cambodia (RGC) commenced the “Promoting Climate-Resilient Water Management and Agricultural Practices in Rural Cambodia” project (Phase 1) with support from the Least Developed Countries Fund (LDCF). It was the first climate change adaptation project under the National Adaptation Programme of Action (NAPA, 2006). In this US$3.8 million project ($1.85 M LDCF and $1.95 M co-financing) the Ministry of Agriculture, Forestry and Fisheries (MAFF) implemented specific measures aimed at reducing vulnerabilities from localized flood and drought were introduced in 16 communes in two provinces – Preah Vihear and Kratie, both of which have been plagued with droughts and floods. Specific adaptive interventions included:

* Demonstration of small- and micro-scale water conservation measures to provide additional buffer from variable rainfalls for agricultural or household use
* Demonstration of climate resilient farming/livelihood techniques including propagation of drought- or flood-resilient rice varieties, seed purification techniques, home gardening, and diversified livestock rearing.
* Rehabilitation of secondary and tertiary canals to ensure continued access to freshwater for paddy rice cultivation

These measures were complemented by an effort to integrate climate change concerns into sub-national level development planning process as well as strengthening the capacity of civil society organizations such as Farmer Water User Communities (FWUCs). The adaptation investments aimed to increase the capacity of households to retain rainwater for domestic and agricultural use, enhance/maintain the productivity of agriculture in a changing climate, and assist in diversifying their livelihoods for the landless and land-poor families will be facilitated in at least 50 villages in 32 communes in two provinces. The Mid Term Evaluation of the project indicated that it had done well to create general awareness in the provinces and villages about climate change and how it affects communities, and instrumental in getting provincial investment programmes in Preah Vihear and Kratie, and commune investment programmes in at least ten communes incorporate climate change agenda. However, its ability to influence national debates and policies remain weak due to its preoccupation with implementing a large number of activities, not all of which generate relevant evidence-base for developing convincing policy messages.[[3]](#footnote-3) This aspect of policy development was not a part of the NAPA-FU project design.

The final evaluation of Phase 1 in January 2014 stated that the project had reached most of its initial objectives and outcomes. “11,073 households in 52 villages, representing 55.5% of the target households received timely information on weather forecasts to cope with events such as severe floods. In response, some farmers start changing their farming practices, for instance by replacing late-mature rice varieties by short cycle varieties better fitting with seasonal changes. In addition, 1,470 households corresponding to 75 FWUC and representing 30% of the total target households are benefiting from 62 pump wells, 3 community ponds, 41 rain water harvesting containers and 10 solar pumps. These achievements by the NAPA FU project are not only visible in the field, but also when discussing the impacts of these installations with the beneficiaries.”[[4]](#footnote-4) According to the current Project Document, field test data indicated that improved climate-resilient crop varieties have increased average yields by 18% compared with the conventional varieties.

The current project has undertaken a host of similar interventions to Phase 1, in some of the same villages plus villages in two new districts, as noted in **Table 1**. They have endeavored to refine the approach by adopting more of a ‘one village’ approach, placing greater emphasis on poor and vulnerable households, applying more targeted gender assessment and design, and more firmly establishing the role of Farmer Water Use Committees and other decentralized means of sustaining water management adaptation measures. The project also conducted training on vegetable growing and livestock raising as a mechanism to cope with climate change and generate extra income and to gradually change the mindset away from the traditional cultivation toward more diversified agriculture.

**2.2 Problems that the project seek to address**

The central problem that the project sought to address is to build on and expand concrete adaptation measures introduced in Phase 1 and aim to reduce the vulnerability of agriculture, in particular the capacity of households to retain rainwater for domestic and agricultural use, enhance/maintain the productivity of agriculture in a changing climate, and assist in diversifying their livelihoods for the landless and land-poor families. A focus was placed on cementing good practices gleaned from Phase 1, adopting a more integrated one village approach, and achieving the overall value-for-money while addressing immediate and urgent adaptation actions identified in the Cambodia NAPA.

In Cambodia, food security relies on rice cultivation, which is expected to be strongly affected by climate change. The field assessments demonstrated that improved rice varieties have increased average yields by 18% compared with the conventional varieties. Is actual farmer experience in line with these original demonstrations? Has the Phase 1 success of mainstreaming of climate change considerations into sub-national development planning process had a lasting effect on investments? Has the integration of gender considerations into the VRA process assisted in gender-differentiated impacts of climate change being addressed more effectively? Have the project interventions demonstrated adaptation measures that are suitable and beneficial for the most disadvantaged and vulnerable? Has the enhanced capacity of Farmer Water User Communities as a local custodian of communal water infrastructure been sufficient to provide for sustainability including collection of water user fees? These are the types of question which the current project seeks to address.

Some of the issues/lessons that were identified in Phase 1 reports included:

- Social mobilisation is currently weak in terms of participation and is driven primarily by needs of the project, rather than being internally driven by communities;

- Limitations of spreading too thin: potential impact could have been constrained by how the project has gone about selecting certain activities and beneficiaries in a scattered manner, and targeting a handful of resource-rich farmers; (need for a ‘total village analysis’ for bottom-up adaptation solutions taking into account a community’smulti-faceted needs);

- Lessons shared at technical level: a pilot project should systematically draw and disseminate lessons, and engage in dialogue with policy makers and planners at provincial and national level to ensure scaling and replication of successful ‘models’;

- Learning from earlier experiences: the previous Early Warning System collapsed due to lack of financial support from the Government; unless the project is able to gain provincial financial support after the project duration, the sustainability of the system will remain a question;

- Diversification for adaptation: introduction of new variety or rice and seed purification techniques has been successful but these measures need to be supplemented by crop diversification which allow farmers to grow crops and trees which can withstand varying water regimes in the same growing season as insurance against total crop failure in the event of serious environmental shocks;

- Irrigation structures: design, maintenance and utilisation issues which dogged irrigation structures in the country in the past remain to be addressed and supplemented with an integrated approach involving efficient soil and water management, adjusting/diversifying cropping patterns and farming practices in response to climate changes are necessary to increase the resilience of farmers.[[5]](#footnote-5)

**2.3 Immediate and development objectives of the project**

The project objective is to reduce the vulnerability of Cambodia’s agricultural sector to climate–induced changes in water resources availability. This was pursued through three expected outcomes:

**Outcome 1 -** Improved capacity within local institutions to manage agricultural water resources in a changing climate. To be measured bythe number of Communes in the target areas that integrate gender-sensitive adaptation action plans and climate risks into their development plans, and relevant climate risk information disseminated to stakeholders.

**Outcome 2 -** Locally appropriate adaptation options demonstrated to reduce exposure to climate-induced risks. To be measured by the extent of community-based adaptation measures adopted by households in target districts.

**Outcome 3 -** Lessons learned in the project target areas replicated in other vulnerable areas of Cambodia. To be measured by the number of outside programmes, policies or projects incorporating project practices, approaches or methods.

**2.4 Main stakeholders**

The stakeholders included a long list of government agencies and collaborating partners. As shown below.

|  |  |
| --- | --- |
| **National level** | The Ministry of Agriculture, Forestry and Fisheries (MAFF) |
| The Ministry of Water, Resources and Meteorology (MoWRAM) |
| The Ministry of Environment (MOE) |
| The Ministry of Women's Affairs (MoWA) |
| (Cambodian Agricultural Research and Development Institute (CARDI) in Phase 1) |
| **Provincial level** | Provincial Administrations |
| Provincial Department of Agriculture |
| Provincial Department of Water Resources and Meteorology |
| Provincial Department of Women Affairs |
| **Local level (districts and communes)** | District Administrations |
| District Agriculture Offices |
| Commune Councils (32) |
| **NGOs** | (Phase 1 engaged Save Cambodia Wildlife in awareness raising) |
| **Collaboration programmes** | IFAD-MAFF RULIP project (ended 2014)  IFAD PADEE project (to 2017)  IFAD-MAFF ASPIRE project is just commencing  UNCDF LGCC project Phase 2 now being completed |

The beneficiaries of the project were principally poor households in 32 communes in Kratie and Preah Vihear provinces. The project phase 2 (2013-2015) supported 3,592 households of which 1,209 households were the beneficiaries of phase 1 (2009-2012). Overall, the project phases 1 and 2 have supported 6,062 households (Annex 6).

**2.5 Expected results**

|  |
| --- |
| **Outcome 1: Improved capacity within local institutions to manage agricultural water resources in a changing climate** |
| **Output 1.1** Improved understanding among local communities and planners about gender-differentiated impacts and risks of climate change |
| **Output 1.2** A community-based climate information system to facilitate resilient-agriculture is strengthened |
| **Outcome 2: Locally appropriate adaptation options demonstrated to reduce exposure to climate-induced risks** |
| **Output 2.1** Community-level water supply infrastructure for both domestic and livestock use constructed and managed in 60 villages benefiting at least 2,500 households |
| **Output 2.2** Resilient livelihood methods (i.e. resilient or early/medium maturing seed varieties, SRI and diversified livestock production) expanded to 60 villages |
| **Output 2.3** Agricultural areas under irrigation expanded and managed   * Undertake a feasibility study and land acquisition for construction of irrigation or community water infrastructure for agriculture * Construct community-level water infrastructure |
| **Output 2.4** Women’s management capacity for community-water infrastructure strengthened |
| **Outcome 3: Lessons learned in the project target areas replicated in other vulnerable areas of Cambodia** |
| **Output 3.1** Increased public awareness and environmental education programmes on climate risk reduction designed and implemented |
| **Output 3.2** Improved knowledge among government planners about ongoing adaptation investments and gaps in the area of climate resilient farming |
| **Output 3.3** An impact assessment study conducted capturing gender-disaggregated benefits of adaptation investments promoted under the project |

**2.6 Project Concept and Activities**

**Figure 1** outlines the project concept as reflected in the implementation activities. The central idea is that development of water supply infrastructure along with the technical skills to utilize the water supply and community mobilization will lead to enhanced community resilience to climate change. The focus presented in the project document was “to increase the capacity of households to retain rainwater for domestic and agricultural use”. The project commenced with community mobilization, climate change awareness raising, and gender analysis and training. User groups focused on solar pumps, seed purification, Farmer Water Use Committees and microfinance revolving funds were established in the project villages, with several groups in a village (some of which were later consolidated into one group.) There were 136 such groups established. Following the mid-term review of Phase 1, the project adopted a “one village approach” that endeavored to concentrate the activities and to encourage farmers to adopt several adaptation options in order to improve impact. The one village concept stemmed from the Mid-Term Phase 1 evaluation recommendation to concentrate multiple adaptation interventions within households and villages.

Awareness raising, gender analysis and training were provided in all of the 32 project villages. Physical interventions were implemented in 23 of the 32 project communes. The primary focus was on:

1. Household and community water collection, storage and distribution through community ponds, solar pumps, hand pumps, and rooftop rainwater harvesting, including training on operations and maintenance;
2. Agricultural inputs including improved seeds, enhanced farming systems, livestock development, basic equipment, mulching and drip irrigation materials, locally-disseminated weather information and training to enhance agricultural crop diversification; and
3. Irrigation systems development, rehabilitation and extension projects at five sites to expand crop production and diversification and in some case to assist drainage on waterlogged lands.

These investments provided the basis for outputs related to enhanced domestic water supply, enhanced agricultural water supply, resilient crop varieties and cropping systems, regulated flows and drainage controls, and community organisational strengthening through water user fees, revolving funds and community capacity development to manage water resources infrastructure. Various sub-outcomes can be observed arising from the key outputs, including household cost/labour savings from new water domestic sources and related health benefits from groundwater use, small scale irrigation in the dry season for increased rice and vegetables production, overall increase in crop yields, diversification and incomes due to water availability, livestock development, improvement and incomes, and large scale irrigation system expansion intended for increased crop production and reduced flooding.

**Table 1** outlines the distribution of project activities across the 23 communes. Other communes (9) were involved in only awareness raising, gender assessment and some weather information dissemination activities. This table summarizes both Phase 1 and Phase 2 field activities. It is difficult to separate results data for Phase 2 in the available reports.

In Preah Vihar province, the last four communes (one new district) in **Table 1** were added in Phase 2 but project activities were also carried on in many other communes in Phase 2.

In Kratie province, the last four communes were also added in Phase 2 but activities also continued in the other communes as well. At least fifteen categories of activities were implemented. Two wind pumps were demonstrated in Toeuk Krahom in combination with community ponds in Phase 1. Some additional activities such as distribution of water filters also occurred in Phase 1.

**Figure 1: Project Concept**

“Increase capacity of HHs to retain rainwater for domestic and agricultural use”

Community climate change and gender awareness/training and organisation of user groups

‘One village approach’ with HHs learning 2-3 technologies with focus on village scale climate resilience

HH & community water collection, storage and distribution

Agricultural inputs, weather information & training to enhance prod./diversification

Irrigation systems development, rehabilitation and extension

Mainstream into CIPs

Enhanced domestic water supply

Enhanced agricultural water supply

Resilient crop varieties and cropping systems

Regulated flows and drainage controls

Water user fees, revolving funds & community capacity to manage water infrastructure

Water supply cost/labour savings and health benefits

Small scale irrigation in dry season for rice and vegetables

Crop yields, diversification and incomes increased

Livestock development, improvement and incomes

Large scale irrigation and reduced land flooding

Outcome 1

Improved capacity of local institutions to manage agri. water

Outcome 2

Locally appropriate adaptation options demonstrated

Outcome 3

Lessons learned replicated in other vulnerable areas

Rapid gender assessment

**Table 1: Distribution of NAPA Follow-up Project Interventions (Phase 1 and 2)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **No. of units completed** | | | | | | **No. of villages where interventions were introduced** | | | | | | | **No. of groups** | |
| **Project Communes** | **Comm. pond** | **Solar pump** | **Pump well** | **Rehab. irrig sys** | **Farmer**  **Field Sc** | **Bio**  **gas** | **Seed purific** | **Sys rice Inten** | **Integ**  **F Sys** | **Cl Res seeds** | **Livest prod** | **Agric. inputs** | **P-har**  **proc.** | **User group** | **Revolfund** |
| **Preah Vihear** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Toeuk Krahom\* | 2\*\* | 6 | 26 | 1 | 5 | 11 | 1 | 6 | 5 | 6 | 6 | 6 | - | 35 | 6 |
| Choam Ksan | 1 | 2 | 12 | 1 | 2 | 1 | 1 | 3 | 2 | 5 | 5 | 5 | - | 16 | 1 |
| Kantout | - | - | 11 | - | 2 | - | 1 | 3 | 2 | 4 | 3 | 3 | - | 11 | - |
| Pring Thom | - | - | 3 | - | - | - | 1 | - | - | 1 | 1 | 1 | - | 3 | - |
| Romdos Sre | - | - | 11 | - | 2 | - | 1 | 3 | 2 | 4 | 4 | 4 | - | 11 | - |
| Sra Em | - | 7 | 2 | - | 1 | - | - | 1 | 1 | 2 | 3 | 3 | - | 9 | 7 |
| Yeang | - | - | - | - | 2 | - | 1 | 3 | 2 | 2 | 2 | 2 | - | - | - |
| Kulen Choeung | - | 2 | 2 | - | - | - | - | - | 1 | 2 | 2 | 2 | - | 4 | 1 |
| Kulen Tbong | - | 3 | 5 | - | - | - | - | - | 1 | 2 | 2 | 2 | - | 8 | 2 |
| Phnom Penh\* | 1 | 2 | 3 | - | - | - | - | - | 1 | 3 | 3 | 3 | - | 6 | 3 |
| Thmey | 1 | 3 | 3 | - | - | - | - | - | 1 | 5 | 5 | 5 | - | 7 | 2 |
| PV Total | 5 | 25 | 78 | 2 | 14 | 12 | 6 | 19 | 18 | 36 | 36 | 36 | - | 110 | 22 |
| **Kratie** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Bosleav | - | 5 | - | 1 | 8 | 1 | 1 | 8 | 8 | 8 | 5 | 5 | 8 | 6 | 12 |
| Dar\* | - | 2 | - | 1 | 4 |  | 1 | 5 | 9 | 5 | 3 | 3 | - | 3 | 6 |
| Kantout | - | - | - | - | 2 |  | 1 | 3 | 2 | 3 | 2 | 2 | - | - | 3 |
| Kou Loab | - | 4 | - | - | - |  | 1 | 3 | - | 3 | 3 | 3 | 3 | 4 | 3 |
| Koh Chreng | - | 1 | - | - | - |  | - | 2 | - | 2 | 2 | 2 | - | 1 | 1 |
| Sambok | - | 1 | - | - | 2 |  | - | 3 | 4 | 3 | 3 | 3 | - | 1 | 2 |
| Thmar Andeuk | - | 2 | - | - | 4 |  | 1 | 5 | 7 | 5 | 3 | 3 | - | 2 | 6 |
| Thmar Kre | - | - | - | - | - |  | 1 | 2 | - | 2 | 2 | 2 | - | - | 1 |
| Koh Knhe | - | 1 | - | - | - |  | - | 2 | - | 2 | 2 | 2 | - | 1 | 2 |
| Sambo | - | 2 | - | - | - |  | - | 3 | - | 3 | 3 | 3 | - | 2 | 3 |
| Sandan\* | - | 2 | - | - | - |  | - | 2 | - | 2 | 2 | 2 | - | 2 | 2 |
| Vathanak | - | 3 | - | 1 | - |  | - | 2 | - | 2 | 2 | 2 | - | 4 | 2 |
| Kratie Total: |  | 23 | 0 | 3 | 20 | 1 | 6 | 40 | 30 | 40 | 34 | 34 | 11 | 26 | 43 |

\*TE field visit \*\* Included 2 wind pumps; P-har proc = post-harvest processing; User groups include solar pump groups, seed purification groups, and farmer water users.

Water filters (435) distributed to 285 vulnerable family in 8 villages of Bos Leave commune, 150 with contribute by solar pump member of 45 %, and water filter (720) support to 720 vulnerable family in 4 communes of Kulen district with subsidy.

3. Evaluation Findings

**3.1 Project Formulation**

3.1.1 Project design characteristics

*Project time frame and available information*

The project implementation occurred over a period of about two years, which provided only one year of crop cycle experience and production from which to generate expected changes in farming practices involving 15 types of field intervention in 23 communes. The short interval between baseline and mid-term household surveys and the timing of this evaluation before final HH survey and VRA analysis information were available imposed limitations on the findings.

*Outcome – output coherence*

The project results framework proposes that improved local capacity for agricultural water management (Outcome 1) will be achieved by two outputs related to understanding of gender-differentiated impacts and risks, and a community based climate information system. The outputs deemed ‘necessary and sufficient’ for demonstration of locally appropriate adaptation options (Outcome 2) are water supply infrastructure, resilient livelihood methods, irrigation expansion and women’s capacity to manage the infrastructure. Logic modelling is not a strong feature of the project design and reflects a weak approach to results-based project development, with related problems in operationalizing effective indicators.

*Beneficiary selection and interventions*

It was noted in the MTR of Phase 1 that poor HHs were underrepresented in the project beneficiaries. Adjustments were made to increase the focus on ID-1/ID-2 poor HHs, increasing from 18% in Phase 1 to 52% in Phase 2.[[6]](#footnote-6) The project developed a detailed list of beneficiaries in Phase 2 and the MWA were assigned to consult with individual households for possible participation in the project. Poor HHs often require a different set of adaptation measures than more wealthier HHs, and have a higher level of seasonal and permanent migration. The project design approach may need to more carefully consider and assess beneficiary attributes within the VRA analysis and the project planning.

*Gender mainstreaming*

Gender mainstreaming was designed on the basis of: gender assessment of targeted project areas; promoting gender equality in and throughout project implementation; and instilling an understanding of gender related concerns and responsibilities in project staff’s terms of reference; adopting gender responsive budgeting; using gender sensitive indicators for monitoring and evaluation; and providing gender activities to address differing needs of women and men. Some lessons have been previously identified (see Section 3.3.7).[[7]](#footnote-7)

*Design of early warning system*

The project planned to deliver “tailor-made climatic information” but this was not possible due to a lack of local meteorological data and analytical capacity. The specific purpose and orientation of the EWS for disaster reduction assistance or for crop extension advice was not fully clear.

*Household survey design*

The household survey endeavored to capture counterfactual information by assessing water use and agricultural management changes in project households, non-project households in the same village and non-project households outside of these villages. It was reported that further questions were proposed for the mid-term survey to better assess project effects and that these aspects were later included in the final survey design. Linkages between M&E data, anecdotal data reported in annual reports and the HH surveys may need to be better coordinated in future projects.

*IFAD RULIP collaboration*

The NAPA follow-up project was assisted by activities and implementation staff under the RULIP project up until 2014. It is noteworthy that the companion RULIP project went through a major redesign at mid stage from a heavily top-down, inflexible, supply driven approaches to extension delivery and group formation with very low uptake of promoted production technologies and significant problems in group mobilization, to a results oriented, farmer-driven and demand responsive extension delivery with better support to Group Revolving Fund groups. This has reportedly been the main driver of the strong results achieved by RULIP project.[[8]](#footnote-8)

3.1.2 Country ownership/driveness

The project was designed as a CIDA ‘fast-start’ project which built upon preceding GEF-funded NAPA FU project (Phase 1) and the IFAD RULIP project. The project has been fully aligned and integrated with government priorities and programmes. The integration of project activities into government systems at provincial, district and commune level has been a conspicuous feature of the project, with direct collaboration of the MAFF, MoWRM and MoWA. Commune councils incorporated climate change priorities into CIPs (Phase 1) although limited resources are available to implement many of these.[[9]](#footnote-9)

3.1.3 Stakeholder participation

An extensive set of stakeholders carried over from the Phase 1 project were involved in the subsequent design of the Phase 2 project. It was formulated with the participation of the relevant authorities and local beneficiaries. A community-based approach with strong emphasis on the role of women has been adopted.

3.1.4 Replication approach

The approach to replication is part of Outcome 3 activities associated with compiling hard evidence of results and promoting discussion of best adaptation practices in order to encourage other vulnerable communities to adopt similar technologies and resilience strategies. The strong focus on M&E was expected to assist this replication effort.

3.1.5 Linkages between project and other interventions within the sector

The IFAD *Rural Livelihoods Improvement Project* in Kratie, Preah Vihear and Ratanakiri (RULIP) project was implemented in the earlier period of the NAPA Follow-up Project and collaborated on various activities. The project supported sustainable agriculture including climate resilience measures for 14,894 households who directly benefited as members of the various self-help groups (i.e. Livelihood Improvement Groups (LIG), Most Vulnerable Family (MVF) and Farming System Improvement (FSI) Groups).

The *Project for Agriculture Development and Economic Empowerment* (PADEE) project is another IFAD-financed project aimed at improved agricultural productivity delivered in collaboration with SNV, FAO and IDE. The project area is the provinces of Kampot, Kandal, Prey Veng, Svay Rieng and Takeo. Exchange visits were undertaken with PADEE participants.

The *SNC Scale-up Project* is a project implemented by NCDD Secretariat, under the National Implementing Modality (NIM) of UNDP aimed at scaling up climate change into sub-national planning and budgeting process in five districts in Battambang, Takeo and Preah Vihear provinces. The *Local Governments and Climate Change* (LGCC2) project, supported by UNCDF, also collaborates with NAPA FU in strengthening local authorities involvement in climate change adaptation.

3.1.6 Indicators quality and utilization

The indicators for Outputs provided quantitative measures of progress relative to baseline levels and end of project targets. Quarterly reporting effectively tracked this progress, but the indicators have a strong emphasis on activities completed; e.g., Output 2.3 “Agricultural areas under irrigation expanded and managed” reflects the extension/rehabilitation work completed (hectares) yet the effective operation and user management of the schemes are not addressed. Similarly with Output 2.4 “Women’s management capacity for community-water infrastructure strengthened” is measured by the number of women who received training rather than results of the training. Indicators should be quantified and specific enough to ensure best measurement of achievement. The Household Surveys were intended to supplement the M&E information to provide a better understanding of project impacts.

Some of the particular constraints to measuring capacity development were addressed by the supplementary Exit Strategy analysis of the management capacity status of the water user groups. This exit strategy will need to focus on the implementation mechanisms linked to sub-national institutions and other projects to ensure the current results lead to impact and sustainability.

The indicators for Outcomes also had weaknesses. Outcome 1 on improved women’s water management capacity was measured by the number of communes that had mainstreamed gender into CIPs and the extent of climate risk information dissemination. Outcome 2 on demonstration of adaptation options was to be measured by the number of women that adopted these options, although the actual monitoring data simply record the number of households that were supported. Outcome 3 indicator intended to measure outside programmes, policies, projects that incorporated project practices, approaches or methods but it was not functional in capturing the expected replication effects.

Comments on the effectiveness of the M&E system are presented in Section 3.2.3. Despite the results measurement problems in the project design, the narrative progress reporting provided timely information on project status.

3.1.7 UNDP contribution

UNDP Cambodia has had a key role in assisting the Royal Government of Cambodia with climate change issues and commitments to UNFCCC. The close relationship that UNDP have with government, their established relationship in providing international expertise to climate change policy issues in the country and the many years of project experience in the environment sector makes them well suited to development and engagement in the NAPA FU Project. UNDP contribution has been noted as including a long-standing association with Cambodia, impartiality, compatibility with national approach, support for multisectoral interventions, access to global expertise, showcasing Cambodia’s development experience and achievements, flexibility and responsiveness and support to UN system coordination.[[10]](#footnote-10)

3.1.8 Management arrangements

The management structure involved a Project Board representing three entities: Executive (MAFF), Senior Beneficiaries (MAFF, MoWRM, MoWA, MoE, NCDDS), and Senior Suppliers (UNDP, IFAD). Operational roles are provided by a National Project Manager, UNDP Project Assurance, Project Support Staff, and Technical Support Services of the line agencies. No significant structural issues were identified.

The Terminal Evaluation discussions suggested that PDRD could have been usefully added to the provincial level Technical Support Services.

The concept of a formally designated Water-Agriculture Team with a mandate to implement joint water supply and management initiatives for climate resilience was also suggested as a model for NCDD climate change programmes.

**3.2 Project Implementation**

**3.2.1 Project Implementation Characteristics**

*One village approach*

This approach was developed near the end of Phase 1 and was expected to result in more identifiable local results from a combination of adaptation measures. There are no available data on whether this approach is any better than the earlier dispersed approach in terms of generating results. The Phase 2 activities were active in at least 23 villages so the efforts were still spread over a wide area.

*Joint water management*

The coordination of irrigation system development and the management of water for irrigated crops and crop production depends upon a close working relationships between MWRM and MAFF. In the project’s rehabilitation/extension of irrigation schemes this task may require further action during scheme implementation. The importance of the water supply infrastructure for domestic purposes also suggests that these operating partnerships should include the Ministry of Rural Development in the future.

*Commune involvement and resources*

Commune leadership and involvement has been an important factor in community mobilization. The mainstreaming of climate change into CIPs, while creating awareness, has not directly led to more projects related to climate change due to the lack of investment funds, but commune leaders nevertheless stated that the mainstreaming contributed to a heightened awareness of the adaptation options. They had better plans to respond to climate change in the CIPs and to attract other donors and local NGOs to support these activities.

*Generality of weather forecasts*

The lack of in-season sub-national weather forecasting constrained the ability of the project to effectively deliver a community-based early warning system and related extension advice, although the promotion of early maturing crop varieties was assisted by 3-mth weather forecasts. The extent of weather information dissemination also depended on the enthusiasm of the volunteers and the timely availability of information.

*Training and inputs for agricultural diversification*

The project provided substantial training and extension support but there does not appear to be any follow-up assessment of effectiveness. The impression from field visits was that some farmers have adopted integrated farming methods and irrigated home gardens with training and inputs provided by the project but it is not widespread. This may be due to (a) the need for longer term extension support (project is too short), b) the lack of male farmer’s participation beyond the paddy production (primary focus on women’s priorities and participation), c) some uncertainties about accessibility to markets and the risks of working in new crops and livelihoods that constrain agricultural diversification, and d) a misperception of community ponds solely for domestic water and not compatible with integrated farming and aquaculture. The importance of disseminating knowledge and evidence of income success to reduce the perceived risks was also highlighted.

*Access to markets and other barriers*

The evaluation consultations suggested that project beneficiaries may have lacked sufficient knowledge of and linkages to agricultural markets for their produce. Some farmers (in PVH) mentioned limited/lack of market access making it difficult to do crops and vegetable cultivation or crop diversification beside rice, while others stated that the local market or village market absorbed all their produce. It was not clear the extent of this issue[[11]](#footnote-11) but it may have been one of the barriers that constrained the level of small-scale irrigation and integrated farming systems (data not available). The expected shift or expansion from traditional rice farming to new practices in a relatively short term may have been underestimated and not fully addressed in the project design.

*UNDP disbursement rules*

The requirement to spend 80% of the annual budget before further financial advances are provided imposed some strain on the fourth quarter activities and may have accelerated the spending during the early month in order to meet the requirement. Many of the project expenditures are geared to the crop cycle and the financing rules need to recognize these operational timing issues.

3.2.2 Financial planning and co-financing

Table 2 presents budget and expenditure data. The project disbursed 46% of the annual budget in the first year and 91% in the second year, reflecting a slow start for the project. Minor accounting deficiencies were noted in audit reports and promptly corrected. The project budget of $2.59 M is higher than the original budget of $2.25 M, presumably due to additional funding from UNDP. About 88% of the budget was expended by August 2015.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Outcome | 2013 | | 2014 | | 2015 | | Total | |
| Budget | Expense  % | Budget | Expense  % | Budget | Expense  % | Budget | Expense  % |
| Outcome 1: Improved capacity within local institutions | 82,256.16 | 43,102.55 52.4% | 143,072.81 | 130,185.18 91.0% | 169,352.77 | 87,428.99 51.6% | 342,640.50 | 260,716.72 76.1% |
| Outcome 2: Locally appropriate adaptation options demonstrated | 184,877.14 | 116,617.98 63.1% | 1,030,712.72 | 949,981.70 92.2% | 445,135.66 | 307,241.36 69% | 1,511,735.34 | 1,373,841.04 90.9% |
| Outcome 3: Lessons learned replicated in other vulnerable areas of Cambodia | 152,437.80 | 35,742.44 23.5% | 339,641.89 | 293,500.66 86.4% | 177,511.91 | 129,255.64 72.8% | 506,755.01 | 458,498.74 90.5% |
| Project Management | 47,148.00 | 18,067.74 38.3% | 119,431.20 | 106,470.53 89.15% | 106,629.60 | 61,710.36 57.9% | 231,167.86 | 186,248.63 80.6% |
| TOTAL | 466,719.10 | 213,530.71 45.75% | 1,632,858.62 | 1,480,138.07 90.6% | 898,629.94 | 585,636.35 65.3% | 2,592,298.72 | 2,279,305.13 87.9% |

**Table 2: Project Budget and Expenditures, April 2013 - August 2015**

Work planning and allocation of funding did not always result in outputs directly contributing to the expected outcomes (see Conclusions). In hindsight, some of the budget may have been better directed at the gaps noted in the final column in Annex 6.

3.2.3 Monitoring and reporting process

The project submitted quarterly progress and financial reports that contained detailed tracking of progress against project outputs, identification of project implementation challenges, analysis of project risks, and responses to the Phase 1 mid-term and terminal evaluations as well as actions taken on Project Board recommendations and decisions. The reports also assessed “progress towards UNDP country programme (CPAP) outputs”. The quality of the reporting based on the project results framework was excellent.

The Semi-Annual and Annual Reports to the Canada-UNDP Climate Change Adaptation Facility and the Project Board provided overview information mostly focused on activities completed and minor issues that were encountered. This good quality, detailed monitoring and reporting was tempered by relatively poor performance metrics for the project: the indicators were not particularly effective at measuring substantive results (Section 3.1.6) and the extent of the spread and acceptance of demonstrated climate-resilient water management actions beyond direct beneficiaries remains unclear. The monitoring information did not appear to cause any adjustment in the implementation strategy.

Despite the significant attention given toward monitoring and assessment, the available information does not yet provide sufficient conclusive evidence on the level of achievement of central concept of the project - demonstrating adaptation options and promoting their selection and use for long term climate change adaptation. This information gap for terminal evaluation may be reduced once the final household survey is completed but at the time of this evaluation it has been difficult to precisely determine the extent of uptake and ongoing use of the farming adaptation options supported by the project.

3.2.4 Execution and implementation modalities and issues

The project activities were delivered in a coordinated and efficient manner (even if some had marginal results) by a well-managed project team. The progress reporting and communications appear to have been excellent. The presence of an experienced standing MAFF PSU with a management track record and existing working relationships provided definite advantages. The organisation and willingness of the parties to cooperate in a joint multi-agency approach at the provincial level also seems to have been a key factor in effective implementation.

3.2.5 Management by the UNDP Country Office

The UNDP CO provided oversight, recruitment, knowledge management and reporting support to the project. No significant concerns were noted except for the usual complaint about financial advances processing being contingent on 80 percent completion of the previous quarterly budget which affect work planning. In some cases, expenditures had to be rushed in order to meet the requirement. Reference was made to the procurement process that “sets hurdles to coordination” and different administrative procedures of the implementing institutions.[[12]](#footnote-12)

Some of the design issues (Section 3.1.1) and the wide array of activities could have benefitted from more strategic direction focusing on the core functions of the project. The M&E indicators (Section 3.1.6) and the sustainability concerns (Section 3.3.6) should have been anticipated at an earlier stage. It may be difficult to ensure set up of agricultural cooperatives at the end stage of the project. Engagement with UNDP regional initiatives such as the ECCA also seems to have provided little contribution to project end results.

**3.3 Project Results**

3.3.1 Project objective

The project has clearly reduced farmer vulnerability in the communities and households actively involved in the project.The principal contribution toward enhancing the availability of water reduced has been to undertake a coordinated multi-agency approach, to focus on community vulnerability and gender-oriented adaptation plans related to water supply, and to demonstrate viable technologies that can be sustained by user groups.

3.3.2 Achievement of Outcome 1: Capacity development

1. **Vulnerability Reduction Assessment and Rapid Gender Assessment**

The Vulnerability Reduction Assessment (VRA) was developed in 2012[[13]](#footnote-13) and a Rapid Gender Assessment (RGA) method was integrated with this method in 2013 for the Phase 2 NAPA-FU project. The VRA was slightly revised to reflect gender issues and to enable the identification of solutions to inclusively address climate change impacts affecting men and women differently. The VRA also allows for calculation of a VRA score at baseline and project completion. VRA refresher training was conducted for the provincial teams (three line departments—PDA, PDoWRAM and PDoWA). They were then divided into small teams to facilitate VRA exercises in the target communes. Participants included local authorities (Commune Councils, village chiefs, PBCs) and villagers (men and women).

The Phase 1 project document highlighted an effort to translate gender-related objectives into concrete actions on the ground. A rapid gender assessment (RGA) was carried out led by the Provincial Department of Women’s Affairs (PDoWA). The RGA included key research questions on early warning systems, water for irrigation, domestic water, and agricultural productivity. The five-day assessment took place in six villages, three in each of the project’s target provinces. Both men and women groups were interviewed. The findings of the RGA show that the situation differs across provinces and even villages. Overall, the answers provided by men and women groups demonstrate that women are more likely to be disproportionally affected by the impacts of climate change due to their different roles in community. For example, the RGA revealed that membership of FWUCs were predominantly men. However, in those villages where water usage is informally organized, women reported to be involved in the planning and also the preparation of pumps and fee collection. The project hence concluded that gradually increasing women membership in FWUCs, as a Government-recognized formal organization, and offer trainings on irrigation maintenance, management and utilization of user fees, would lead to empowerment of women in villages.

In the context of water for domestic use, it turned out that in Kratie province, men and women are equally involved in fetching water whereas in Preah Vihear province, the task is mainly performed by women. Although all project villages were located relatively close to a water source (with a maximum distance of 2,000 meters), women perceived the provision of water for domestic purposes during dry season as an issue. Furthermore, the water quality was found to be of concern as some wells in Kratie contain arsenic.

Based on these findings, the NAPA Follow-up project team developed a gender action plan (GAP) including four gender goals: to improve the utilization of climatic information of vulnerable groups and women; to ensure that women have better access to water resources for households use; to enable women to benefit from climate resilient farming practices and crop varieties; and to increase the number of women receiving extension services on climate change resilient farming techniques.[[14]](#footnote-14)

The Phase 2 project undertook Rapid Gender Assessments in Vulnerability Reduction Assessment (VRA) and Rapid Gender Assessment (RGA) in 16 of the total 32 (Phase 1 and 2) communes. These were expected to serve as a benchmark against which progress of the project is measured, as well as opportunities for sub-national administrations and line departments to be more acquainted with the tool.

The RGA report conclusions noted the following:

In general, there were no significant differences between the priorities of men and women. They both think that resilient rice seeds, improvement to domestic water access and the provision of agriculture technical skills are very important to them.

The main difference between men and women comes from women having a more accentuated social dimension associated with domestic economic activities. Water ranked first as priority for women. Women are adopting a “House proximity’s approach." This is consisting in satisfying water needs for domestic and production use; to this regard, women favor water sources nearer to their homes or villages, such as communal wells and/or ponds. Women are more inclined than men in adopting an integrated approach with importance given to home gardening and animal husbandry.

Men are adopting a more rice-based approach associated with the building and /or rehabilitation of irrigation schemes.[[15]](#footnote-15)

The report highlighted the importance of availability of water in combination with the technical on-site demonstration to create a favorable environment to women to benefit from the climate resilient farming practices and crop varieties introduced by the project. Adoption of technology is an entry point that accelerates confidence building and leadership of women. The increased number of women as model farmer and members of FWUC and women gradually taking up some responsibilities and decisions supposedly for men, e.g. choice of rice varieties, seed multiplication/purification were noted as positive results in the Vulnerability Reduction Assessment Report (March 2014). Several solutions to reduce vulnerability were identified, the most important priorities included: digging/restoring ponds, wells and other waterharvesting technologies, the provision of resilient/early mature rice varieties, cash crops/vegetable seeds, the provision/extension of agriculture technical skills, and building or rehabilitation of irrigation systems.

1. **Capacity development**

During 2014-2015, commune level workshops were organized by Provincial Department of Women’s Affairs (PDoWA) to raise awareness on climate change impact, its differential impact on women and men, and how the impact can be mitigated, specifically for women and vulnerable groups. The workshops involved 1,489 commune councillors, group leaders and community members, of which 875 was women. A preliminary finding from village surveys conducted in March 2015 indicated that 80-85% of community members are aware of project interventions and have better knowledge about climate change adaptation, specifically in agriculture and water.[[16]](#footnote-16) Commune council members were also actively supportive of the project activities which were viewed as aligned with their commune investment plans.[[17]](#footnote-17)

Capacity development of women to manage the water infrastructure was a key priority in the Phase 2 project. The PSU stated that 2,030 out of target 3,200 women have benefited from the project activities such as climate information targeting male and female farmers, technical trainings on effective use of water, trainings, exchange visits and farmer field days (**Annex 6**). The six monthly report in April 2015 stated that during the reporting period, 414 group leaders and farmers (of which 207 was women) received a refresher training on group management/leadership, revolving fund management, water fee management and effective use of water. In addition, 2,752 farmers (of which 1,730 were women) participated in farmer exchange visits and farmer field days aiming at promoting farmer-to-farmer learning and exchange of experiences in agriculture and water management.

Institutional capacity of the Ministry of Agriculture, Forestry and Fishery (MAFF) was also assisted during the formulation of MAFF Climate Change Action Plan (as part of the Cambodia Climate Change Strategic Plan, and through a cost-benefit analysis of various adaptation measures in the agriculture sector in collaboration with the Royal University of Agriculture and the ongoing UNDP regional capacity building initiative (the Economics of Climate Change Adaptation). Moreover, the project assisted the National Committee for Sub-National Democratic Development (NCDDS) in formulating guidelines on mainstreaming Climate Change. As part of institutional capacity building, MAFF/PSU also organized a joint study visit (NAPA FU and PADEE) to Lao PDR and Japan to acquire additional knowledge and experiences on climate change adaptation (CCA) and agriculture business.

A separate technical support activity occurred with the Department of Agricultural Land Management (DALM) in a study of land suitability for rice in Preah Vihear and Kratie. The report demonstrated suitability of various rice varieties in the specific soil types of the communes. During the consultation workshop held on February 2, 2015, recommendations have been made to DALM to extend to others crops and formulate tools that propose resilient extension service with given climatic information for dissemination and decision-making at the sub-national level.[[18]](#footnote-18)

1. **Tailored climate information and EWS**

The project team undertook an extensive survey on the dissemination and use of weather information.[[19]](#footnote-19)

Prior to NAPA FU implementation, particularly in Kratie a flood prone province, the system of volunteers was operating with the Cambodian Red Cross on emergency basis towards people preparedness during disaster. Besides adding development related responsibility through provision of climatic information (extreme weather information and seasonal forecasts) to the community, the project expanded the structure by having two volunteers, one man and one woman, per village.

Volunteers ensured that information received from the Department of Meteorology of MoWRAM through the Provincial Department of Water Resource and Meteorology was posted on the village information board. They also used loudspeakers to disseminate the information received from the Department of Meteorology in the target villages during the emergency time. As of early 2015, the volunteers had disseminated the climatic information to 1,819 households in 80 target villages.

A survey of results of the climate [weather] information dissemination was completed based on a representative survey of one village per one commune - 21 villages, 16 villages in Preah Vihear province and 5 villages in Kratie province. Interviewees, selected on a randomized basis, totaled 825 community members (58% were women).[[20]](#footnote-20) The assessment indicated that in Kratie, while most respondents (93-99%) received information on storm, flood, rain and drought, only 50% received seasonal forecast. Gaps were found related to (a) reliability: most of the information remained too generic and could not be downscaled into district, commune and village context; (b) lack of interest. As consequence of the first cause, the contents are either limited or non-existent as its main element, information on rain is diluted. The contents when available were not user-friendly and; lack of advisory and/or extension services, making the use of the seasonal forecast less attractive.

In Preah Vihear, both men and women (53%-56%) received information on storm and rain, while 36%-39% on flood and drought and 21% received seasonal forecasts. The report states that percentage of households having received the information is lower in Preah Vihear, possibly due to: (a) Flood versus drought: the volunteers are more active in emergency related activities in the flood prone areas than drought prone area where interventions bear more recovery-related activities from the technical ministries such as Ministry of Agriculture, Forestry and Fisheries (MAFF) and Ministry of Water Resources and Meteorology (MoWRAM) (b) Target: NAPA FU selected two target districts that are drought prone areas; (c) density of the population: in Preah Vihear, population is less dense than in Kratie, the number of the village are larger and households are spatially more scattered. (Those specific demographic characteristics rendered the dissemination of climatic information more challenging); and (d) channels used: by far, village meetings animated by the volunteers and Farmers-to-Farmers ranked respectively first and second as favorite channels of information. Information board and mobile announcement although available in the village, captured less attention with low percentage.

The survey also assessed use of the information. Both men and women used information to prepare seeds, crop selection, store water, prepare the land, repair their houses and prepare for evacuation sites. The men were more involved in land preparation and the percentage of information utilization by men is higher (85%) than women (69%). In addition, instead of using information for planning to restore/rehabilitate water sources (36%), e.g. pond, canal, and dam, etc., people tended to use the information to prepare home water storage (76%). Both men and women shared similar responsibility in this activity.

The report stated that where village volunteers played key roles in disseminating extreme weather information and seasonal forecast, significant impacts on livelihoods were generated; “99% of people in the target areas stayed safe, 96% of respondents said that it reduced crop damage and 84% said it also helped reduce damage on infrastructure, especially on houses, when there is a wind storm.” People used the information for different purposes. Significantly, people (44%) used information for security purposes: children (44%), repair house (13%) and evacuation (1%), for which women have a preponderant role (69% versus 12% for men). In Preah Vihear there is no big flood risk, except flash flood that requires limited safety evacuation (1%). Agricultural activities came second (prepare seeds with 24% where men are more active (36% versus 15%), crop selection with 13%). Water management ranked third behind security and agriculture, arguably the report states, because water infrastructure had been constructed by the project. The results pinpointed that farmers in the two provinces are giving the most importance to security related issues and that in the current situation the climate information is too generic.

The report supported the need to sustain the roles and responsibilities of the Community –based EWS and integrating functions related emergency and development to the concerned parties sub national administrations and line departments. It highlighted the importance of a Communication Strategy, and a need to “downscale the climatic information at least to the district level, and enrich seasonal forecast with more consistency; DoWRAM and PDA should work closely with the Sub National Administrations to bring their services closer to the communities.”

1. **Review of Outcome 1 results**

The integration of VRA and RGA has provided a new model for assessing climate change risks and vulnerability reduction opportunities. This is a significant contribution that warrants further refinement and development based on project experiences. A review of the VRA guidelines could usefully consider consolidating and improving technical climate impact assessment information to complement the household survey/community perceptions survey information, and secondly, to consider the larger scale drainage, watershed and district level risks that originate beyond the village and household scale. (There is a bias toward household-based adaptation intervention when in some cases, flood and drought response action at a larger scale may be more productive). The new LDCF project[[21]](#footnote-21) provides an opportunity to further develop the VRA methodology in consultation with other participants in similar climate change adaptation programmes.

VRA-RGA activities, while providing important gender disaggregated strategies, have also highlighted the gender divide in the project design: women have focused on domestic water supply while men have focused on the rehabilitation and expansion of the project-supported rice irrigation systems. Men have not been significantly involved in home gardens and integrated farming methods, which have been essentially promoted for women alongside their other household commitments. (See discussion under Outcome 2 below). The predominant focus has been on encouraging women’s participation in small scale irrigation. A shift by male farmers toward crop diversification and away from sole dependence on rice farming has been less of a priority. The dry season availability of farm labour and complementarity of vegetable and tree crops to rice production should be basis for encouraging farmers to diversify crops and incomes.

The training and other capacity development by the project have clearly helped to establish responsible community groups for management of the various water supply infrastructure. The depth and sustainability of this capacity cannot be confirmed due to a lack of detailed capacity assessment information, but the site visits suggested substantial skills and commitments at the four communes visited (Table 1). The Exit Strategy analysis of user groups’ capacity helped to assess capacity status.

The climate information/EWS activities have provided important information and lessons on use of volunteers to disseminate national weather information and the care that is needed to design effective risk reduction/climate change adaptation strategies. The main benefit appears to have been for flood warning and promotion of early maturing rice varieties to reduce risks of longer crop cycles. “Climatic information” seems to have been confused with weather forecasting and the lack of enhanced in-season forecasting and extension prescriptions are real constraints to the results. The site interviews suggested modest effects on farmer’s decision making from increased information dissemination. (The terminal evaluation of Phase 1 found that more than half of the targeted households received timely information on weather forecasts to cope with severe flood and that some farmers start changing their farming practices, for instance by replacing late-mature rice varieties by short cycle varieties.[[22]](#footnote-22))

Despite the bold efforts of the project team, the planned “tailored climate information” has not been performed as expected due to generalized weather forecasts, limited technical capacity and poor design work on the intervention strategy (volunteers disseminating weather forecast through various methods). An assessment of the EWS concluded that 98 % of those surveyed in Kratie and 79% in Preah Vihear affirmed having received weather information from at least one communication channel, but seasonal forecasts were received by only 50% and 21% respectively.[[23]](#footnote-23) Farmers used the existing networks to learn and disseminate information that affect their daily livelihood; 91% used village meetings and 96% used villagers as mean to channel the information and that information boards were not particularly useful. Both men and women used information to prepare seeds, crop selection, store water, prepare the land, repair their houses and prepare for evacuation sites. Seasonal forecasts at a local level require a more comprehensive system of meteorological data and analysis and agricultural extension response.[[24]](#footnote-24) This EWS should have also connected to the national committee for disaster management and MOWRAM to ensure effectiveness and communities able to prepare and cope with weather events. The effort by the project team to assess results of this component and to identify gaps that affect the EWS is appreciated.

**3.3.3 Achievement of Outcome 2: Technologies demonstration**

Table 1 outlines the 15 sets of field interventions that were implemented in 23 communes in addition to climate change awareness-raising and gender assessments completed in all 32 project communes. “The provision of community-level water supply infrastructure and resilient livelihood methods as a comprehensive package, as opposed to uncoordinated support, is currently ongoing benefiting 66 villages…. 860 households will directly benefit from these water facilities [in Phase 1]. Technical and material support for climate resilient agriculture directly benefits 3,018 farming households in Phase 1 and 1,587 in Phase 2.[[25]](#footnote-25) It was also reported that under the ‘one village approach’, a total of 3,394 households were supported with one or more of the following resilience measures in 65 villages:

* Integrated Farming System (IFS) that combines rice farming and fish cultivation, supporting 3,394 households;
* Construction of two community ponds (19,350m3) benefiting 430 households;
* 35 solar pump system (20 in Kratie and 15 in Preah Vihear) benefitting 529 households and 959 students (two systems have been installed in two schools, one in Preah Vihear and one in Kratie). The initial investment required for each unit is about US$7,600 and it covers about 15-20 households.
* 15 pump wells (all in Preah Vihear) benefiting 212 households
* 1,481 households were supported to be part of a Water User Group (WUG) and trained to manage these water supply systems.[[26]](#footnote-26)

The total outputs for Phase 1 and 2 (Table 1) included: 48 solar pumps, 78 hand pumps, 5 community ponds, 5 rehabilitated irrigation systems, farmer field schools and several sites with wind pumps and biogas units. Major support was provided for climate resilient seeds, livestock and agricultural inputs to households in 70 villages and farmers in 50-60 villages acquired training in rice intensification methods (SRI) and integrated farming systems. User groups (136) were set up to manage solar pumps, undertaking seed purification (and multiplication) and irrigation schemes, and revolving funds for small scale loans were provided to 43 of these groups (Table 1).

The project database included 2,369 beneficiary households in Phase 2 and 3,679 in Phase 1. It was reported in Phase 1 that 1,470 households corresponding to 75 WUGs andrepresenting 30% of the total target households were benefiting from the project’s water supply infrastructure[[27]](#footnote-27) (no Phase 2 data).

1. **Technologies performance**

The project annual report noted:

“A simple analysis of the internal rate of return from the solar pump system was conducted and it concluded that the IRR is 15% and the stream of benefits would ensure that the initial investment is paid back after seven years[[28]](#footnote-28). Not only does this demonstrate that the financial contributions from CCAF is generating a positive stream of benefits in years to come (as far as the investment in the solar pump systems is concerned), but it also presents a great opportunity for potentially engaging private sector actors in the future provision of such services. This analysis needs to be refined further and be expanded to cover other types of investments.

The project team also observed cascading effects of freshwater access within targeted villages. Beyond the initial members of 1,481 who obtained access to freshwater facilities, additional 30% of non-members also obtained access to these facilities by paying water user fees (the same amount is charged to both members and non-members). This also demonstrates that willingness to pay for freshwater infrastructure exists, even among the most vulnerable, poorest members of the community, and hence another indication of a private sector engagement possibility. A WUG is collecting each month, on average, US$75 of user fees, which is more than enough to replace the necessary parts of the equipment and replace the entire system after 15 years of the lifetime of the system. Extra savings are already being used as loans to members for productivity enhancement purposes.”[[29]](#footnote-29)

The data on ponds, solar pumps and pump wells provided by the project team illustrate the costs and beneficiary reach, as shown on **Table 3**.

**Table 3: A summary of investment costs and unit cost for freshwater infrastructures**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Investment type | Total number | Total investment | # of beneficiaries | Investments per beneficiary |
| Community ponds (19,350m3) | 2 | $7,740 | 430 | $18 |
| Solar pump well | 35 | $266,000 | 529 | $502\* |
| Pump well | 15 | $22,500 | 212 | $106 |

\* This does not include 959 students or additional beneficiaries who are not part of the water user group formed by the project.

Source: Semi-Annual Report: Canada-UNDP Climate Change Adaptation Facility, April 2015

The Climate Resilient Irrigation Training Manual produced by the project provided an assessment of the cost of water as follows (Annex 2 of the manual):

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Capital cost | | Cost/m3 | IRR |
| Rainwater harvesting storage: | $250 | | $0.20 | 23.82% |
| Solar pumps: | $7600 | | $0.32 | 17% |
| Pump wells: | $1500 | $1.88 | | 12.42% |

The TE team also compiled some site specific data at the four sites identified in **Table 4** below. There is considerable variation in water use especially during the dry season but it is clear that water users are willing to pay for improved domestic water supply especially because of the high savings in labour and cost provided by this infrastructure. The annual revenues from water fees in each community are in the order of 5-6M kr ($1250-1500 USD). With a presumed 10 year life span for solar pumps costing about $8000, the financial viability appears to have good potential for this technology.

**Table 4: Solar and wind pump data from site interviews, September 2015**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Project site** | **Install date** | **Water fee** | **Avg HH Use (m3 )** | **Est. ann. revenue** | **Est savings (cost/labour)** |
| Teokrehom comune, Choam Skan district, PV  - 19 HH connections (site pump) and 180 group members covering 6 pumps at the village | 2012 | 1500 Kr/m3 | 13m3 /day wet  60 m3 /day dry | 4.8M kr annually  (reported  400,000 kr/mth on avg) |  |
| Teokrehom village Wind Pump and Community pond, 33 HH connections and 12 HH pump connections and 151 group members | Dec 2011  -water charges in April 2015 | 1000 Kr/m3 | 30m3/month in the wet season, and 60m3/month in the dry season | 227,000 kr/5mths from 12 HH | 1000-1500 kr for tank water |
| Serereipheap village, Dar commune, Kratie  - 14 HH connections and 19 group members |  | 1000 Kr/m3 | 10m3 /day wet  15-20 m3 /day dry | 2.52M kr annually | Before had to carry water from 300m |
| Thmey village, Sandan commune, Kratie  - 16 HH connections and 52 group members  (another 14 connections on a 2nd solar pump) | Nov 2014 | 1000  Kr/m3 | 13m3 /day wet  60 m3 /day dry season | 5.76 M – 6.4 M kr per year | 5000 kr for tank (0.8 m3)  Dry season cost avoided 30,000–40,000 kr/HH |

The project reports also indicated that about 50% of the beneficiaries who had not had home-gardens started growing vegetables and they earn an average of US$10 per day during the peak season from selling their vegetables to the local market (or about $2,000 additional income per year).[[30]](#footnote-30) But these are very approximate estimates and they were not validated by the TE site visits. During our visit, farmers reported that they have no experience in the past to grow vegetable to support their livelihood, but recognize the importance of water availability and a willingness to grow in the next dry season. Similarly, the TE site visits at four communes could not find evidence of SRI rice intensification method.

The project also undertook major rehabilitation and expansion of irrigated rice farming schemes at five locations (Phase 1 and 2). The last annual report indicated “the project rehabilitated three new irrigation schemes, two of which are in Kratie and one in Preah Vihear. As a result, additional 541 hectares of paddy fields are now under irrigation benefiting at least 248 households. Farmer Water User Communities (FWUC) were formed to manage the water supply systems. In addition, the Department~~s~~ of Agriculture continues to mobilize farmers to practice double rice crop (medium and short varieties are introduced by project) using these irrigation systems.”[[31]](#footnote-31) The TE discussions at two recent project sites (Teuk Krahom and Dar communes) indicated that it is too early to assess results and user groups and fees have yet to be fully established and operational. The O Khsan reservoir scheme in Teuk Krahorm Commune, Choam Ksan District of Preah Vihear involved extension of an existing irrigation scheme to take advantage of available 20-50 ha of rice farming land (see Climate Resilient Irrigation Training Manual, 2015, p. 17).

1. User groups and revolving funds

The 136 user groups established by the project (from the database on phase 1 and 2 of project beneficiaries) has been a major achievement, with important sustainability concerns (see Section 3.3.6). A “Village Situation Analysis” also completed by each provincial team, identified six types of community water and agriculture groups as shown on **Table 5** below. The analysis also rated capacity status of the groups and found that 15-20% were considered as having ‘weak’ capacity and about 5% having ‘strong’ capacity with the remainder as moderate capacity. Almost 70% of the groups had revolving funds

**Table 5: Types and numbers of community groups**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Types of groups** | **Kratie** | **Revolving fund** | **Preah Vihear** | **Revolving fund** |
| **One village groups** | **31** | **18** | **-** | **-** |
| **Solar pump groups** | **23** | **8** | **25** | **18** |
| **Pump well groups** | **-** | **-** | **79** | **62** |
| **Farmer water user communities** | **4** | **0** | **7** | **3** |
| **Integrated farming system groups** | **20** | **20** | **12** | **12** |
| **Seed groups** | **6** | **6** | **6** | **1** |
| **Total:** | **84** | **50** | **129** | **96** |

**Source: NAPA Follow Up 2, Project Exit Strategy, August 2015.**

**Note: some of these groups are currently being consolidated and formed into Agricultural Cooperatives**

The project identified capacity building needs related to group management, business plans, conflict resolution, bookkeeping and financial management, harmonization of rules and regulations and the establishment of Agriculture Cooperative status.[[32]](#footnote-32) According to participants, infrastructure support functions that still require capacity assistance include (i) undertaking regular follow-up and technical advice and training for solar pumps, (ii) capacity building for irrigation schemes including mobilizing additional funds to complete the schemes, and (iii) continuous extension services and training to optimize the use of water infrastructure.

1. **Review of Outcome 2 results**

The array of technologies that were demonstrated and promoted under Outcome 2 have provided useful experiences for community-based adaptation measures in the two provinces. The overall target of 5500 households implementing multiple measures has likely been met, although exact estimates were not available. Some 3,015 households have benefitted from small scale water infrastructure (Annex 6) and many others have received training and agricultural inputs (an estimated 860 beneficiary households were expected from Phase 2 of the project[[33]](#footnote-33)). The Mid-Term Household Survey indicated that 15% of project households in Kratie and 9% in Preah Vihear benefited from the solar water pumps[[34]](#footnote-34), implying 367 direct beneficiaries. The provision of domestic water supply, particularly with higher quality groundwater, has been a major factor influencing the positive community response and commitment to these facilities. The hand, solar and wind pumps and the rooftop rainwater harvesting tanks have been highly appreciated and appear to have a high level of user attention and engagement in maintaining the facilities. The community ponds provide a water supply source during the dry season. It was also noted that the project teams with the provincial departments should support farmer communities to optimize uses of irrigation schemes, pond water and also solar pumps for agricultural production and livelihood improvement.

Technical and material support directly benefited 2,369 farming households according to the project database. There are not enough data to fully assess the results from the various agricultural support activities (although the final HH survey will fill some information gaps). Lead farmers have demonstrated impressive results and extensive training has been provided by the project; uptake of home-based gardens may be in the order of 30% higher (see section below) although many are rainfed. The community water infrastructure is primarily used for domestic water supply. Community ponds that were visited were under-utilized and did not completely demonstrate model intensive farming systems.

* + 1. Achievement of Outcome 3: Lessons learned and replication

The design assumption for Outcome 3 replication results is based on dissemination of project information and workshop and exchange visit discussions, surveys, case studies and programme collaboration. Replicating lessons learned in other vulnerable areas of Cambodia has been pursued through various knowledge products and workshops and through household surveys to understand the effects of the project interventions and identify opportunities to learn from the project.

1. Knowledge development and replication

The project team promoted lessons from the Phase 1 project to be replicated in two large-scale agriculture programmes led by IFAD - PADEE and ASPIRE. A joint learning workshop was organized with PADEE, coordinated by MAFF, and focusing on experiences of agriculture extension and climate change adaptation in the agriculture and water sector. 120 national and provincial level stakeholders participated, including project teams and partners from 5 target provinces of PADEE and CCAF (Canada-UNDP Climate Change Facility).

In-country exchange visits were provided for provincial staff education including visits to resilient irrigation systems and improved rice farming in Siem Reap, Takeo, Kampot and Kampong Thom. Most of the exchange visits were centered on two themes:

* Water management covering the maintenance of the infrastructures and the roles and responsibilities of the concerned parties – PDoWRAM for the main canal and FWUCs for the sub-canals with regard to water management;
* Experiences on climate change adaptation combining agriculture and water. Some adaptation activities are derived from farmers themselves with an increased adoption on double cropping, with early-mature rice varieties that fit to seasonal changes.[[35]](#footnote-35)

In collaboration with UNDP/SGP/CCBAP, LGCC2 and SNC Scale Up projects, a joint reflection workshop on climate change mainstreaming at sub-national planning process was organized in November 2014 by bringing 88 participants from governments, development partners, non-government organizations, local authorities and communities. The climate change adaptation mainstreaming experiences have been shared and discussed. It was agreed that the experiences and lesson learnt will be consolidated and widely shared in NCDDS website. Several model farmers from the project won awards in a nation-wide farmer competition.

The project team has produced a number of communication materials such as project update, story from the fields, photo essay, photo albums and a number of articles and success stories. The team developed case studies and video documentary and produced two training manuals: the *Global Gender and Climate Change Training Manual* in Khmer and the *Climate Resilient Irrigation Training Manual* in Khmer and English. In addition, the team work with partners to disseminate its communication materials through websites of Climate Change Department of Ministry of Environment (CCD (MoE)), UNDP Adaptation Learning Mechanism, and UNDP Cambodia website. With support from the UNDP global communications team, the success articles were widely shared among their network such as Facebook, Twitter, the Adaptation newsletter etc. A number of articles and success stories were written and shared on the website and the UNDP newsletter. The impact of this sharing of knowledge and skills was not monitored to assess results.

It was observed that replication could also involve publishing simple, one page technical guidelines that are easy for farmers to use; many farmers only have a basic literacy in Khmer language and it is difficult for them to do the job without simplified technology instruction.

1. Household survey data on project effects

The household surveys were undertaken at three stages: Baseline – Feb/Mar 2014; Mid-term – June/July 2015; Endline – Oct. 2015. Approximately 600 randomly selected households were involved in each survey, with only 5-6% new households included in the subsequent mid-term and final surveys. The late baseline and short period between mid-term and final survey were constraints to identifying changes induced by the project. The surveyed households included 400 from 12 project villages (divided evenly into beneficiary and non-beneficiary households) and 200 from non-project control group villages. As noted earlier, some additional questions had to be added for the final survey to capture more information on specific project impacts in context with the project logframe and M&E system. Final Survey data were not yet available for this evaluation.

The Mid-term survey report found that three-quarters of the project (Phase 2) households reported positive impacts from the project, with impacts apparently higher in Kratie province.[[36]](#footnote-36) It reported:

“The NAPA project interventions had significantly impacted to HHs in project villages. HHs in both phases and provinces informed in increased income, increased availability of water for livestock and domestic use, and increased crop yields, which are some of the impact of the NAPA project activities.

A great majority of HHs in Phase I villages (95%) and Phase II villages (76%) had positive impact from the project, while only 5% of HHs in CD [‘Control Domain’] village inside Phase II and none of the HHs in CD villages outside project had impact from the project.

91% of HHs in Kracheh [Kratie] and 99% of HHs in Preah Vihear in phase I, as well as 93% of HHs in Kracheh [Kratie] and 60% of HHs in Preah Vihear in phase II mentioned that they were benefitted by engaging in project activities for over a period of time. Whereas only 10% of HHs in Preah Vihear and none of the HHs in Kracheh [Kratie] in CD village inside Phase II informed of having impact by NAPA project.”[[37]](#footnote-37)

The following results were also highlighted:

* 52% of the Phase 2 project households were poor (ID I or II status) compared to 18% in Phase 1 project households; in the Phase 2 project households, 69% were classified poor in the 2014 Baseline Survey while 52% were poor in the 2015 Mid-Term Survey[[38]](#footnote-38); (the project database indicated that 39% of agricultural activity beneficiaries (1401/3592 HHs) were poor).
* The Baseline Survey indicated that, in the dry season, 17% of project households and 30% of non-project control households were dependent on rainwater for irrigation purposes (no Mid Term data)[[39]](#footnote-39);
* Rice farming was practiced by 75% of the households with a higher proportion in Preah Vihear compared to Kratie province;
* Inter-annual variability in rice production was significant: 73% of rice farming households reported a decrease in production compared to the previous year due to ‘natural disasters’;
* 68% of project households in Kratie and 67% in Preah Vihear had home gardens, compared to 31% and 26% respectively in the non-project households (11% using NAPA solar pump water for irrigation and 36% dependent on rainwater),[[40]](#footnote-40) suggesting that the project households may have had about a 30% higher rate of home gardens (no data from Baseline survey)[[41]](#footnote-41);
* Around 38% of surveyed households grew cash crops (especially maize, cassava, banana, mango, and watermelon), implying that 16% of households had home gardens only for home consumption;
* The primary water source for home gardening was from rainwater, followed by excavated pond and drilled well;
* Among the households with access to irrigation water, 55% reported that the amount of water provided only half of their needs, a decline from 69% in the Baseline survey.
* After access to irrigation, agricultural yields increased; around 32% of households in Kratie reported having improved their yields from 50-100%, while only 29% of HHs in Preah Vihear reported the same. Among 57 households in Kratie and 48 households in Preah Vihear who had access to irrigation, 30% of HHs in Kracheh reported increased yields from 25 – 50%, and 29 % of HHs in Preah Vihear reported the same.
* The most common way to articulate the advantage that irrigation facilities offered was “being able to plant even when rains were late”. About 61% of the respondents (54% in Kracheh and 69% in Preah Vihear) mentioned positively.
* 35% of households encountered irrigation problems, typically not enough water over the entire growing season, varying from 18% in Kratie to 54.5% in Preah Vihear having problems; around 31% of households (Phase 1 and 2 villages) reported inadequate water for the entire season;
* 7% of households in Kratie took advantage of the weather information from project staff (compared to 6% in Phase 1 villages) and 0% of Preah Vihear households mentioned this compared to 11% in Phase 1 villages).
* The two household surveys indicated that only 20-27% (baseline and mid-term) of households had access or utilized agricultural extension services either from government or from the project.

1. Review of Outcome 3 results

The data are insufficient to fully determine the actual adoption and replication of the project technologies, but the project has made a major effort to capture the lessons learned in project households compared to non-project control households and to exchange experiences and lessons with other projects and countries. As noted above, three-quarters of the surveyed project households perceived positive benefits. The project may have increased irrigation water supply to meet 50% of farming needs by about 15% over baseline conditions. The project may have also increased the amount of home gardens by about 30% compared to non-project villages. Irrigation resulted in 30% of households producing increased agricultural yields (25-100% range) according to the Mid-term Survey.

The water supply infrastructure and extension support, notably 78 pump wells, 48 solar pumps, 5 community ponds and 5 rehabilitated irrigation schemes along with 34 farmer field schools and the introduction of various farming technologies (Phase 1 and 2 - Table 1) have demonstrated a wide range of effective measures to address climate change through community-based water management, although ongoing support is needed. The extent to which replication occurred beyond the project sites remains to be seen.

It is too early to see the impact of sharing lessons learned as some activities have just started, but there was a positive response from local authorities and communities toward the water supply assets. The beneficiaries were happy with the availability of water resources but in general, based on site visit observations and discussions, do not yet substantially grow additional crops during dry season or diversify crop production. Policy influence have been seen at the local level through mainstreaming the climate change into the CIPs, but the influence to the policy at national level is less apparent.

Some of the knowledge development activities have had little short term evidence of contribution toward the expected outcome. For example, the soil, crop and climate change analysis by Department of Agriculture and Land Management was expected to “recommend appropriate resilient options based on soil types, crop suitability and the forecasted climatic information”. They are working toward a product that will assist adaptation strategies in the future but no observable results for project outcomes are available to date. Similarly, the project provided support for the regional UNDP capacity building programme on the Economics of Climate Change Agriculture, and for a study tour by PADEE and NAPA FU senior officers to review Japan’s agricultural cooperatives. These are no doubt worthwhile efforts, but in a short-term project it is difficult to see how they have directly contributed toward the planned outcome of enhanced adaptation measures being adopted in the targeted villages.

3.3.5 Sustainability of project results

The Project Exit Strategy was developed through district consultation workshops involving 362 participants including senior management from project board (MAFF/PSU, UNDP, MoWA, MoWRAM and provincial administrations), project management and team at provincial and district levels, district governors, commune councillors, village chiefs and representatives from farmer groups.[[42]](#footnote-42) The overall recommendations from the workshops included:

* + 1. Ownership. Promote stronger ownership on the water infrastructures, the groups and the revolving funds.
    2. Strengthen the groups’ rules and regulations. Ensure that the group understand the core essence of the rules and regulations and enforce their implementation by convening regular meetings.
    3. Efficiency of the revolving funds. Continuous support through more training, coaching and follow-up support on financial literacy would ensure efficiency of the use of revolving funds.
    4. Create network and synergy building within and outside their communities to promote learning, sharing and getting support. This can be done through the introduction of contact list and maintain a regular communication.
    5. Project team concluded that continuous support is required beyond the project lifetime.

These recommendations still need to take into account the lack of mechanisms for sharing skills and knowledge, training, coaching and mentoring after the project completion. Therefore, the project should consider establishing such a mechanism for mentoring and coaching with financial resources from several sources such as NGO, donors, etc. The project is making exceptional effort to increase the potential for sustainability. Collaboration opportunities with ASPIRE and PADEE need to be considered along with more defined water infrastructure management responsibilities for sub-national authorities. The difficulties in sustaining FWUCs and savings groups are significant. For example, the CCBAP terminal evaluation found that few of the groups had acquired the capacity to mobilise enough funds to be able to ensure maintenance of the structures, and that once project support ended, savings groups from several earlier years no longer remained functional.[[43]](#footnote-43)

Provincial Action Plans for sustainability activities during the final months of the project and after the project in 2016 have been attached to the Project Exit Strategy. A strategic alliance with the MAFF Climate Change Action Plan for implementation of the Exit Strategy was proposed at the last board meeting.[[44]](#footnote-44) TE discussions also identified three certain key priorities for sustainability:

* Continued development of Agricultural Cooperatives to better institutionalize the management rules and practices of the user groups, and to provide a provincial role in monitoring and guiding these groups toward self-sustainability[[45]](#footnote-45);
* Technical oversight and backstopping by MoWRAM and MAFF for effective and equitable management of the rehabilitated irrigation systems with clear responsibilities established for monitoring, support and reporting; and
* Community-based O&M plans established and implemented for each of the water supply infrastructure.

3.3.6 Gender equality results

The gender elements in Outcome 1 related to developing women’s capacity to manage the project-supported water infrastructure and to engage in climate resilient farming. The central focus on women has contributed toward distinct benefits under the project’s gender action plan goals: to improve the utilization of climatic information of vulnerable groups and women; to ensure that women have better access to water resources for households use; to enable women to benefit from climate resilient farming practices and crop varieties; and to increase the number of women receiving extension services on climate change resilient farming techniques.

The participation of women has been high: for example, 63% of the 2752 farmers receiving technical knowledge and group leadership training were women; 59% of the 1489 commune members who were provided climate change training were also women. 70% of the government staff receiving training were women and half of the user group members who got training were also female. Data on female participation were also extracted from provincial presentations, as shown on Table 6 below reflecting an overall 60% female participation rate.

**Table 6: Gender-disaggregated data on training session participation**

|  |  |  |
| --- | --- | --- |
| Sessions: | Total | Female |
| **Preah Vihear:** |  |  |
| Meeting to analyze VRA in the communes of Chorm Ksan District | 314 | 178 |
| Meeting to analyze VRA in the communes of Kulen District | 275 | 140 |
| Gender mainstreaming into climate change commune investment plan | 49 | 19 |
| Workshop on gender and climate change Kulen District | 44 | 7 |
| Training on gender and climate change 12 villages in Kulen District | 674 | 344 |
| Disseminate information to students in Kok Srolao primary school | 236 | 116 |
| Training session on raising bees to women groups and a study tour with 12 participants (4 women). | 12 | 4 |
| Training session on leadership and management Kulen District and Choam Ksan district | 328 | 185 |
| 7 training sessions at Choam Ksan District in 10 villages | 323 | 192 |
| 8 training sessions at Kulen District in 9 villages | 244 | 145 |
| **Kratie:** |  |  |
| Workshop on reviewing VRA results of 20 villages in 20 communes in Sambo and Chet Borey District | 70 | 8 |
| Selection of Climate information dissemination agents | 66 | 25 |
| 54,936 people in 46 villages have received and used the information | 100% | 46% |
| Technical workshop on climate information provided by volunteers | 102 | 43 |
| Meeting to select farmers and harvesters in the 32 target villages | 1966 | 1399 |
| Agricultural technical training - 31 sessions of Technical training on vegetable planting, intensive crops, chicken raising, for farmer member from 31 villages in 12 communes and 02 districts. | 1249 | 795 |
| 31 sessions of refresher training on vegetable planting and intensive crop for 31 villages in 12 communes in 02 districts. | 1146 | 811 |
| 19 solar powered water pumps and water irrigation systems 15 villages, 09 communes in Chet Borey District and Sambo District, Kratie Province for 688 beneficiaries in Hun Sen Sompha Boreak | 688 | 350 |
| Election of a new leader for Ou Tyong water system, of Svay Chrom, Ou Kantout, and Ou Dar communes | 162 | 78 |
| Organized farmers to use the 3 new water system in Kbal Chour, Dai Kla, and Ou Tyong, 8 sessions and organized 5 farmer community leaders (02 women – Accountant and Assistant) for water utilization. | 99 | 33 |
| Organizing water solar panel users; solar panel utilization committee consists of 05 people ( 02 women – Accountant and Assistant). | 5 | 2 |
| 3 training session on recording income and expense from service fee towards the water solar panel utilization committee | 45 | 22 |
| 3 sessions on strengthening and effective use of water to farmers using the water solar system | 142 | 77 |
| Strengthen the community on roles and responsibilities of sustainable water management | 182 | 53 |

Source: Summary reports presented by Provincial coordinators during field mission, Oct. 2015.

The seed purification, integrated farming and solar pump groups are principally run by women. Specific post-harvesting of agricultural products was directed at women’s groups.

3.3.7 Country ownership and mainstreaming

The project has been fully aligned and integrated with government priorities and programmes. The integration of project activities into government systems at provincial, district and commune level has been a conspicuous feature of the project, with direct collaboration of the MAFF, MoWRM and MoWA. Commune councils incorporated climate change priorities into CIPs (Phase 1) although limited resources are available to implement many of these priorities. The direct involvement of subnational government institutions and information-sharing with NCDD has supported the decentralisation strategies for government services.

1. **Rating of Project Performance**

|  |  |  |
| --- | --- | --- |
| **Rating Criteria (UNDP/GEF TE)** | ***Rate*** | ***Reasons for rating*** |
| **1. Monitoring and Evaluation** |  |  |
| M&E design at entry | MU | The project theory of change is not well-defined and the indicators mostly measure activities. |
| M&E Plan Implementation | S | The household surveys and various special studies endeavoured to determine the effects of the project activities on enhancing resilience of farm households. |
| Overall quality of M&E | MS | The project has been committed to assessment and learning about the effectiveness and gender sensitivity of the interventions. Available results data are incomplete. |
| **2. IA& EA Execution** |  |  |
| Quality of UNDP Implementation | S | The oversight, reporting and communication has ensured that the project is pro-actively managed. |
| Quality of Execution - Executing Agency | S | The project team have effectively coordinated the implementing agencies and guided implementation progress. MAFF PIU have done a good job at coordinating the agencies. |
| Overall quality of Implementation / Execution | S | The project has been implemented in an effective and timely manner with a high level of commitment from subnational authorities and communities. |
| **3. Assessment of Outcomes** |  |  |
| Relevance | R | The focus on improving water availability and managing water resources is critical to climate change resilience in the agricultural sector and highly relevant. |
| Effectiveness | S | Most of the planned outputs and results have been achieved to an acceptable level except for the tailor-made seasonal forecasts and the expected replication of project approach and practices to other areas. Sustainability concerns affect some of the project achievements. |
| Efficiency | S | The project has implemented a large number of activities in a short two year period. Not all have contributed to project results but activities have been delivered in a timely manner. |
| Overall Project Outcome Rating | S | The project has contributed to a better understanding of the approaches and means of enhancing climate resilience through a variety of water management technologies and practices. |
| **4. Sustainability** |  |  |
| Financial resources: | ML | The ASPIRE and PADEE projects are expected to assist further development and maintenance of the project achievements in conjunction with the Exit Strategy. |
| Socio-political: | L | There is policy support for community based responses to climate change, including use of Agricultural Cooperatives. |
| Institutional framework and governance: | ML/MU | The sustainability of the user groups and the ability of FWUCs to manage irrigation schemes with government support carries some uncertainties. |
| Environmental: | L | Water quality issues are being addressed for the domestic water supply facilities. |
| Overall likelihood of sustainability: | ML | Sustainability will depend in part on the future support for Agricultural Cooperatives and the role of ASPIRE in strengthening agricultural extension services and water user groups, with particular concerns about sustainability of large irrigation schemes. |

**Rating categories as per the UNDP/GEF Evaluation guidelines:**

|  |  |
| --- | --- |
| ***Outcomes, Effectiveness, Efficiency, M&E, I&E Execution ratings:*** | ***Sustainability ratings:*** |
| Highly Satisfactory (HS): no shortcomings  Satisfactory (S): minor shortcomings  Moderately Satisfactory (MS)  Moderately Unsatisfactory (MU): significant shortcomings  Unsatisfactory (U): major problems  Highly Unsatisfactory (HU): severe problems | Likely (L): negligible risks to sustainability  Moderately Likely (ML): moderate risks  Moderately Unlikely (MU): significant risks  Unlikely (U): severe risks  ***Relevance ratings:*** Relevant (R)  Not relevant (NR) |

5. Lessons Learned

1. The project implementation partnership between MAFF, MWRM and MWA provided a coordinated, cross-ministry approach to addressing climate change adaptation, with a continuum between household water availability, irrigated farming practices and livelihoods diversification. Identifying the specific roles for each agency within a coordinated, well-communicated programme is a key lesson.
2. The project team identified five specific lessons in a recent report: “(1) a solar pump is best suited for small group of up to 25 households; (2) need to follow an integrated approach: providing source of water, agricultural techniques and tools, and strengthen the groups, (3) analysis of existing water resources to ensure availability and safety is critical during the feasibility study, (4) the establishment of water user groups, rules and regulations should be defined prior to the construction of the water infrastructures to ensure the groups readiness to use and maintain the infrastructure in the sustainable manner, and (5) water meters should be installed in every house of the members to measure the number of cubic meter of water used and ensure the payment.”[[46]](#footnote-46)
3. UNDP also identified some key lessons from Phase 1 of the project in the Adaptation Learning Mechanism website (2011): need to (1) bolster local institutional capacity within the context of broader development programmes, (2) clearly identify the risks that are specific to the implementation of the project (e.g., fragmented governance), (3) develop incentives for adaptation, and (4) develop gender mainstreaming at the project’s beginning.[[47]](#footnote-47)
4. The project has not been designed to directly draw out policy implications from field interventions or to test alternative strategies for future subnational implementation of climate change strategies, but there are some experiences that could be considered in policy discussions particularly with regards to financial viability of water supply technologies, sustainability of user groups to manage water infrastructure, and quality assurance services for irrigation systems management. These three themes could be considered in the networking and collaboration between stakeholders in similar climate change adaptation activities in Cambodia. Capacity to implement such action remains an issue.
5. The Vulnerability Reduction Assessment method that has been developed with UNDP assistance provides an important contribution to the technical process of identifying adaptation options and the process of selecting beneficiaries (vulnerable households) based on well-defined criteria, including gender equality. The VRA however, has been limited by the lack of adequate sub-national downscaling of global climate model predictions to provide more precise local estimates of climate stress, limited localized in-season weather forecasts, and uncertain linkages to disaster risk reduction and contingency response measures. Other aspects are proposed for strengthening by the new LDCF project. VRA procedures also need to customize adaptation and safety net measures for the poorest households and the migration characteristics of many of these households.
6. The project experiences highlight the long term challenges and process of promoting irrigated agriculture and crop diversification in areas dominated by traditional rainfed rice farming. Introducing new crops and small scale irrigated farming needs to be balanced with enhanced water conservation/efficiency measures in conventional farming systems. Short term changes within a 2-3 year project may not be realistic although model practices of lead farmers are nevertheless important for the farmer field school approach and future extension programmes that support integrated farming development based on enhanced water availability. Extension programs should introduce crop water use efficiency to improve the use of water during water scarcity periods.
7. The project concept of increasing rainwater harvesting and water availability for agricultural productivity, diversity and resilience at a household level has proven to be a viable and cost effective investment in water-scarce communities. The primary benefits from the water infrastructure have been for domestic water supply in the dry season. Participation in home gardening has demonstrated success for the limited number of households connected to water systems and active farmers but based on the evidence in hand has yet to be adopted in a widespread manner, although actual data on uptake still needs to be collected.
8. There are water management-extension coordination challenges for MAFF/PDA and MoWRAM /PDoWRAM to jointly increase the linkage between water availability and crop diversification associated with the community water supply facilities and to increase the use of larger irrigation schemes for crop diversification to supplement rice farming incomes. Water supply for agricultural adaptation to climate change needs to be addressed with an integrated management system at a district level.
9. The five rehabilitation and expansion irrigation schemes have only recently been implemented and there is insufficient experience to assess results. Coordinated PWRAM, PDA and FWUC management and the necessary requirements for user fees, sustainability and oversight of these facilities is a concern. Irrigation schemes still need mentoring and coaching on agricultural activities and O&M.
10. The NAPA-FU project experience is consistent with the conclusions from the companion RULIP project in regard to meeting the needs of vulnerable households: “effectiveness and relevance of RULIP were also strengthened by the inclusion of three key activities: allocation of more agriculture training days for all members of self-help groups based on farmers' own priorities; creation of MVF (most vulnerable family) groups for the most vulnerable households with additional financial support, and; strengthening of the Village Animal Health Worker system given the importance of small livestock in poorer households' livelihoods.”[[48]](#footnote-48)
11. The efforts to learn about project results and impacts have been spread between a project activity database, household surveys, gender assessments, separate component studies (e.g., EWS) and spot checks by staff and visitors. Yet actual data on the central question of beneficiaries’ uptake of project technologies to date remains very limited for the purposes of evaluating key results. The M&E framework needs to be carefully designed at the project inception to guide performance monitoring and assessment based on representative household level data.
12. The sequence of NAPA-FU Phase 1 and 2 projects has provided continuity and efficiency in contributing to progress toward a refined Water-Agriculture model for community based adaptation. The Canadian ‘top-up’ funding for a relatively short second phase was able to utilize the existing structures, processes and staff in addressing key issues that remained at the end of Phase 1 (technologies viability, water user groups, engaging vulnerable households, using combinations of interventions, etc.). This was a clear benefit over starting a new project with limited funding. In hindsight, given the available resources and time frame, it may have been better to have had a more strategic focus on a narrower set of themes and outcomes and less geographic spread.

6. Conclusions and Recommendations

**6.1 Conclusions**

The project has been well organised and has effectively implemented the planned activities and outputs in a timely manner and with a high level of commitment of the PSU and the implementing partners. The joint implementation by three ministries is a new approach that, according to the partners and participants, has been a successful arrangement. It has contributed toward a distinct multi-agency, sectoral approach through (a) a coordinated subnational water-agriculture team approach, (b) facilitating provincial-district-commune planning and implementation, (c) gender-sensitive Vulnerability Reduction Assessment technical inputs for design of water-related climate resilience measures and (d) developing the user responsibility and capacity to manage water infrastructure.

This NAPA Follow-up Phase 2 Project (2013-2015) along with the previous Phase 1 Project (GEF/LDCF (2009-2012), have had a substantial effect in raising awareness of climate change and adaptation options in 65 villages and 32 communes. Phase 2 mostly focused on 16 of the communes, although there was ongoing support for some of the Phase 1 communes. Farmers are now aware and trained to varying degrees in alternative activities (vegetable production, poultry/pig raising, integrated farming, post-harvest processing, etc.) although precise participation rates are not available. Crop cycle changes, particularly through the use of early maturing varieties and climate-resilient rice varieties are the most evident changes. The project concept of rainwater harvesting and water source availability as a basis for improved agricultural productivity, diversity and resilience at a household level has generally proven to be viable and cost effective in water-scarce communities where local people are managing the facilities with external technical oversight.

The primary benefits from water infrastructure have been for domestic water supply in the dry season. The secondary benefits have been to provide water for home gardening, integrated farming, livestock development and expanded irrigated rice farming. Almost 3400 households have reportedly applied more than one adaptation measure (Phase 1 and 2). The extent to which these methods have been adopted by farmers has yet to be clearly confirmed but some lead farmers have demonstrated significant results, and others have shown a strong interest. The promotion of climate resilient rice varieties, seed purification (and multiplication) and livestock development appear to have been readily adopted, while the use of integrated farming and SRI rice intensification methods have less evidence of acceptance (although data are lacking). Home gardening has been heavily promoted and may have led to a significant increase in such gardens, and assisted crop diversification and incomes (data may be available in the final household survey).

Opportunities exist to further expand integrated farming around community ponds and other water sources. The barriers to integrated farming systems appear to include limited extension staff capacity, lack of experience, reluctance to change traditional farming practices, insufficient evidence of benefits from investments, farm plot proximity in relation to households, and perceived risk of access to markets.

The household surveys (baseline and mid-term) indicating that only 20-25% of farmers in the project areas had access to agricultural extension services will be of particular interest for the IFAD ASPIRE project that has just commenced and the new LDCF project. PDA and DOA should work to enhance water availability for household income generation given the project reports that some farmers have doubled and tripled their farm incomes. Extension workers should be assisting farmer groups to develop cultivating plans in accordance with weather forecasts.

Five irrigation schemes have been rehabilitated and/or expanded, although there is insufficient experience and information to assess results. Some users are uncertain about paying water use fees. Sustainability of this infrastructure is a major concern.

Gender assessment and mainstreaming has been a significant component of the project and has generally been successful at raising awareness, ensuring equitable participation of women, targeting adaptation priorities for women, and promoting post-harvest processing of agricultural products. Women made up 60% of the participants in training sessions and workshops. But there also appears to be a gender divide in that the small scale multi-crop irrigation activities are mostly targeted for women while men are largely only involved in the expansion of large scale irrigation schemes for rice farming.

The 65 community revolving funds that have been established have had a high degree of participation and appear to have had a very positive effect on member savings and incomes, although data verifying the effects on household economic status and fund survival potential are still required. The 136 user groups (for example, farmer water user communities, seed purification groups, solar pump groups) that have been established have different levels of capacity – strong, moderate, weak, as shown in the recent survey. The Exit Strategy will be critical to promoting sustainability of these groups and therefore proposed action plans need firm commitments.

The project has also succeeded in assisting a greater proportion of poor households compared to Phase 1, as reflected in the Mid-term Household Survey and the project activity database. More than twice as many poor households were beneficiaries in the Phase 2 project (52% vs 18% in HH survey; and 39% in project database). The weather information dissemination through community volunteers was an interesting experiment that engaged community volunteers. “Tailor-made climatic information” (output 1.2) however was beyond the scope of the project due to insufficient local in-season weather forecasts and extension advice. Nevertheless, some farmers used the weather forecasts to adjust crop varieties and timing of crop planting.

Project resources were spread very widely across more than 15 types of field interventions in 23 communes during Phase 1 and 2 of the project. The financial, economic and sustainability case for investment in water sources, storage and distribution still needs to be elaborated, especially for the 48 solar pumps installed by the project. The DALM study (on land suitability for crops) and the training/studies on benefit-cost analysis have not yet provided evidence of practical results, but they remain works in progress. Project technologies may need more direct consideration for promotion and assistance within MAFF agricultural and climate change adaptation extension systems and local government climate adaptation planning.

The replication results expected under Outcome 3 for other vulnerable areas are not yet apparent and may have been too ambitious given the project scale and time frame (Oct 2013 - Dec 2015). The M&E system and HH Surveys have provided useful data on project beneficiaries and activities and on household level changes in agriculture and water availability over the course of 1.5 years (a weak basis for establishing causality). At the time of this evaluation, they generally lack conclusive information on intervention performance although the final survey may offer a clearer picture. The household surveys have been an important effort to examine project effects, from which some useful lessons can be drawn by the end of the project for future M&E systems.

The project design issues also suggested some weaknesses in how the project theory of change and project indicators were developed, articulated and communicated. Output-outcome coherence and indicator selection may have constrained project effectiveness. The ‘one village’ strategy was adopted after Phase 1 mid-term review and appears to have enhanced results, although data are limited.

Overall, the project has been effectively and efficiently implemented and provided some meaningful results in a very short term through an array of field interventions and awareness raising activities. Not all of the outputs led to expected outcomes but the important connections between water management and agricultural resilience to climate change have been demonstrated. The sustainability and long term potential for these interventions will need to be a key focus over the final few months of the project.

**6.2 Recommendations**

1. The NAPA Follow-up Project Management should finalize the provincial action plans within the Project Exit Strategy and formulate agreements with the responsible parties for implementation of the necessary actions specified in the strategy.
2. The NAPA Follow-up Project Management should ensure that the project community water infrastructure and irrigation schemes have approved Operations and Maintenance Plans prepared in collaboration with the water user groups. The roles and responsibilities of group members and government advisors should be specified.
3. National and provincial authorities should establish a clear institutional mechanism for technical support, oversight and reporting on the management of large irrigation schemes, particularly for the five rehabilitated schemes funded by the project. Each scheme should also introduce crop diversification activities with a clear plan and links to markets. This will require a coordinated management approach with technical backstopping from the line agencies.
4. The NAPA Follow-up Project Management and the Dept. of Cooperatives should further support the formation of Agricultural Cooperatives and strengthening of financial management procedures for user fees and revolving funds to maintain the community water infrastructure and related livelihoods development. Each association or farmer group should have a business plan addressing technical needs, quantity and quality of crop production, and market linkage to ensure all surplus product has a market for income generation. A two-year workplan should be developed as part of the project closure phase, including a mechanism and resources for implementation of the workplan.
5. The NAPA Follow-up Project Management should compile technical and financial performance data for the various water supply options (RWH tanks, hand pumps, solar sumps, wind pumps, farm ponds, community ponds, etc.) within a concise, practical guide to assist district and commune level climate change adaptation strategies and water supply business plans. This guide should be used to further promote these technologies and assist the implementation of the Agricultural Sector Strategic Development Plan 2014-2018.
6. The NAPA Follow-up Project Management should identify key lessons and opportunities for the IFAD ASPIRE and PADEE projects and for the new LDCF project, drawing upon project experiences (including potential measures to overcome barriers to integrated farming systems) and propose arrangements for IFAD project support to sustain the project FWUCs and other user groups in the two provinces. The lessons should draw upon the terminal evaluation, household survey and final workshop analyses.
7. MAFF should be encouraged to develop more technical guidance and extension packages for effective use of community ponds for domestic and agricultural water supply and farmer training opportunities in integrated farming systems, including guidance on compatible domestic and agricultural uses at these ponds. Technical guidelines for beneficiaries should be simple and recognize low literacy rates.
8. UNDP should update the Vulnerability Reduction Assessment guide based on project experiences in recent years in consultation with other climate change adaptation projects and programmes in Cambodia and support from the new LDCF project, including consideration of enhanced subnational climate modelling scenarios, soil and water vulnerability attributes, customized adaptation measures for poor households, and standardizing the use of gender-sensitive risk assessment within the VRA methodology.
9. UNDP should identify lessons from the weather dissemination/EWS component of the project that have implications for the GEF project - *Strengthening climate information and early warning systems in Cambodia to support climate resilient development and adaptation to climate change,* particularly in regard to developing relevant crop-specific extension advice in relation to in-season weather forecasts and disaster warnings, use of crop calendars for planning of production and diversification, and project lessons on methods for communicating forecasts.
10. The national and provincial authorities should be encouraged, in conjunction with NCDD programmes, to further develop the Water-Agriculture team approach for engaging PDoWRM, PDA, PDoWA and PDRD in results-oriented initiatives to enhance domestic and agricultural water for climate change resilience in vulnerable communities.

**ANNEX 1: TERMS OF REFERENCE**

##### Assignment Information

|  |  |
| --- | --- |
| **Assignment Title:** | International Project Terminal Evaluation Consultant |
| **UNDP Practice Area:** | Environment |
| **Cluster/Project:** | E&E Cluster/Promoting Climate-Resilient Water Management and Agricultural Practices in Rural Cambodia (NAPAFU Phase2) |
| **Post Level:** | International Consultant |
| **Contract Type:** | Individual Contract |
| **Duty Station:** | Phnom Penh, Cambodia |
| **Expected Place of Travel:** | Kratie and Preah Vihear provinces |
| **Contract Duration:** | 22 days, 25 September – 25 November 2015 |

##### Project Description

### The impacts of climate change on Cambodian agriculture, particularly on rice cultivation, are predicted to adversely affect food production and security in rural areas. At present, there is emerging evidence that agriculture-based livelihoods and overall food security in Cambodia are affected by increased frequency and severity of floods, dry spells and drought events.

### A major constraint in moving from a focus on post-disaster relief management to anticipatory agricultural and water resources planning is the limited institutional and individual capacity in both government agencies and community organizations to understand potential climate change impacts on irrigation systems, communal freshwater availability and agricultural production and to internalize a perspective of longer-term resilience into sectoral policy and development planning processes.

### The project was designed to: reduce vulnerability of Cambodia's agriculture sector to climate-induced changes in water resources availability. The project has three outcomes:

### Improved capacity within local institutions to manage agricultural water resources in a changing climate;

### Locally appropriate adaptation options demonstrated to reduce exposure to climate change - induced risks; and

### Lessons learned in project pilot sites replicated in other vulnerable areas of Cambodia.

### The project phase 1 was implemented over a period of four years – from September 2009 until August 2013 and financed by the Global Environment Facility’s Least Developed Country Fund (GEF/LDCF) and UNDP Core Fund. The second phase has been started from September 2013 until December 2015. The project is implemented by the Ministry of Agriculture, Fisheries and Forestry (MAFF) under UNDP National Implementation Modality (NIM). Key line Ministries that are closely involved in the implementation are the Ministry of Water Resources and Meteorology (MoWRAM) and Ministry of Women’s Affairs, with technical oversight and inputs from the Ministry of Environment as a Project Board member. The project target areas are in Preah Vihear and Kratie provinces.

### This is the first pilot project on climate change adaptation project following the priorities identified in the Cambodian National Adaptation Programme of Actions (NAPA). Lessons learned and best practices are essential for replications, scale ups and influence to policy and plan development. Knowledge sharing among key practitioners, relevant stakeholders locally and regionally is one of the key focus of the project. The Terminal Evaluation for the project phase 1 was conducted in 2013 according to the guidance, rules and procedures established by UNDP and GEF as reflected in the UNDP Evaluation Guidance for GEF Financed Projects.

### Again, in the project phase 2, an independent Terminal Evaluation will take place in October 2015, will be undertaken in accordance with UNDP guidance. The terminal evaluation will focus on the delivery of the project’s results as initially planned. The terminal evaluation will look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental benefits/goals.

##### Scope of Work

### The evaluator is expected to frame the evaluation effort using the criteria of relevance, effectiveness, efficiency, sustainability, and impact, as defined and explained in the UNDP Guidance for Conducting Terminal Evaluations of UNDP-supported projects. The evaluator is expected to complete and submit a set of questions covering each of the above criteria as part of an evaluation inception report in consultations with UNDP Country Office, the project team and the UNDP Regional Technical Advisor, and shall include it as an annex to the final report.

### The evaluation must provide evidence‐based information that is credible, reliable and useful. The evaluator is expected to follow a participatory and consultative approach ensuring close engagement with government counterparts, in particular the Project Board members, UNDP Country Office, project team, UNDP Regional Technical Adviser based in Bangkok and key stakeholders. The evaluators are expected to conduct a field mission to the two target provinces namely Kratie and Preah Vihear. The detailed schedule of the field mission will be developed during the inception stage when the evaluators design the evaluation methodology and approach.

### Interviews will be held with the following organizations and individuals at a minimum:

### The Project Board members

### The core project team based at the MAFF’s Project Support Unit

### Representatives of UNDP Country Office and the UNDP Regional Technical Advisor

### Representatives of IFAD/PADEE

### Representatives from the provincial administrations, district/commune councils from the target provinces and communes supported by the project

### Local authorities and beneficiaries

### The evaluators will review all relevant sources of information, such as the project document, project reports – including Annual Progress Report (APR), project budget revisions, quarterly progress reports, Terminal Evaluation report (phase 1), project files (phase 2), national strategic and legal documents, and any other materials that the evaluators consider useful for this evidence-based assessment.

##### Expected Outputs and Deliverables

### The objectives of the evaluation are to assess the achievement of project results, and to draw lessons that can both improve the sustainability of benefits from this project, and aid in the overall enhancement of UNDP programming.

### The evaluation team will produce the following deliverables to UNDP CO and the Project Board:

### The inception report with detail methodology and approach of the Terminal Evaluation process.

### A presentation of an executive summary, jointly prepared by the International and National Consultants, including findings and recommendations to key stakeholders;

### A detailed draft evaluation report covering scope of the terminal evaluation with detailed attention to conclusion, lessons learnt and recommendations; and

### List of annexes prepared by the consultants including TOR’s, itinerary, list of persons interviewed, summary of field visits, list of documents reviewed, questionnaire and summary of results, and leveraged resources, etc.

### The report together with the annexes shall be written in English and shall be presented in electronic form in MS Word format.

### The specific deliverables in sequence, corresponding to the work and their corresponding target delivery dates within a maximum of 22 working days are summarized below:

|  |  |  |  |
| --- | --- | --- | --- |
| **Deliverables/ Outputs** | **Estimated Duration to Complete** | **Target Due Dates** | **Review and Approvals Required** |
| Inception Report | No later than 2 weeks before the evaluation mission. | 25 September 2015 | UNDP Regional Technical Advisor and UNDP CO |
| Presentation on initial findings | End of evaluation mission | 16 October 2015 | UNDP CO Project stakeholders |
| Draft Detail Evaluation Report (per annexed template) | Within 3 weeks of the evaluation mission | 30 October 2015 | UNDP Regional Technical Advisor, Project Board and UNDP CO |
| Final Report\* | Within 1 week of receiving UNDP comments on draft | 20 November 2015 | UNDP Regional Technical Advisor and UNDP CO |
| Total: 22 days | |  | |

##### Institutional Arrangement

### The principal responsibility for managing this evaluation resides with the UNDP CO in Cambodia. The UNDP CO will contract the evaluators and ensure the timely provision travel arrangements within the country for the evaluation team. The team will be responsible to, reporting to, UNDP CO after getting approval/acceptance of output from the national project manager and National Project Director. The Project Team will be responsible for liaising with the Evaluator team to set up stakeholder interviews, arrange field visits, coordinate with the Government etc.

### The evaluation team will be composed of 1 international and 1 National Evaluators. The International Evaluator will act as Team Leader. S/he is responsible for the leading of the TE mission and compiling the Terminal Evaluation final report; while the National Evaluator will provide facilitation and coordination support to the Team Leader. The National Evaluator will assist the Team Leader in collecting relevant documents and reference to support the evaluation process. S/he will work closely with UNDP CO and project team to set up stakeholder interviews, arrange field visits, and coordinate with the Government, etc.

### In addition, if necessary, the National Evaluator will assist the Team Leader to interact also with the UNDP Regional Technical Advisor, to ensure that the approach and methodology as well as the evaluation report are sound and in line with the donor requirements.

##### Duration of the Work

The duration of the work is 22 working days starting from 25 September to 25 November 2015. The field work and interview with key stakeholders are expected to be finished by 15 October 2015. A presentation of the findings and recommendations will be done by 16 October 2015. The evaluators will submit the draft final report within 3 weeks of the evaluation mission, it is expected to receive by 30 October 2015. The project team and UNDP CO as well as UNDP RTA will provide feedback/comments no later than two weeks after the receipt of the draft report. The consultants will submit the final report by 20 November 2015.

##### Duty Station

The Evaluator will need to travel to Cambodia during the period of 25 September-16 October 2015 to conduct stakeholder interviews, visit the project sites and make a presentation of the initial findings of the evaluation. The consultant is expect to be based at duty station at least 12 days and other work will be home-based.

It is expected that the consultants will spend 5 days in the two provinces including travel during which UNDP CO will provide transportation.

**ANNEX 2: Evaluation Matrix**

|  |  |  |  |
| --- | --- | --- | --- |
| **Criteria** | **Evaluation Questions** | **Indicators** | **Data Sources** |
| **Relevance**  *The acceptance, suitability and practicality of the project concept and implementation strategy and the extent of alignment with national climate change policies frameworks, local needs and UNDP country programming.* | To what extent were project activities suited to local and national development priorities and organizational policies?  Is the project concept and approach still accepted as relevant and achievable by project stakeholders and in-line with country priorities?  To what extent is the project integrated with country/partner institutions and programmes?  Was the Project Strategy the most effective route towards planned results?  To what extent do the underlying assumptions remain valid? | Stakeholder views of the project concept and approach  Changes in country or implementing partner priorities  Extent of partners involvement and ownership including integration into ongoing programmes  Validity of key assumptions associated with project results | Review of alignment with government programmes and institutions  Interview data on beneficiaries perceptions of the project  Interview data with staff and other donors on the quality of the project design |
| **Effectiveness**  *The achievement and timeliness of the targeted outcomes and outputs per the Project Document and Annual Workplans, including cross-cutting results related to development, gender and environmental sustainability*. | What quantitative and qualitative achievements have occurred in terms of output/outcome targets?  To what extent are the beneficiaries from poor or vulnerable households?  What effects on beneficiaries’ climate change resilience can be observed to date?  What contributions to cross cutting gender equality objectives can be observed?  What contributions to cross cutting environmental sustainability can be observed? | Reported progress per the ProDoc Indicators  Proportion of poor households within the project beneficiaries  Community based Vulnerability Risk Assessment before and after project activities  Disaggregated gender data on project activities and beneficiaries  Environmental risks in vulnerable communities | Assessment of progress by project staff and beneficiaries  Compilation of data on reported results of project interventions  Review of pre and post project results surveys and assessments  Field observation on quality of facilities installed and operating  Review of data on gender-disaggregated results |
| **Efficiency**  *The clarity and effectiveness of work planning and implementation duties and reporting relationships, coordination and communication between implementing organisations and levels, project management structure effectiveness and responsiveness (‘adaptive management’), efficiency of the administration and quality/timeliness of the monitoring and reporting systems.* | Implementing arrangements: How effective are the working relationships and coordination and communication between partners?  Work planning: Is the annual work plan preparation participatory and consistent with the project document and results framework?  Finance/cofinancing: Has project financing and budgeting occurred as planned?  Project efficiency/cost effectiveness: Has the project been generally efficient and cost effective in relation to results?  Project management: Have the project management bodies and partners been effectively engaged in guiding the project and adapting to project implementation issues?  Monitoring and reporting: The reliability and usability of the project Indicators for monitoring and reporting against baseline conditions, the quality of the monitoring plan/reports, and the effectiveness of the monitoring system and data quality. | Understanding of roles/responsibilities  Participant satisfaction  Stakeholder participation in AWP preparation  AWP implementation extent aligned with ProDoc  Annual expenditures in relation to annual budgets  Co-financing and in kind contributions provided  Efficiency of disbursements and financial management  Outputs achieved relative to costs; value for money  Proportion of costs for project management  Number of meetings and decisions taken by project committees  Perceived clarity of roles and responsibilities  Pro-active actions of management bodies  Use of project indicators in progress reports  Monitoring of cross-cutting issues in progress reports  Resources allocated to M&E processes | Analysis of implementation modalities  Assessment of AWPs and process  Review of expenditures and co-financing contributions and financial and audit reports  Assess reasons for delays  Analysis of project events and milestones and working relationships between stakeholders |
| **Sustainability**  *The conditions necessary for project-related benefits and results being sustained after the project is completed and any risks affecting project implementation and replication potential.* | Sustainability planning: To what extent does the project explicitly consider sustainability expectations and the project exit strategy?  Institutional sustainability: What institutional capacity development measures will enhance sustainability?  Policy sustainability: What policy development measures will enhance sustainability?  Financial sustainability: What financial commitment or business case developments will enhance sustainability?  Risk identification: Have the critical risks been sufficiently addressed?  Replication potential: Are the necessary conditions in place to support adoption of project technologies and measures by other communities? | Sustainability strategies in the project design and delivery  Extent of capacity development within targeted organisations  Changes in policy to sustain project results  Financial means to sustain project results  Validity and importance of the risks identified in the ProDoc/ ATLAS Risk Management Module  Observed nearby replication activities that support sustainability | Assessment of institutional capacity development and stakeholder commitment  Sustainability analysis from interview data  Risk analysis using ProDoc and ATLAS |
| **Impact**  *The effects of the project on long term resilience to climate change impacts and stress, and the capacity of government and local communities to respond to drought, flooding and water scarcity.* | Are there indications that the project has contributed to, or enabled progress toward reduced vulnerability and enhanced climate change resilience?  Has overall food security status changed in the project areas?  Are there changes in policies or institutions that suggest a longer term effect on capacity to address climate change? | Reduction of farmer vulnerability to climate variability and climate change  Verifiable reductions in long term water availability  Increased institutional capacity to address climate change | Interviews with project stakeholders  Surveys on community vulnerability status |

**ANNEX 3: Interview Guide**

This is a general guide only to be used in context with the evaluation issues and criteria above. It is not a questionnaire. It serves as an informal aid in prompting discussion during the interviews.

**Part I – reference questions: project staff and partners**

**Project Formulation**

1. How has the concept of ‘one village’ been applied and what advantages or disadvantages are associated with this approach?
2. What were the main changes that occurred in Phase 2 and did they improve upon Phase 1 results? How have adaptation measures been customized to address needs of poor households?
3. Were there any project risks that were not identified or adequately considered, and how could they have been better anticipated and managed?
4. If the project was to be implemented again, are there any changes in project design and results framework that you would suggest?
5. What have been the major challenges or issues in implementing the project? Are these lessons for future projects?

**Project Implementation**

1. How effective and efficient was the Project Structure and Organization in facilitating project coordination, communications and implementation? Would you have changed anything in hindsight?
2. Has annual work planning and budgeting been effective, and have disbursements been in line with annual budgets? Were there any delays in administrative processes?
3. Have the project monitoring indicators been effective and feasible for reporting on progress?

**Project Results**

1. What does the benefit-cost analysis suggest about financial sustainability of various adaptation measures? Which measures have proven potential for replication?
2. Overall, what are the most important or significant achievements of this project?
3. Are there specific changes in institutional capacity at provincial, district or commune level that could be attributed to the project? How has the project changed these institutions?
4. Were there any expected results have not been completely achieved or are not fully satisfactory?
5. What follow-up assessment of training program results has been undertaken? What gaps remain in capacity development?
6. What are the key lessons for future projects that have been learned during the implementation of the project?

**Sustainability**

1. How likely is it that the main outcome level results – improved capacity, demonstrated options, can be sustained? What will be the effects of project closure on these results?
2. How many of the Water User Groups are likely to survive after the project? What factors will affect survival?
3. What project exit strategies, if any, have been or could be considered to enhance sustainability?

**Impact**

1. How significant has climate change vulnerability reduction been across the 65 villages – minor, substantial, transformation? What are the key factors that affect long term impact?

**Part I – Field Level Questions**

**Project Formulation**

1. How significant has the project been in addressing the water availability/drought or flooding problems in your commune now compared to before the project?

2. To what extent do you think the project has been addressing the key factors affecting your ability to cope with the drought problem? Were any aspects missed?

3. To what extent have the poor households been able to participate in the projects?

**Project Implementation**

4. What specific factors or conditions have particularly helped or hindered progress in project implementation? Have there been any implementation problems?

5. Are there any links between this project and other projects in your area?

6. How would you rate the quality of the technical and extension support that has been provided by the project? How could it have been improved?

7. How well were your views taken into account by the project staff and managers? Is there anything you would have liked to have seen done differently?

**Project Results and Sustainability**

8. Can you explain the key factors that have contributed toward the achievements shown in the project reports and surveys?

9. Which of the project supported livelihood activities are most successful and which are the least successful? Why? Has your HH income or food security increased, decreased or stayed the same?

10. What have been the benefits from and constraints to use of Integrated Farming Systems?

11. To what extent is water from the solar pumps is also shared among neighbouring farmers. How are these farmers using the water? What ancillary benefits can be observed?

12. Have similar CCA interventions been used in other projects or other areas with similar or different results?

13. Can you give an example of how the new weather information service has affected your farming practices? How did you make farming decisions before and how is it different now?

14. What is the most important learning or skill, if any, that you have acquired from the project?

15. Do you think that the project activities will be continued after the project closes? Why? Why not?

**ANNEX 4: Itinerary and List of Persons Interviewed**

| **Date** | **Time** | **Meetings** | **Location** | **Who** |
| --- | --- | --- | --- | --- |
| 28 Sept. | 09:00-09:30 | Meeting with UNDP Country Office  Topic(s): Overview of the mission schedule and general introduction | UNDP | Mr. Velibor Popovic  Mrs. Ratana Norng, Programme Analyst, UNDP  016581596  [ratana.norng@undp.org](mailto:ratana.norng@undp.org) |
| 10:00-10:30 | Meeting with Project Director and Board members,  Topic(s): Introduce the Terminal Evaluation team and schedule. | MAFF PSU | H.E. Mam Amnot, Project Director, Secretary of State, MAFF  017981981 |
| 10:30-11:15 | Meeting with IFAD County Program Officer  Topic(s): Partnership and mainstreaming synergy building, CCA in mainstreaming of good practices into the IFAD supported project/program. | MAFF/PSU | Mr. Meng Sakphouseth  IFAD CPO - Cambodia  012 928 093  [sakphouseth@gmail.com](mailto:sakphouseth@gmail.com) |
| 11:15-12:05 | Meeting with MAFF Technical Team on Climate Change.  Topic(s): MAFF Strategy on climate change and Action Plan and linkages with others MAFF Strategic Papers | MAFF | H.E. Ty Sokun  Secretary of State, MAFF  MR. Prak Thaveak Amida  Deputy Secretary General,  012227746 |
|  | 14:00-14:30 | Meeting with ADB/PPCR on partnership and opportunity for scaling up Climate Resilient Initiatives. | ADB | Mr. Chanthou Hem, Senior Programme Officer, ADB Cambodia  012 262 265  [chem@adb.org](mailto:chem@adb.org) |
|  | 15:00-17:00 | Meeting with MAFF/PSU and project team including MoWRAM and MoWA.  Topic(s): Presentation on evaluation methodology, expected results and work-plan including field work. | MAFF/PSU | Hok Kimthourn  National Project Manager  And Project team  016449693  [kimthourn@gmail.com](mailto:kimthourn@gmail.com) |
|  |  | Prepare for field trip | Phnom Penh | TE team |
| 29 September 2015: Field Visits | | | | |
|  | 07:30-12:30 | Travel to PreahVihear province |  | TE Team |
| 29 Sept. | 14:00-15:30 | Meeting with provincial administration and departments  Topic(s): Project implementation and achievement | Provincial Administration | H.E SuySerith, PoengTryda, Vong Lo, Ouk Samboeun, Prum Vimean, Hun Nang and provincial project team  012491895  [vimean.prum@undp.org](mailto:vimean.prum@undp.org) |
| 15:30-17:00 | Separate meetings with concerned provincial departments (if needed) |  | PDA, PDoWRAM, PDoWA |
|  | Meeting with project beneficiaries | Kulen district | District governor, commune chief, district team and farmers (water user group) |
| 30 Sept. | 09:00-12:00 | Meeting with project beneficiaries | Teuk Krahorm commune | District governor, commune chief, district team and farmers (water user and farming system improvement groups) |
| 13:30-15:30 |  | Choam Ksan  commune | District governor, commune chief, district team and farmers (water user and farming system improvement groups) |
| 01 Oct. | 07:30-12:00 | Travel to Kratie province |  | TE Team |
| 14:00-15:30 | Meeting with provincial administration and departments  Topic(s): Project implementation and achievements | Provincial Administration | Pen Lynath, Heng Monida, Eang Phalkun, Kuy Huot, Leang Seng, Bun Sithot, Loeung Sina, Thun Sonich, Chin Bunrith, and provincial project team  011 752 591  [bunrith.chin@undp.org](mailto:bunrith.chin@undp.org) |
| 16:00-17:30 | Meeting with project beneficiaries | Dar communes | District governor, commune chief, district team and farmers (FWUC, water user and seed purification groups) |
| 02 Oct. | 08:30-11:00 | Meeting with project beneficiaries | Sandan commune | Commune chief, district team and farmers (water user and farming system improvement groups) |
| 12:30-17:30 | Travel to Phnom Penh |  | TE team |
| 05 Oct. | ~~08:30-09:30~~ | ~~Meeting with UNDP/SGP and CCBAP~~  ~~Topic(s): VRA and mainstreaming CCA in local planning processes.~~ | ~~UNDP~~ (**NOT AVAILABLE**) | ~~Ms. Ngin Navirak~~  ~~012 844 083~~  [~~navirak.ngin@undp.org~~](mailto:navirak.ngin@undp.org)  ~~Mr. Hou Serey Vathana~~  [~~sereyvathana.hou@undp.org~~](mailto:sereyvathana.hou@undp.org) |
| 10:00-11:00 | Meeting with NCDDS/LGCC and SNC Scale Up projects  Topic(s): Partnership, scaling up and mainstreaming climate change in local planning processes. | NCDDS (**CONFIRMED**) | Mr. Sar Kosal  012 915 363  [kosal.sar@undp.org](mailto:kosal.sar@undp.org)  ~~Mr. Kong Chanthan~~  ~~012898557~~  [~~chanthankong@gmail.com~~](mailto:chanthankong@gmail.com)  ~~Mr. Chhun Bunnara – NPM, SNC Scale Up project~~ |
| 11:30-12:00 | Meeting with SBK – Impact Assessment Consulting Firm | SBK Office (**CONFIRMED**) | Dr. Ramji Dhakal (SBK)  [rdhakal2010@gmail.com](mailto:rdhakal2010@gmail.com) |
| 14:00-15:00 | Meeting with MoWA working group on Climate Change  Topic(s): Gender and Climate Change Adaptation, experience generated from the project and their contribution to the ministry strategic papers | MoWA (**CONFIRMED**) | H.E. Mrs. Sivan Botum, Secretary of State  Mr. Chhun Hak, Deputy Director General  Ms. Chhan Ratha, Office Chief – Gender Equity  017642261  [ratha.chhan@my.jcu.edu.au](mailto:ratha.chhan@my.jcu.edu.au) |
| 15:30-16:30 | Meeting with MoWRAM  Topic(s): Water Resource Management Policy and Climate Change Adaptation. | MoWRAM (**NOT YET CONFIRM**) | Mr. Keo Sovathapheap, Deputy director, FWUC Department, MoWRAM 012889959  [keosovathapheap@gmail.com](mailto:keosovathapheap@gmail.com) |
| 06 Oct. |  |  |  |
|  | Meeting with CCD/CCCA  Topic(s): Update on the implementation of CCCSP and their implication on the current and future CC projects/programs. | MoE |  |
| 11:00-11:30 | Meeting with UNDP CD or DCD (P) | UNDP(CONFIRMED) | Dr. Ponlok Tin, Secretary General and Head of Trust Fund Secretariat.  Mr. Sum Thy, Director, CCD  016907764  [cceap@online.com.kh](mailto:cceap@online.com.kh) |
|  | 14:00-14:30 | Propose meeting with UNDP Gender Adviser | UNDP | UNDP Country Director or Deputy Country Director (Programme)  [ratana.norng@undp.org](mailto:ratana.norng@undp.org) |
|  | 14:30 – 15:30 | Propose meeting with NAPA- FU - PSU | MAFF | ????????? |
|  | 16:00 – 17:00 | Desk review and writing of summary findings |  | ???????? |
| 07-08 Oct. | Full days | Debriefing meeting to present the preliminary findings and observations | MAFF/PSU | TE team |
| 09 Oct. | 09:00-11:00 | First draft of TE report share with UNDP and MAFF/PSU for comments |  | NAPA FU Project Board Members  NAPA FU Staff; IFAD CPO; UNDP CO; [kimthourn@gmail.com](mailto:kimthourn@gmail.com) |
| 30 Oct. | By 17:00 | Submission of the final TE report |  | TE team |
| 20 Nov. | By 17:00 |  |  | TE team |

**List of Persons Interviewed**

|  |  |  |  |
| --- | --- | --- | --- |
| **No** | **Name** | **Position** | **Organization** |
| 1 | HE. Ty Sakun | Secretary Of State | MAFF |
| 2 | HE. Mam Amnot | Secretary of State | MAFF |
| 3 | Meng Sakphouseth | IFAD CPO | MAFF |
| 4 | Ung Dara Rat Moni | Project Adviser | UNDP |
| 5 | Hok Kimthourn | National Project Manager | MAFF/PSU |
| 6 | Keo Savathapheap | Deputy Director | MOWRAM |
| 7 | Kek Navatevy | Communication Officer | NAPA-FU |
| 8 | Mony Chanmeas | Project Accountant | NAPA-FU/MAFF |
| 9 | Nong Ratana | Program Analyst | UNDP |
| 10 | Hang Sovanarith | Project Coordiantor | UNDP |
| 11 | Suos Pinreak | Project Adviser | NAPA-FU |
| 12 | Velibor Popovic | ACD Programme | UNDP |
| 13 | Pen Linet | Deputy Governor | Kratie Province |
| 14 | Eang Phalkun | Deputy Director | PDOWRAM |
| 15 | Kuy Huot | Director | PDA Kratie Province |
| 16 | Li Dy | Agricultural Extension Officer | PDA |
| 17 | Mon Voleak | District Officer | DoWRAM |
| 18 | Eang Savy | District Officer | DoWRAM |
| 19 | Thun Sonich | M&E Officer | NAPA-FU, Kratie Province |
| 20 | Hon Thearen | Agronomy Officer | PDA, Kratie province |
| 21 | Leng Sina | Gender Officer | PDoWA, Kratie province |
| 22 | Sim Diman | Officer | PDA, Kratie province |
| 23 | Ou Vicheka | Finance Officer | Provincial Administration, Kratie province |
| 24 | Hem Chanthou | Senior Project Officer | ADB |
| 25 | Yim Bunlean | Senior Provincial Administration Officer | Provincial Investment and Planning Officer, Preah Vihear Province |
| 26 | Peung Tryda | Director | PDA, Preah Vihear Province |
| 27 | Prum Vimean | NAPA FU Coordinator | Preah Vihear Province, |
| 28 | Hun Nang | M&E officer | Preah Vihear Province |
| 29 | Cheng Peou | Officer | PDOWRAM, Preah Vihear Province |
| 30 | Ouk Samboeun | Officer | PDOWA, Preah Vihear Province |
| 31 | Hing Ponharith | Officer | PDA, Preah Vihear Province |
| 32 | Pen Pich Ponnareay | Agronomy Officer | PDA, Preah Vihear Province |
| 33 | Vong Lo | Deputy Director | PDOWRAM, Preah Vihear Province |
| 34 | Yong Kim Oeun | Deputy Director of Administration | Provincial Governor Officer, Preah Vihear Province |
| 35 | Meeting with beneficiaries at Bos Village, Phnom Penh Commune, Kulen District |  | Kulen District, Preah Vihear province |
| 36 | Meeting with beneficiairies at Teuk Krahorm village and commune |  | Kulen District, Preah Vihear province |
| 37 | Meeting with beneficiaries at Choam Ksan Commune |  | Choam Ksan District, Preah Vihear Province |

**ANNEX 5: List of Documents Reviewed**

Abrams Julian Hilton, Climate Resilient Irrigation Training, UNDP, NAPAFU project, 2015.

Aipira Cecilia, Liam Fee and Navirak Ngin, UNDP SGP Cambodia, Guidebook for Practitioners Implementing the Vulnerability Reduction Assessment, March 2012.

Abhijit Bhattacharjee and Nimul Chun, Mid-Term Review – NAPA Follow up Project: Final Report, UNDP, August 2012.

Abhijit Bhattacharjee and Dr. Sovith Sin, Terminal Evaluation of Cambodia Community-Based Adaptation Programme (CCBAP) UNDP Cambodia, February 2015.

Alexandre Borde & Nimul Chun, Terminal Evaluation Report Promoting Climate-Resilient Water Management and Agricultural Practices in Rural Cambodia, January 2014.

Government of Cambodia, CIDA, UNDP, Promoting Climate-Resilient Water Management and Agricultural Practices in Rural Cambodia (NAPAFU Phase2), Sept., 2013

IFAD, Cambodia Rural Livelihoods Improvement Project in Kratie, Preah Vihear and Ratanakiri (RULIP) Project completion report, Dec. 31, 2014.

IFAD, PADEE Mid Term Review, Apr-May 2015.

Kingdom of Cambodia, Census of Agriculture 2013 Preliminary Report, National Institute of Statistics

Lemaresquier Thierry, Kalyan Mey, Emanuele Cuccillato, Mid-Term Review of UNDP Country Programme Action Plan for Cambodia, 2011-2015, March 2014

MAFF, Agricultural Sector Strategic Development Plan, 2014-2018.

MAFF/UNDP, Listen to Villagers on Climate Change, Vulnerability Reduction Assessment, Nov 2010.

MAFF PSU, Semi-Annual Report: Canada-UNDP Climate Change Adaptation Facility, UNDP, April 2015

MAFF PSU, Annual Report Canada-UNDP CCAF Cambodia, UNDP, Oct. 2014

MAFF PSU, Annual Project Report 2014, UNDP, Dec. 31, 2014

**MAFF PSU, NAPA Follow Up 2, Project Exit Strategy, UNDP, August 2015**

**MAFF PSU, Quarterly Progress Report (Quarter 3, 2014).**

NAPA Follow Up 2, Follow up Assessment on impacts of EWS Summary findings and follow up actions, PSU, 2015.

NAPA Follow Up 2, Cost Benefit Analysis spreadsheets: IFS, Pumping Machine, Solar Pump; MAFF BC Assessment of CC.

Royal Government of Cambodia and UNDP, Reducing the vulnerability of Cambodian rural livelihoods through enhanced sub-national climate change planning and execution of priority actions, LDFC/GEF, 2015-2019

Save Cambodia’s Wildlife, Assessment Report on Awareness and Knowledge Level on Climate Change and Adaptation Practices, NAPA Follow-up project, June 2012

SBK Research and Development, Impact Assessment Midterm Survey Report for NAPA Follow-up Project, Kracheh and Preah Vihear Provinces, Cambodia, 28 July 2015.

SBK Research and Development, Final Report, Impact Assessment Baseline Survey for NAPA Follow-up Project, Kracheh and Preah Vihear, UNDP Cambodia, 28 Aug 2014

UNDP-Adaptation Learning Mechanism, Cambodia Case Study, November 2011; <http://www.undp-alm.org/resources/case-study/undp-alm-case-study-cambodia-2011>.

UNDP/MAFF, NAPAFU Phase 2 ProDoc, 12 June 2013.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **ANNEX 6: Terminal Evaluation Summary of Project Achievements and Observations** | | | | | |
|  | **Indicator** | **Baseline from**  **Project Document** | **Targets**  **End of Project** | **Sept. 2015 Target Achievement**  **progress (PIU summary)** | **TE Comments on Results** |
| **Project Objective[[49]](#footnote-49)**  To reduce the vulnerability of Cambodia’s agricultural sector to climate–induced changes in water resources availability | Reduction of farmer vulnerability to climate variability and climate change | KRT: 3.8  PVH: 4.16 | VRA score is at least 40% lower than the baseline level | The project team will conduct the final VRA in November 2015 and a VRA score will be re-calculated for comparison. | The project has clearly reduced farmer vulnerbaility in the communities and households actively involved in the project. The final VRA survey should consider sustainabiity aspects.  Some adoptation of technologies has been achieved to assist income generation, and reduce farmer vulnerability to climate change |
| **Outcome 1**  Improved capacity within local institutions to manage agricultural water resources in a changing climate | Number of Communes in the target areas that integrate gender-sensitive adaptation action plans and climate risks into their development plans  Relevant climate risk information is disseminated to stakeholders | Currently 16 communes have developed a gender sensitive sub-national development plans  The existing forecast / climate risk information dissemination is inadequate to increase the resilience in the agriculture and water sector | By the end of the project, 32 commune-level development plans integrate gender-sensitive climate risks and concerns into the plans  By the end of the project, at least 70% of the target households (further disaggregated by gender) have access to climate risk information | See output 1.1 and 1.2. | A significant shift toward increased water management investment through mainstreaming CC/gender into CIPs is not yet apparent. Mainstreaming may be more symbolic than substantive. Commune CIP budgets are typically $10,000-20,000, providing limited scope for climate investments. The business case for climate funding top-up and P3 opportunities need to draw upon relevent financial and economic analysis of the water supply options.  The effectiveness of the water supply infrastructure management training is not fully documented, although the high priority of communities toward water supply may assist commitment and sustainability. These investments should have O&M plans or checklists so that there is no uncertainties about monitoring and maintenance.  The specific implications of the Rapid Gender Assessments, VRAs and DALM outputs for district level water management strategies could be further elaborated – the generality of the assessments and recommendations constrain potential for action. More efficient processes for local vulnerability scoping and choices could be standardized for subnational programmes.  Larger scale watershed risks that can overwhelm site adaptation and risk reduction options also need to be considered (e.g., flooding hazard reduction in Kratie).  The uses of weather information are still limited, especially for crop diversification and production. To be able to use this information, the project should develop a cultivation plan including rotation cycle after each crop growing cycle and develop crop calendar using the weather information available. |
| **Output 1.1**  Improved understanding among local communities and planners about gender-differentiated impacts and risks of climate change | A gender assessment is carried out in 32 communes and gender-disaggregated sources of climate risks and vulnerability | A rapid gender assessment was undertaken in 16 communes | By the end of the project, a gender assessment is completed in 32 communes  A report summarizing the results of the gender assessment is available | The target was achieved.  VRA and RGA was carried out in 16 new (Phase 2) target communes. They followed identified key issues such as resilient/early mature rice seeds, farming skills, animal husbandry, rehabilitation of irrigation systems, dig wells and pond, etc., that need to be addressed in order to build a resilient community. |
| **Output 1.2**  A community-based climate information system to facilitate resilient-agriculture is strengthened | Availability of tailored climate information targeting male and female farmers | General seasonal forecasts are available but they are not tailored or easily understandable to facilitate resilient farming practices | Tailor-made climatic information is made available in at least 60 villages  The utilization of such information is assessed for male and female farmers | The target was achieved.  In 2014, two types of information – flood and rain warning – were disseminated through the village volunteers who were trained by the project. It is estimated that more than 10,000 hhs in the 80 target villages received this information (51% women).  The project worked with the Department of Agriculture Land Management (DALM) to undertake soil assessment, soil/crop analysis to recommend appropriate resilient options based on soil types, crop suitability and the forecasted climatic information  In 2015, based on the assessment report, the project team conducted three consultation meetings with DALM and project teams in target provinces to discuss a proposed farmer advisory framework taking into account soil, crop suitability and weather forecast aiming at enabling farmers to make better decision for planning and farming activities. As a result, advise on rice based farming for this rainy season has been developed and disseminated to 12,353 households in 80 target villages.  The project team conducted a follow up assessment on the impacts of EWS. |
| **Outcome 2**  Locally appropriate adaptation options demonstrated to reduce exposure to climate-induced risks | Community-based adaptation measures adopted by households in target districts | 3,679 households (56% of the original target households) have implemented at least one additional measure to reduce livelihood exposure to climate change. | 5,500 households have implemented at least two/three additional measure to reduce livelihood exposure to climate change | The project phase 2 supported 3,592 households of which 1,209 households are the beneficiaries of phase 1. They have implemented at least two adaptation measures to reduce the livelihood exposure to cc.  Overall, the project phase 1 and 2 have supported 6,062 households. | Model farmers involved in the water supply infrastructure have demonstrated successful vegetable and fruit farming and integrated farming with livestock and aquaculture. Others have used available water for small kitchen gardens and pig raising. It is not apparent from the site visits that widespread development of home gardening has occurred except for those households directly connected to community water systems.  Nevertheless, the potential for home gardening and integrated farming has been showcased. Data, analysis and validation of results from the final Household Survey will help to clarify effects of the interventions.  The community ponds and new reservoirs appear to be under-utilized or under-prepared for intensive use such as demonstrating integrated farming opportunities.  When asked about SRI rice intensification method, farmers interviewed during the TE site visits were not able to describe this activity; they acknowledged the benefits of a drum seeder provided by the project.  The high nutrient loads and flow regulation rules for newly flooded reservoirs will need to be properly managed with assistance from PDoWRM/ PDA.  Follow-up assessment of the effectiveness of the Participatory Irrigation Management and Development (PIMD) training may be needed.  Most recently completed ponds, wells and irrigation schemes, some less than six months or just one cropping cycle in the wet season, are too early to make judgement of the uses of the water resources for crop and livestock productions.  Crop and livestock production activities have been observed, but not fully engage with the available water resources. Most irrigation schemes visited by the TE did not have many activities utilizing the available water resources. In this regards, the project management along with relevant department within each target provinces should consider joint development of work plans for farmer groups for each installed water resources equipment. |
| **Output 2.1**  Community-level water supply infrastructure for both domestic and livestock use constructed and managed in 60 villages | Number of households harvesting and/or conserving rain water in target villages for household | 1,020 households in 23 villages (24%) are actively involved in rainwater harvesting | By the end of the project, at least 2,500 households in 60 villages are actively harvesting rainwater to conserve and safeguard water resources for household use | The target was achieved.  As of September 2015, 3,015 households in 53 villages benefited from small scale water infrastructures: 78 pump wells, 48 solar pump systems, 5 community ponds, and 51 rain water harvesting tanks. With them villagers could safeguard water resources for household use (domestic, home gardens and animal raising…), specifically in the dry season and during dry spell. |
|  | Number of women receive technical/leadership trainings on effective use of water | 990 women have received training on effective use of water | 2,200 women received technical/leadership trainings on effective use of water | The target was achieved.  2,940 women received training on gender and climate change, farming skills, training on effective use of water, etc. |
| **Output 2.2**  Resilient livelihood methods (i.e. resilient or early/medium maturing seed varieties, SRI and diversified livestock production) expanded to 60 villages | Area of Agricultural Land on which climate resilient farming practices and/or crops are actively adopted | Resilient rice varieties have been used on 325 hectares | By the end of the project, at least 1,000 hectares of agriculture land are under resilience farming (resilient or early/medium maturing seed varieties, and SRI). | The Provincial Department of Agriculture facilitated the provision of technical skills and the distribution of farm inputs such as rice seeds, vegetable seeds, animal breeds, and farm tools to 3,592 households in 65 villages in both provinces to implement resilient package of integrated farming systems. PDA continues providing advisory services and follow up support to participating farmers. As a result, 1,573 hectares of farm land is under resilient farming (integrated farming systems and cultivation of medium and early mature rice varieties).  The target was achieved.  1,401 households of ID poor 1 & 2 and land-poor households selected in 4 target districts for the project phase 2 and they actively involved in the project activities (farming practices) and benefit from water infrastructures. |
| Number of the landless or land-poor benefiting from diversified livestock production | 441 households in target areas practice climate-resilient, diversified livestock production | By the end of the project, at least 1,375 landless or land-poor households practice climate-resilient, diversified livestock production |
| **Output 2.3**  Agricultural areas under irrigation expanded and managed | Land hectarage under irrigation | 848 hectares are currently covered by irrigation in Kratie province with LDCF financing. | By the end of the project, at least 1,500 hectares (i.e. additional 652 hectares) benefited from the irrigation systems. | Three new irrigation schemes (two in Kratie and one in Preah Vihear) have been rehabilitated in the project phase 2. Three farmer water user communities (FWUC) formed to manage and maintain the irrigation systems. The schemes could irrigate 541 hectares of paddy fields and benefit around 248 households. Other benefit of schemes are to drain water away when flooding.  Totally the project rehabilitated/built five small scale irrigation schemes (three in Kratie and two in Preah Vihear). The schemes could irrigate 1,389 hectares of paddy fields, representing 92.60% of the target output. |
| **Output 2.4**  Women’s management capacity for community-water infrastructure strengthened | Number of women in water management groups who receive trainings on management, maintenance, user fees collection, etc. | 1,192 women representing 55.4% out of 2,152 of FWUC, WUGs and FSI members have received training on Participatory Irrigation Management and Development (PIMD), roles and responsibilities of FWUC and basic concepts of early warning system. | 3,200 of women benefit from training and exchange visits to FWUCs/WUGs that are successful in water management. | The target was achieved.  In the project phase 2, 2,030 out of target 3,200 women have benefited from the project activities such as climate information targeting male and female farmers, technical trainings on effective use of water, trainings, exchange visits and farmer field days. |
| **Outcome 3**  Lessons learned in the project target areas replicated in other vulnerable areas of Cambodia | Number of outside programmes, policies or projects incorporating project practices, approaches or methods | No follow-up projects to date incorporate project lessons and experiences | By the end of the project, at least 5 programmes, policies or projects in other Cambodian districts incorporate project practices, approaches or methods that have been demonstrated in, and derived from, this project |  | The approach to leveraging replication results is not clear. The Outcome statement is mostly aspirational rather than realistic.  Outcome 3 activities should be able to determine the relative performance and preferences for the 15 sets of interventions (Table 1) based on verifiable project experiences. To date, the project has only partly achieved this expectation.  The knowledge development products, the M&E database, the Household Surveys and the special studies that were completed do not appear to have an overall guiding framework within which to advance the lessons learned and knowledge base. Activities completed is not a valid measure for learning outcomes.  The implications for and benefits to the project results from collaboration with the Economics of Climate Change Adaption (ECCA) initiative remain to be determined. Cost-effectiveness analysis needs to be part of a practical business case for water infrastructure investments.  The project completion workshop should draw out the key lessons for similar community-based adaptation programmes, and the evidence-based messages for policy makers. |
| **Output 3.1**  Increased public awareness and environmental education programmes on climate risk reduction designed and implemented | Number of paper-based, web-based, audio-based and TV-based publications about project-related practices, approaches, methods or results | As of 2012, there have been 3 newspaper pieces, 6 online articles, 3 radio clips and 4 TV reports were published reporting the project activities. In addition, the project team was exclusively interviewed 3 times by the local TV stations. | By the end of the project, at least additional one publication and one video story is produced  By the end of the project, at least one article focusing on women’s roles in water infrastructure management (derived from Output 2.4) published  By the end of the project, lessons learned from this project are accessible to other countries in Asia and beyond through the ALM and websites of MoE/CCD, NCDDS and MAFF and participation in regional/international conferences/workshops | In 2014, given the growing importance of agricultural co-operative in Cambodia and in the wake of preparing ASPIRE, an IFAD supported program, MAFF/PSU has commissioned a study visit in Japan where experience of Farmer Organization is of the highest notoriety. It was a joint visit involving 18 Senior Management and staff of PADEE and NAPA Follow-Up from national and provincial levels, who will be involved in the implementation of the ASPIRE program. It aims to customize the best practices into the Cambodia context to strengthen the Farmer Organizations in ensuring Food Security, Environmental sustainability and Economic opportunity which ultimately build a resilient community.  Pursuing this learning path, the corridor of learning had deepened between PADEE and NAPA FU, the experience of NAPA FU on the learning center, a community-based learning center, had been thoroughly discussed for scaling up purpose in PADEE in the 6th PADEE Technical Meeting in September 2014.  In November 2015, the project will organize the project completion workshop that aims to capture and disseminate lessons from both phases of the project. The workshop will share also knowledge and experiences with other participating countries in the UNDP-Canada Climate Change Adaptation Facility (CCAF) and countries in the region. |
| Number of workshops at the national and regional levels on lessons learned | One national workshop has been organized with 140 participants and practitioners from the national and sub-national levels to exchange and discuss experiences concerning climate change impacts and adaptation in Cambodia. | By the end of the project, at least one additional national workshop is organized to present lessons learned, leveraging the enhanced M&E framework established |
| **Output 3.2**  Improved knowledge among government planners about ongoing adaptation investments and gaps in the area of climate resilient farming | Sectoral assessments of adaptation gaps in the context of resilient rural agriculture | Climate change public expenditure review was undertaken by UNDP but no assessment of adaptation gaps have been undertaken | By the end of the project, at least one national level assessment on water and/or agriculture sectors is undertaken | With financial support from the project, the Royal University of Agriculture (RUA) has carried out a survey to collect agriculture data to support the regional capacity building program on the Economics of Climate Change Adaption (ECCA).  The country team comprising of MAFF, MoE, and RUA, with coordination support from the project, worked online with mentor to clean the collected data and practiced the application of Stata for data analysis. |
| **Output 3.3**  An impact assessment study conducted capturing gender-disaggregated benefits of adaptation investments promoted under the project | Availability of evidence-based case studies from the project | Capturing of lessons learned is predominantly anecdote-based | By the end of the project, at least one systematic study is undertaken on the gender-disaggregated impact of project carried out in 9 selected villages (3 integrated target, 3 scatter target and 3 non-target villages). | To produce an evidence-based case study from the project, SBK - a consulting firm has been recruited to undertake and administer the impact assessment.  In 2014, the Baseline Survey and the baseline assessment report were developed and submitted to MAFF/PSU and UNDP.  In early 2015, a mid-term assessment was carried and the mid-term assessment report was submitted to MAFF/PSU and UNDP.  The final assessment is planned in October 2015. |

1. Kingdom of Cambodia, Census of Agriculture 2013 Preliminary Report, National Institute of Statistics, p.12. [↑](#footnote-ref-1)
2. E.g., these factors could include food security and income returns that enhance viability of replication of the adaptation measures, the capacity and commitment of extension officers and subject matter experts, presence and effectiveness of community organisations and institutions, etc. [↑](#footnote-ref-2)
3. Abhijit Bhattacharjee and Nimul Chun, Mid-Term Review – NAPA Follow up Project: Final Report, UNDP, August 2012. [↑](#footnote-ref-3)
4. Alexandre Borde & Nimul Chun, Terminal Evaluation Report Promoting Climate-Resilient Water Management and Agricultural Practices in Rural Cambodia, January 2014, p.8. [↑](#footnote-ref-4)
5. Abhijit Bhattacharjee and Nimul Chun, Mid-Term Review – NAPA Follow up Project: Final Report, UNDP, August 2012. [↑](#footnote-ref-5)
6. Source: Baseline and Mid-Term Household Survey reports; note: the project reports indicated that 1401 of 3592 households (39%) in Phase 2 were Poor ID ½ households. [↑](#footnote-ref-6)
7. UNDP-Adaptation Learning Mechanism, Cambodia Case Study, November 2011; http://www.undp-alm.org/resources/case-study/undp-alm-case-study-cambodia-2011. [↑](#footnote-ref-7)
8. IFAD, Cambodia Rural Livelihoods Improvement Project in Kratie, Preah Vihear and Ratanakiri (RULIP) Project completion report, Dec. 31, 2014, p. xi [↑](#footnote-ref-8)
9. Commune councillors are aware of how to integrate climate change into commune development plans, a process which began in 2011. See: Save Cambodia’s Wildlife, Assessment Report on Awareness and Knowledge Level on Climate Change and Adaptation Practices, NAPA Follow-up project, June 2012. [↑](#footnote-ref-9)
10. Thierry Lemaresquier, Kalyan Mey, Emanuele Cuccillato, Mid-Term Review of UNDP Country Programme Action Plan for Cambodia, 2011-2015, March 2014, p. 15. [↑](#footnote-ref-10)
11. Access to markets was mentioned as a problem by project participants but data from the mid-term household survey also indicated that 73% of farmers in Kratie and 66% in Preah Vihear were able to sell their produce; 2015, Table 46, p.50. [↑](#footnote-ref-11)
12. Minutes of the 7th Board Meeting, 7 Feb., 2015. [↑](#footnote-ref-12)
13. Cecilia Aipira, Liam Fee and Navirak Ngin, UNDP SGP Cambodia, Guidebook for Practitioners Implementing the Vulnerability Reduction Assessment, March 2012. [↑](#footnote-ref-13)
14. Government of Cambodia, CIDA, UNDP, Promoting Climate-Resilient Water Management and Agricultural Practices in Rural Cambodia (NAPAFU Phase2), Sept., 2013. [↑](#footnote-ref-14)
15. Source: NAPA Follow Up Phase 2, Vulnerability Reduction Assessment Report, March 2014, p. 18. [↑](#footnote-ref-15)
16. Semi-Annual Report: Canada-UNDP Climate Change Adaptation Facility, April 2015 [↑](#footnote-ref-16)
17. The Terminal Evaluation of Phase 1 found that provincial development plans in the target provinces had incorporated climatic risks such as annual emergency response action plans, awareness raising activities related to climate change, rehabilitation of irrigation schemes, etc. Commune Councils are more aware of the issues related to the alteration of the climate and the need to tackle it at the local level. [↑](#footnote-ref-17)
18. Semi-Annual Report: Canada-UNDP Climate Change Adaptation Facility, April 2015. [↑](#footnote-ref-18)
19. NAPA Follow Up 2, Follow up Assessment on impacts of EWS Summary findings and follow up actions, PSU, 2015 [↑](#footnote-ref-19)
20. Ibid., 2015. [↑](#footnote-ref-20)
21. Royal Government of Cambodia and UNDP, Reducing the vulnerability of Cambodian rural livelihoods through enhanced sub-national climate change planning and execution of priority actions, LDFC/GEF, 2015-2019. [↑](#footnote-ref-21)
22. Alexandre Borde & Nimul Chun, Terminal Evaluation Report Promoting Climate-Resilient Water Management and Agricultural Practices in Rural Cambodia, January 2014. [↑](#footnote-ref-22)
23. MAFF PIU, NAPA Follow Up 2, Follow up Assessment on impacts of EWS, Summary findings and follow up actions, 2015. [↑](#footnote-ref-23)
24. This is being addressed the GEF project: *Strengthening climate information and early warning systems in Cambodia to support climate resilient development and adaptation to climate change,* 2014-2018. [↑](#footnote-ref-24)
25. Annual Report Canada-UNDP CCAF Cambodia, Oct. 2014; and PIU data. [↑](#footnote-ref-25)
26. Semi-Annual Report: Canada-UNDP Climate Change Adaptation Facility, April 2015. [↑](#footnote-ref-26)
27. Alexandre Borde & Nimul Chun, Terminal Evaluation Report Promoting Climate-Resilient Water Management and Agricultural Practices in Rural Cambodia, January 2014. [↑](#footnote-ref-27)
28. In this analysis, only the fees collected from the users (1500 Riels (or US0.37)/m3) is included in the stream of benefits, which overly underestimates the real benefits of the investment in the form of improved home garden productivity, health benefits or opportunity costs associated with water collection. [↑](#footnote-ref-28)
29. Semi-Annual Report: Canada-UNDP Climate Change Adaptation Facility, April 2015. [↑](#footnote-ref-29)
30. Ibid., 2015. [↑](#footnote-ref-30)
31. Semi-Annual Report: Canada-UNDP Climate Change Adaptation Facility, April 2015. [↑](#footnote-ref-31)
32. **NAPA Follow Up 2, Project Exit Strategy, August 2015** [↑](#footnote-ref-32)
33. Annual Report, Canada-UNDP CCAF, Oct 2014, p. 6 [↑](#footnote-ref-33)
34. SBK Research and Development, Impact Assessment Midterm Survey Report for NAPA Follow-up Project, Kracheh and Preah Vihear Provinces, Cambodia, 28 July 2015, p. 15. Calculation: 1587 x 15% + 1428 x 9% [↑](#footnote-ref-34)
35. MAFF PSU, Annual Project Report 2014, Dec. 31, 2014, p.11. [↑](#footnote-ref-35)
36. SBK Research and Development, Impact Assessment Midterm Survey Report for NAPA Follow-up Project, Kracheh and Preah Vihear Provinces, Cambodia, 28 July 2015, p. 19. [↑](#footnote-ref-36)
37. Ibid., 2015, p.19. [↑](#footnote-ref-37)
38. Ibid. 2015, Table 5, p. 28; SBK Research and Development, Final Report, Impact Assessment Baseline Survey for NAPA Follow-up Project, Kracheh and Preah Vihear, UNDP Cambodia, 28 Aug 2014, Table 5, p. 19. [↑](#footnote-ref-38)
39. SBK Research and Development, 2014, Table 21, p. 31. [↑](#footnote-ref-39)
40. SBK Research and Development, op. cit., 2015, p. 12. [↑](#footnote-ref-40)
41. We could not confirm that two-thirds of households had home gardens. Based on the TE visits in Preah Vihear and Kratie, most household respondents indicated that they did not grow any vegetable or other crop during dry season, but they will grow in this year’s dry season; although some were concerned about the marketing of their produce. [↑](#footnote-ref-41)
42. **NAPA Follow Up 2, Project Exit Strategy, August 2015** [↑](#footnote-ref-42)
43. Abhijit Bhattacharjee and Dr. Sovith Sin, Terminal Evaluation of Cambodia Community-Based Adaptation Programme (CCBAP) UNDP Cambodia, February 2015. [↑](#footnote-ref-43)
44. Minutes of the 7th Board Meeting, 7 Feb 2015. [↑](#footnote-ref-44)
45. Similar issues of sustainability and options to merge groups at the commune level and form Agricultural Cooperatives are being addressed in the PADEE Project; see IFAD, Project for Agricultural Development and Economic Empowerment Mid-Term Review, 2015. [↑](#footnote-ref-45)
46. MAFF PSU, Water for Resilient Livelihood, 2015 [↑](#footnote-ref-46)
47. UNDP-Adaptation Learning Mechanism, Cambodia Case Study, November 2011; http://www.undp-alm.org/resources/case-study/undp-alm-case-study-cambodia-2011. [↑](#footnote-ref-47)
48. IFAD, Rural Livelihoods Improvement Project in Kratie, Preah Vihear and Ratanakiri (RULIP), Project completion report, 31-Dec 2014 [↑](#footnote-ref-48)
49. *Objective (Atlas output) monitored quarterly ERBM and annually in APR/PIR* [↑](#footnote-ref-49)