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Report No: ICR00004164

IMPLEMENTATION COMPLETION AND RESULTS REPORT
(TF-96649)

ON A

GRANT FROM THE SPECIAL CLIMATE CHANGE FUND
IN THE AMOUNT OF
US$4.974 MILLION

TO THE

REPUBLIC OF THE PHILIPPINES

FOR A

CLIMATE CHANGE ADAPTATION PROJECT

June 28, 2017

Environment and Natural Resources Global Practice
Philippines Country Unit (EACPF)
East Asia and Pacific Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective December 31, 2016

Currency Unit = Philippines pesos
PHP 1.00 = US$ 0.02
US$ 1.00 = PHP 49.50

January 1- December 31

ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
AIDSI	Asian Institute of Developmental Studies
AMIA	Adaptation and Mitigation in Agriculture Project
ATI	Agricultural Training Institute
AWS	Automatic weather stations
BAC	Bids and awards committee
B/C	Benefit cost ratio
BSWM	Bureau of Soil and Water Management
CAS	Country assistance strategy
CC	Climate change
CCA	Climate change adaptation
CCAM-DRR	Cabinet Cluster on Climate Change Adaptation and Mitigation and Disaster Risk Reduction
CCC	Climate Change Commission
CERES	Crop Environment Resource Synthesis
COP	Community of practice
CSDSS	Climate smart decision support system
CSI	Core sector indicator
DA	Department of Agriculture
DBM	Department of Budget and Management
DENR	Department of Environment and Natural Resources
DFAT	Department of Foreign Affairs and Trade of Australia
DOST	Department of Science and Technology
DPs	Development partners
DRR	Disaster risk reduction
EA	Environmental assessment
ECSFFS	Enhanced climate smart farmer field school
EIRR	Economic internal rate of return
ENRM	Environmental and natural resources management
ENSO	El Nino southern oscillation
FASPS	Foreign Assisted Special Projects Service of the DENR
GDP	Gross domestic product
GEF	Global Environment Facility
GEO	Global environment objective
GIU	Geographic insurance unit
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
HLURB	Housing Land Use and Regulatory Board

ICR	Implementation completion and results report
IDMF	Integrated decision making framework
IP	Implementation progress
IPAC	Inclusive Partnerships for Agricultural Competitiveness
IRRI	International Rice Research Institute
ISR	Implementation Support Report
LCCAP	Local climate change action plan
LGU	Local government unit
MOA	Memorandum of agreement
MTPDP	Medium term Philippine development plan
NCCAP	National climate change action plan
NGAs	National Government Agencies
NIA	National Irrigation Administration
NPV	Net present value
OIDCI	Orient Integrated Development Consultants, Inc.
PA	Protected area
PAD	Project appraisal document
PAGASA	Philippine Atmospheric Geophysical and Astronomical Services Administration
PCIC	Philippine Crop Insurance Corporation
PDO	Project development objective
PhilCCAP	Philippines Climate Change Adaptation Project
PhilRice	Philippines Rice Research Institute
PhP	Philippines peso
PIDP	Participatory Irrigation Development Project
PMO	Project management office
PO	People's organization
PPLS	Penablanca protected landscape and seascape
PRDP	Philippine Rural Development Program
PRECIS	Providing regional climates for impacts studies
PSC	Project steering committee
RRSP	Risk Resiliency and Sustainability Program
SARO	Special allotment release order
SIPLAS	Siargao protected landscape and seascape
SPCMAD	Special Projects Coordination and Management Assistance Division
UNDP	United Nations Development Programme
UP	University of the Philippines
WIBCI	Weather index-based climate insurance

Senior Global Practice Director: Karin Erika Kemper
Practice Manager: Christophe Crepin
Project Team Leader: Maurice Andres Rawlins
ICR Team Leader: Maurice Andres Rawlins and Jie Pan

PHILIPPINES
Climate Change Adaptation Project

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A. Basic Information			
Country:	Philippines	Project Name:	Climate Change Adaptation Project
Project ID:	P101076	L/C/TF Number(s):	TF-96649
ICR Date:	06/20/2017	ICR Type:	Core ICR
Lending Instrument:	SIL	Borrower:	REPUBLIC OF THE PHILIPPINES
Original Total Commitment:	USD 4.97M	Disbursed Amount:	USD 3.88M
Revised Amount:	USD 4.97M		
Environmental Category: B		**Global Focal Area: C**	

Implementing Agencies:

Department of Agriculture (DA)
- Agricultural Training Institute (ATI)
- Bureau of Soil and Water Management (BSWM)

Department of Environment and Natural Resources
Department of Science and Technology (DOST)
- Philippine Atmospheric Geophysical and Astronomical Services Administration (PAGASA)

National Irrigation Administration (NIA)
Philippines Climate Change Commission (CCC)
Philippines Crop Insurance Corporation (PCIC)

Cofinanciers and Other External Partners:

B. Key Dates

Process	Date	Process	Original Date	Revised / Actual Date(s)
Concept Review:	06/07/2007	Effectiveness:	01/31/2011	01/31/2011
Appraisal:	02/08/2010	Restructuring(s):		12/01/2015
Approval:	06/29/2010	Mid-term Review:	12/02/2013	12/03/2013
		Closing:	12/15/2015	12/31/2016

C. Ratings Summary

C.1 Performance Rating by ICR

Outcomes:	Satisfactory
Risk to Global Environment Outcome	Moderate
Bank Performance:	Satisfactory

Borrower Performance:	Moderately Satisfactory

C.2 Detailed Ratings of Bank and Borrower Performance			
Bank	**Ratings**	**Borrower**	**Ratings**
Quality at Entry:	Satisfactory	Government:	Satisfactory
Quality of Supervision:	Satisfactory	Implementing Agency/Agencies:	Moderately Satisfactory
Overall Bank Performance:	Satisfactory	**Overall Borrower Performance:**	Moderately Satisfactory

C.3 Quality at Entry and Implementation Performance Indicators			
Implementation Performance	**Indicators**	**QAG Assessments (if any)**	**Rating**
Potential Problem Project at any time (Yes/No):	No	Quality at Entry (QEA):	None
Problem Project at any time (Yes/No):	Yes	Quality of Supervision (QSA):	None
GEO rating before Closing/Inactive status	Satisfactory		

D. Sector and Theme Codes		
	Original	Actual
Sector Code (as % of total Bank financing)		
Agriculture, Fishing and Forestry		
Public Administration - Agriculture, Fishing & Forestry	11	11
Irrigation and Drainage	20	20
Crops	20	20
Agricultural Extension, Research, and Other Support Activities	20	20
Water, Sanitation and Waste Management		
Public Administration - Water, Sanitation and Waste Management	29	29
Theme Code (as % of total Bank financing)		
Finance		
Finance for Development	5	5
Disaster Risk Finance	5	5
Urban and Rural Development		
Rural Development	20	20
Land Administration and Management	20	20
Disaster Risk Management	15	15
Disaster Response and Recovery	5	5
Disaster Risk Reduction	5	5
Disaster Preparedness	5	5
Environment and Natural Resource Management		
Climate Change	60	60
Mitigation	60	60

E. Bank Staff		
Positions	At ICR	At Approval
Vice President:	Victoria Kwakwa	James W. Adams
Country Director:	Mara K. Warwick	Bert Hofman
Practice Manager/Manager:	Christophe Crepin	Mark C. Woodward
Project Team Leader:	Maurice Andres Rawlins	Samuel G. Wedderburn
ICR Team Leader:	Maurice Andres Rawlins	
ICR Primary Author:	Maurice Andres Rawlins	
	Jie Pan	

F. Results Framework Analysis
Global Environment Objectives (GEO) and Key Indicators (as approved)

To develop and demonstrate approaches that would enable targeted communities in the territory of the Recipient to adapt to the potential impacts of climate variability and change.

Revised Global Environment Objectives (as approved by original approving authority) and Key Indicators and reasons/justifications

The GEO was not revised. Some indicators were revised in December 2015 to make minor corrections to terminology and to remove the target values from the indicator names, but the revisions were essentially editorial and did not substantively change the indicators or their targets. In addition, a number of intermediate indicators were added to formally track the uptake of various adaptation tools, resources, and information by different target groups. The details are discussed in the indicator comments in the results framework below.

(a) GEO Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1:	Percent of households surveyed in the targeted areas adopt coping strategies, new technologies or improved farming practices to better cope with climate variability and change.			
Value (quantitative or Qualitative)	0	20	20	35
Date achieved	07/01/2010	12/15/2015	12/31/2016	12/31/2016
Comments (incl. % achievement)	Target value exceeded by 75%. A survey was developed and implemented by the Asian Institute of Developmental Studies (AIDSI) for assessing the adoption of coping strategies, new technologies and improved farming practices by farmers. Stratified sampling was used to group farm households according to elevation and size of farms, and these households were interviewed by field staff of AIDSI on their adoption of climate change adaptation technologies introduced by PhilCCAP. Adoption was measured on a five-point scale that ranged from 'unfamiliar' (with the practice) to 'adopted' (the practice); full details of the sampling methodology and analysis of information are included in the Final Evaluation Report for the PhilCCAP developed by AIDSI.[1] The survey was conducted twice: at midterm (December 2013) with a sample of 2,386 farmer household respondents, and at project closing (December 2017) with a sample of 2,500 farmer household respondents. From the final survey, around 875 farmer households in Regions 2 and 6 that were trained through the enhanced climate smart farmers' field school, adopted			

[1] AIDSI, 2017. Final Evaluation Report on the Philippine Climate Change Adaptation Project (PhilCCAP) Outcome Indicators.

	improved farming practices including climate smart farming, integrated farming systems, organic farming, new technologies including weather index based crop insurance and climate smart decision support system, and coping strategies including use of weather and climate information in fertilizer and water management, and crop selection.[2] This indicator was revised during project restructuring in December 2015 to (a) remove the target value from the indicator name and (b) change the phrase "climate variability and extremes" to "climate variability and change." "Change" is a more correct term than "extremes," and is also consistent with nomenclature of the topic of climate change. This indicator contributes to measuring the PDO objective – 'demonstration of approaches that would enable targeted communities to adapt to the potential impacts of climate variability and change.			
Indicator 2:	Percent of stakeholders surveyed in the targeted areas who have participated in or are knowledgeable of activities demonstrated by the project to reduce vulnerability or improve adaptive capacity.			
Value (quantitative or Qualitative)	0	35	35	46.5
Date achieved	07/01/2010	12/15/2015	12/31/2016	12/31/2016
Comments (incl. % achievement)	Target value exceeded by 33%. A survey was developed and implemented by AIDSI for assessing stakeholders' participation in or knowledge of PhilCCAP. The stakeholders included Regions 2 and 6 staff of Agricultural Training Institute (ATI); Bureau of Soil and Water Management (BSWM); Department of Environment and Natural Resources; Philippine Atmospheric Geophysical and Astronomical Services Administration (PAGASA); National Irrigation Administration (NIA); Philippines Crop Insurance Corporation (PCIC); staff of the Climate Change Commission (CCC); staff of local government units in Regions 2, 6 and 13; members of civil society namely agricultural training institutions. Data was collected by a self-administered questionnaire, that allowed respondents to indicate their knowledge of activities demonstrated by the project. Level of knowledge was measured on a five-point scale ranging from 'oblivious' (no knowledge on the activities) to 'expert' (understanding of and cognitive engagement with activities). Full details of the survey methodology and analysis of information are included in the Final Evaluation Report for the PhilCCAP developed by AIDSI.[3] The survey was conducted twice: at midterm (December 2013) where 38 stakeholders completed the survey, and at project closing (December 2017) where 37 stakeholders completed the survey. Some stakeholders attended training and capacity building sessions on some of the new tools developed under PhilCCAP and on planning and developing climate change adaptation			

[2] Farm households and farmers are not the same. Within a single farm household there may be more than one farmer, for example a husband and wife, and both may have participated in the training.

[3] AIDSI, 2017. Final Evaluation Report on the Philippine climate Change Adaptation Project (PhilCCAP) Outcome Indicators.

	approaches; and dissemination meetings and consultation sessions on what was being done under PhilCCAP. In this manner, stakeholders became aware and knowledgeable, and participated in PhilCCAP activities. This indicator was revised during project restructuring in December 2015 to remove the target value from the indicator description. This indicator contributes to measuring the PDO objective – 'development of approaches that would enable targeted communities to adapt to the potential impacts of climate variability and change.'			
Indicator 3:	Number of direct beneficiaries			
Value (quantitative or Qualitative)	0	2,031	2,031	2,104
Date achieved	07/01/2010	12/31/2016	12/31/2016	12/31/2016
Comments (incl. % achievement)	Target exceeded by 4%. Beneficiaries include farmers and fisher folk in Regions 2,6, and 13. In Region 2, targeted communities included farmers from Tuguegarao East and Penablanca municipalities in Cagayan provinces. Upland communities living in the Penablanca Protected Landscape and Seascape (PPLS) – some of whom are farmers, were also considered beneficiaries of the PhilCCAP. In Region 6, targeted communities included farmers from the municipalities of Dumangas, Pototan, and Jeniauy in Iloilo province. In Region 13, fisherfolk and coastal communities were beneficiaries of the project's interventions in the Siargao Protected Landscape and Seascape (SIPLAS). The number of beneficiaries was assessed from records of farmers participating in the enhanced climate smart farmers' field school (1,344 farmers); weather index based crop insurance pilots (480 farmers); and farmers and fisherfolk in PPLS and SIPLAS (280). Farmers and fisherfolk benefited from the introduction of new farming practices and technologies such as climate smart farming, integrated farming systems, organic farming, new technologies including weather index based crop insurance and climate smart decision support system; and training and new technologies to support coastal livelihoods, for example improved fish pots which are more durable than traditional fish pots, seaweed and abalone cultivation. Farmers have noted improvements in production because of the new technologies for example average yield increases from 12 farms under rice in 2014 wet season showed increase in grain yields by about 8% for farms using the climate smart decision support system compared with adjacent fields where the decision support system was not used to guide farmer's decisions. This new indicator was added during project restructuring in December 2015, to retrofit the then-required core sector indicator (CSI) and strengthen the measurement of the results of the project. Additional beneficiaries, such as the 2500 farm households in the targeted areas who adopted coping strategies, new technologies or improved farming practices to better cope with climate variability and change because of the demonstration effect of the project, are not included in the direct project beneficiaries count. This indicator contributes to the measuring of the PDO objective –			

	'demonstration of approaches that would enable targeted communities to adapt to the potential impacts of climate variability and change.'

(b) Intermediate Outcome Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1:	Number of local government units (LGUs) supporting the implementation of the climate change adaptation management prescriptions contained in the revised protected area (PA) plans.			
Value (quantitative or Qualitative)	0	10		10
Date achieved	07/01/2010	12/31/2016		12/31/2016
Comments (incl. % achievement)	Target 100% Achieved. The result comprises nine LGUs in the Siargao Protected Landscape and Seascape (SIPLAS) and one LGU in the Penablanca Protected Landscape and Seascape (PPLS). Protected area management plans for PPLS and SIPLAS were updated to include climate change adaptation prescriptions that were developed based on vulnerability assessments for the two protected areas. This indicator contributes to the PDO objective 'demonstration of approaches that would enable targeted communities to adapt to the potential impacts of climate variability and change'. For example, improving forest cover on slopes was recommended in PPLS to improve the water provisioning especially under conditions of drought because of climate change. This recommendation was acted on and resulted in the planting of 10,000 agroforestry and fruit trees covering an area of 123 hectares in PPLS. Memoranda of agreement (MOA) were developed and signed with the LGUs to support the implementation of the climate change prescriptions contained in the plans: MOA between Protected Area Management Board (PAMB) of PPLS and DENR instituting joint management with the regional DENR of the community watersheds in PPLS, and MOA between local chief executives of nine LGUs and PAMB in SIPLAS to establish a marine protected area network in SIPLAS. This new indicator was added during project restructuring in December 2015, to reflect the uptake of adaptation measures by political/ governing entities in the protected areas. Such uptake is important for institutionalization and mainstreaming.			
Indicator 2:	Number of agencies, institutions, and stakeholders using the climate information generated by PAGASA including hazard maps, monthly seasonal forecasts, and climate projection report for adaptation.			

Value (quantitative or Qualitative)	0	CR recommendations incorporated into subcomponent design	21	21
Date achieved	07/01/2010	12/15/2015	12/31/2016	12/31/2016
Comments (incl. % achievement)	Target 100% Achieved. The result comprises NIA, BSWM, ATI, PCIC, PhilRice, Orient Integrated Development Consultants, Inc. (OIDCI), nine LGUs in SIPLAS, and one LGU in PPLS. Weather forecasting and climate information were developed and made available to agencies and publicly by PAGASA. This indicator contributes to the PDO objective 'development of approaches that would enable targeted communities to adapt to the potential impacts of climate variability and change'. For example, climate projections and hazard data from PAGASA were used by NIA in the development of the supplemental manual for the planning, design, construction and operation of irrigation infrastructure, which was then used to guide the rehabilitation of irrigation infrastructure to make it more climate resilient. Projections were also used by DENR for revision of the protected area management plans of SIPLAS and PPLS. Hazard maps and climate information were provided to ATI for use in the ECSFFS. This indicator was revised during project restructuring in December 2015, from the original indicator of "Documented evidence that the information has been delivered and used throughout all subcomponents of Components 1 and 2 in appropriate ways to add value consistent with the original documented designs or modified according to updated designs." The revision of the indicator increased its measurability by (a) focusing on agencies, institutions, and stakeholders, which are discrete and easier to measure than "documented evidence," and (b) referring to the specific PAGASA outputs whose use was being monitored.			
Indicator 3:	Number of adaptation supportive policies in the agriculture and/or environment and natural resources management (ENRM) sectors endorsed.			
Value (quantitative or Qualitative)	0	Approval of an adaptation friendly policy in DENR or DA	3	1
Date achieved	07/01/2010	12/15/2015	12/31/2016	12/31/2016
Comments (incl. % achievement)	Partially Achieved (33%). The three intended outputs were (a) national policy on access to and sharing of climate information, (b) national policy on the Integrated Decision Making Framework (IDMF), and (c) local policy on the IDMF. The output produced was the protocol on information sharing. The protocol is important for formalizing climate information sharing, and ensuring clear guidelines on procedures for information sharing, which is sometimes unclear between and within Departments. This indicator contributes to the PDO objective of 'developing approaches that would enable targeted communities to adapt to the potential impacts of climate variability and change' as the access to climate information, which			

	this protocol helps facilitate, is important for the development of adaptation technologies and tools. The local and national IDMF policies were not pursued in lieu of incorporating the IDMF as a tool in the development of the Philippines' national adaptation plan, but the target was not revised a second time to reflect this decision.[4] The original indicator was revised during project restructuring in December 2015, from "Approval of adaptation-friendly policies in the agriculture and/or ENRM sectors (such as revised rural infrastructure guidelines, revised extension guidelines, modified training curricula)." The revision made it more measurable by referring to the number of outputs and identifying in the accompanying description the specific policies to be endorsed.			
Indicator 4:	Number of irrigation infrastructure in Participatory Irrigation Development Project (PIDP) areas redesigned to incorporate climate change adaptation (CCA) parameters recommended by PhilCCAP.			
Value (quantitative or Qualitative)	0	4	4	2
Date achieved	07/01/2010	12/15/2015	12/31/2016	12/31/2016
Comments (incl. % achievement)	Partially Achieved (50%). The result comprises irrigation infrastructure redesigned in Jalaur and Pinacanauan – two PIDP areas. Redesigning was informed by technical feasibility studies undertaken for enhancing climate resilience of irrigation infrastructure at both sites. At Jalaur changes to the irrigation system included automation of sluice and intake gates, and construction of settling basin to trap sediments, and ramp to facilitate easy maintenance of the irrigation system. At Pinacanauan, these changes included increase in drainage canal capacity and redesign of the flume to increase water flow capacity. The changes made to the irrigation systems, though not yet assessed, will help to improve the water available for irrigation, and are important adaptation measures for irrigated agriculture systems particularly during the 'dry' or summer seasons in the Philippines or during conditions of drought exacerbated by climate change. This indicator contributes to the PDO objective of 'demonstrating approaches that would enable targeted communities to adapt to the potential impacts of climate variability and change'. This indicator was revised during project restructuring in December 2015 to (a) remove the number of irrigation systems from the indicator name, (b) change the term "redesigned/rehabilitated" to "redesigned," (c) clarify that			

[4] The intended use of the IDMF was changed, after it was determined by the CCC that the most strategic use of the IDMF was as a tool for determining the relevant stakeholders, identification of mandates and the interplay of actors to support adaptation interventions in the agriculture and natural resource management sectors as part of the National Adaptation Plan (NAP) development. The NAP is a component of the NCCAP, and so the eventual use of the IDMF in the NAP process is consistent with its original intention. The actual use of the IDMF by the CCC is however yet to take place.

	the target was to redesign four irrigation "infrastructures" as stated in the detailed results framework in the PAD rather than two "systems" as suggested in the summary version of the results framework (RF) in the project appraisal Document (PAD) and grant agreement. The original indicator was "Irrigation infrastructure in two PIDP irrigation systems is redesigned/ rehabilitated to incorporate CCA parameters recommended by PhilCCAP."			
Indicator 5:	Evaluation report issued on the outcome of the weather index based insurance in two pilot areas.			
Value (quantitative or Qualitative)	0	Final report issued	1	1
Date achieved	07/01/2010	12/15/2015	12/31/2016	03/27/2017
Comments (incl. % achievement)	Target 100% Achieved. An evaluation was undertaken by PCIC on the implementation of the weather index based crop insurance tool in Regions 2 and 6 to assess the uptake, opportunities and benefits, and constraints and challenges to implementing weather index based insurance.[5] Data was collected through interview surveys with farmers participating in the insurance activities. A balanced assessment of the opportunities and benefits, constraints and challenges, and clear narrative of the implementation of the weather index based crops insurance is provided in the evaluation report. The report concluded that farmers found the weather index based insurance to be a good product, and there was interest in continuing with the product as it resulted in shorter indemnity times for payout after disaster, and greater transparency of transactions. At the same time, extending the use of the index based insurance to other areas requires further refinement of the indices, and installation of more proper weather equipment like automatic weather stations. The report was submitted by PCIC to the DENR and the Bank on March 27, 2017 for review. This indicator contributes to the to the PDO objective of 'demonstrating approaches that would enable targeted communities to adapt to the potential impacts of climate variability and change', as the report describes the demonstration and evaluates to some extent the outcome of the demonstration. This indicator was revised during project restructuring in December 2015 to add the phrase "in two pilot areas" to indicate that the evaluation report should be based on the two pilot areas of the project.			
Indicator 6:	Number of extension workers and farmers who are able to access and utilize the Climate Smart Decision Support tool for rice and corn.			

[5] The report integrates the following reports: 1) Terminal Report of PCIC Region 6 on results of WIBCI pilot-testing in Dumangas, Iloilo (Region 6); 2) Terminal Report of PCIC Region 2 on results of WIBCI pilot-testing in Penablanca and Tuguegarao City, Cagayan Valley (Region 2); 3) Terminal Report of PhilRice on adjustment/enhancement of indices and development of Geographic Insurance Unit; and 4) BSWM Report on Final Geographic Insurance Units in Penablanca and Tuguegarao City pilot sites.

Value (quantitative or Qualitative)	0	12		19
Date achieved	07/01/2010	12/31/2016		12/31/2016
Comments (incl. % achievement)	Target exceeded by 42%. The result comprises 19 extension workers as actual users of the tool. The climate smart decision support tool for rice and corn was used by extension agents to provide farmers in Regions 2 and 6 with guidance for better adapting the management of rice and corn to uncertain weather within a cropping season. This indicator contributes to the PDO objective 'demonstration of approaches that would enable targeted communities to adapt to the potential impacts of climate variability and change'. For example, the climate smart decision support system (CSDSS) generates a profile for each farm that indicates the target yield, the amount and variety of seed that should be planted, the fertilizer and water regimen, and specific agronomic techniques in response to weather information. Weather forecast data are also provided through the CSDSS as a text message to farmers. A total of 363 recommendations (233 rice, 130 corn) generated from the decision support tool were given to 159 farmers (126 rice and 33 corn). Farmers using the CSDSS recommendations have noted increases in production as result. For example, average yield increases from 5 farms under corn in 2014 showed increase in grain yield by 16% for farms informed by CSDDS compared to adjacent farm where this was not done, with added net benefit of PHP 9,903/ ha (US$178/ ha). This new indicator was added during project restructuring in December 2015, to reflect the uptake and use of the climate smart decision support tool as an adaptation tool.			
Indicator 7:	Enhanced Climate Smart Farmers Field School (ECSFFS) Resource Manual approved and adopted by DA as the manual for climate-smart farming practices.			
Value (quantitative or Qualitative)	0	1		1
Date achieved	07/01/2010	12/31/2016		12/31/2016
Comments (incl. % achievement)	Target 100% Achieved. The ECSFFS Manual was approved by Department of Agriculture Memorandum Circular No. 03 which mandates the use of the Manual as technical reference material for the conduct of ECSFFS by the ATI; implementation of Farmer Field School by programs and projects of DA and its attached agencies, bureaus, corporations, and regional field offices; and climate change public awareness campaign to communicate information about climate change and climate change adaptation to various stakeholders. The Manual comprises several techniques for improving the resilience of agricultural systems, and provides guidance to trainers on how to 'teach and demonstrate' these techniques to farmers, and was used during the implementation of the			

	ECSFFS in Regions 2 and 6, and will continue to be used as the ECSFFS is implemented.[6] This indicator contributes to the PDO objective of 'developing approaches that would enable targeted communities to adapt to the potential impacts of climate variability and change'. This new indicator was added during project restructuring in December 2015, to reflect the uptake and institutionalization of the approach for promoting adaptation practices.			
Indicator 8:	Geographic Insurance Unit (GIU) protocol approved and utilized in developing weather index-based crop insurance by PCIC.			
Value (quantitative or Qualitative)	0	1		1
Date achieved	07/01/2010	12/31/2016		12/31/2016
Comments (incl. % achievement)	Target 100% Achieved. The weather index based crop insurance (WIBCI) was an insurance product developed as a climate risk mitigation tool to help reduce the risks that farmers face because of climate change. The geographic insurance unit is a spatial area with similar topography and soil characteristics, and is used as an input to the WIBCI for identifying the areas that are likely to experience disasters based on certain weather conditions. The protocol was developed with inputs from PCIC, BSWM, and PhilRICE, and provides details and guidance on the inputs required for GIU development, and the procedure for GIU development. The protocol was finalized and approved by the PCIC on May 03, 2016, and used in the weather index based crop insurance (WIBCI). This indicator contributes to the PDO objective of 'demonstrating approaches that would enable targeted communities to adapt to the potential impacts of climate variability and change', as it reflects a key input for the development of the WIBCI which was demonstrated among farmers in Regions 2 and 6. This new indicator was added during project restructuring in December 2015, to reflect the uptake, institutionalization, and use of the approach for promoting adaptation practices.			
Indicator 9:	Number of automatic weather stations (AWS) established and utilized for each of the pilot sites.			
Value (quantitative or Qualitative)	0	3		3
Date achieved	07/01/2010	12/31/2016		12/31/2016
Comments (incl. % achievement)	Target 100% Achieved. AWS units were established in Region 2, 6 and 13. AWS' provide weather forecast information for the development of climate change adaptation approaches and tools, and thereby this indicator contributed to the PDO objective of 'developing approaches that would enable targeted communities to adapt to the potential impacts of climate			

[6] For 2018, there are projected 127 batches of Farmers Field Schools and Climate Smart Field Schools.

	variability and change.' For example, weather data was used in the ECSFFS implementation in Regions 2 and 6, and for the development of the weather index based crop insurance. This new indicator was added during project restructuring in December 2015, to reflect increased capacity to generate scientific information.			
Indicator 10:	Project Steering Committee reviews project progress every six months and project management office (PMO) provides monthly status update identifying implementation bottlenecks, issues, and actions as reported in the minutes.			
Value (quantitative or Qualitative)	0	100%	100%	100%
Date achieved	07/01/2010	12/15/2015	12/31/2016	12/31/2016
Comments (incl. % achievement)	Target 100% Achieved. The PMO facilitated regular meetings of the project steering committee. The meetings provided the opportunity to verify progress of the project's activities, and collect data on project results. Project progress reports, and minutes of meetings with implementing agencies are the basis of evidence for this indicator. This indicator was revised during project restructuring in December 2015 to improve the measurement of project management.			
Indicator 11:	Number of agencies adopting the manual of good adaptation practices in terms of the design of adaptation interventions.			
Value (quantitative or Qualitative)	0	6	6	6
Date achieved	07/01/2010	12/15/2015	12/31/2016	12/31/2016
Comments (incl. % achievement)	Target 100% Achieved. The manual of good adaptation practices[7] was developed by the Climate Change Commission as a collection of international and local good CCA and mitigation practices that was developed to serve as a resource guide for government agencies, NGOs, private organizations, and other users. Some of these practices were used in the development of tools and approaches under PhilCCAP. For example, guidance on developing cropping calendars was used in the ECSFFS, and social mobilization trough community radio was used in SIPLAS to disseminate information on the project. Accordingly, this indicator supports the PDO objective of 'developing approaches that would enable targeted communities to adapt to the potential impacts of climate variability and change.' The agencies adopting the manual include BSWM, ATI, PAGASA, NIA, PCIC, and DENR and its attached agencies. This indicator was revised during project restructuring in December 2015			

[7] Good Climate Change Adaptation Practices Manual

	to improve measurability by focusing on agencies, institutions, and stakeholders – which are discrete and easier to measure than documented evidence.

G. Ratings of Project Performance in ISRs

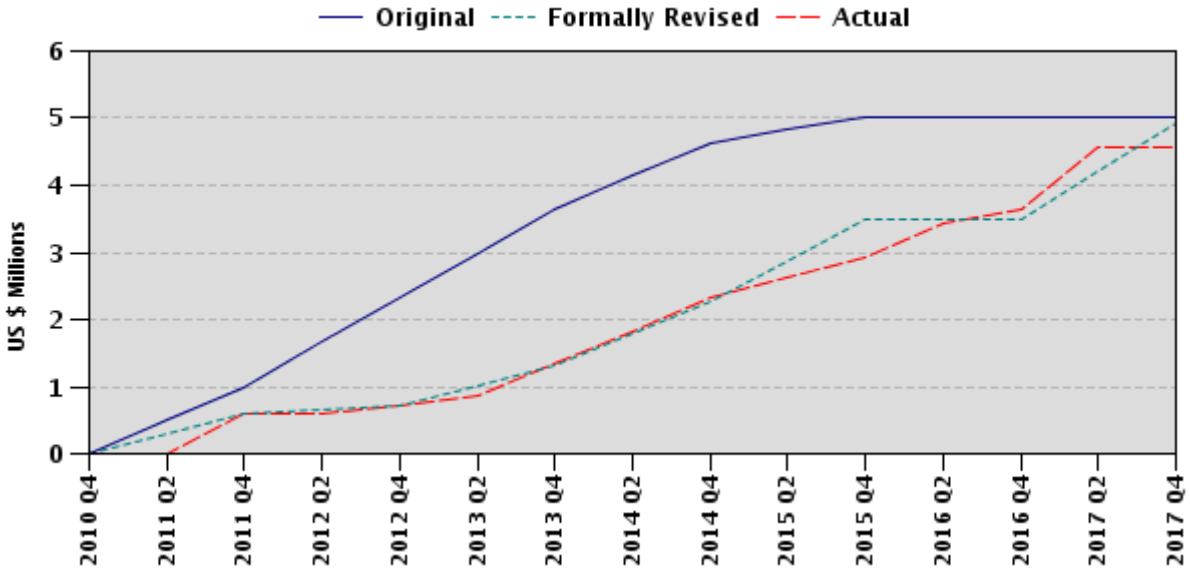
No.	Date ISR Archived	GEO	IP	Actual Disbursements (USD millions)
1	06/26/2011	Satisfactory	Satisfactory	0.60
2	08/09/2011	Satisfactory	Satisfactory	0.60
3	02/07/2012	Satisfactory	Moderately Satisfactory	0.61
4	08/07/2012	Satisfactory	Moderately Satisfactory	0.79
5	02/12/2013	Satisfactory	Moderately Satisfactory	0.89
6	08/19/2013	Satisfactory	Moderately Satisfactory	1.35
7	04/13/2014	Satisfactory	Moderately Satisfactory	2.34
8	01/28/2015	Moderately Satisfactory	Moderately Unsatisfactory	2.82
9	09/02/2015	Moderately Unsatisfactory	Unsatisfactory	3.10
10	05/20/2016	Moderately Satisfactory	Moderately Satisfactory	3.64
11	09/18/2016	Moderately Satisfactory	Moderately Satisfactory	3.88
12	12/23/2016	Satisfactory	Satisfactory	4.54

Note the disbursement figures in the above table are is to be adjusted with actual disbursement ($3.88 M) once all unutilized funds have been reimbursed to the Bank.

H. Restructuring (if any)

Restructuring Date(s)	Board Approved GEO Change	ISR Ratings at Restructuring		Amount Disbursed at Restructuring in USD millions	Reason for Restructuring & Key Changes Made
		GEO	IP		
12/01/2015		MS	MS	3.36	The project restructuring was a part of a portfolio-wide initiative to review the design of results framework of active projects in the country to improve the alignment of PDO and outcome indicators. Key changes made include revision of outcome indicators and intermediate outcome indicators in the results framework.

I. Disbursement Profile



Note the above graph is to be adjusted with actual disbursement ($3.88 M) once all unutilized funds have been reimbursed to the Bank.

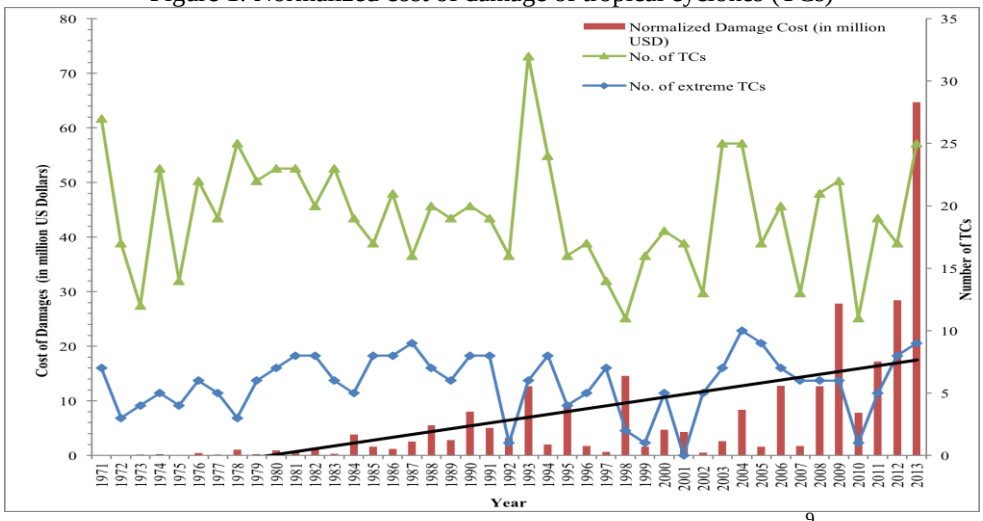
1. Project Context, Global Environment Objectives and Design

1.1 Context at Appraisal

1. **The Philippines is among the most vulnerable countries to the impacts of climate variability and climate change.** Given its location, climate and topography, the Philippines is exposed to a range of climate hazards, such as typhoons, floods, landslides, and droughts, many of which are projected to become more frequent and severe under a changing climate[8]. The country is also periodically affected by the El Niño–Southern Oscillation (ENSO) phenomenon, which creates enormous strains on water resources due to low rainfall and subsequent recharge of natural and man-made water storages. Impacts from climate variability and climate change have already damaged physical infrastructure, endangered human lives and health, and damaged livelihoods particularly among the poor.

2. **The costs of damages associated with climate change are projected to increase.** Typhoons, droughts and floods cause average annual damages of PHP 12 billion (see Figure 1), and the latest projections from the Philippine Atmospheric Geophysical and Astronomical Services Administration (PAGASA) indicate that the intensity of tropical storms and the damage associated with these is expected to increase by the mid-21st century. Damage to agricultural production, which is impacted by drought, floods, and high winds is significant. For example, historical data on typhoon damage from 1984, 1988 and 1990 show that these have caused losses on the order of 1 percent of GDP and 4 percent of agricultural production. Typhoon Yolanda in 2013 resulted in estimated damages of PHP 6.9 billion, approximately 2.5 percent of GDP in 2013.

Figure 1: Normalized cost of damage of tropical cyclones (TCs)



Sources: Damage Data Office of Civil Defence; Cinco et al., 2016[9]

[8] World Bank, June 2013. Getting a Grip on Climate Change in the Philippines. Report number 78809.

[9] Cinco, T. A., de Guzman, R. G., Ortiz, A. M. D., Delfino, R. J. P., Lasco, R. D., Hilario, F. D., Juanillo, E. L., Barba, R. and Ares, E. D. (2016), Observed trends and impacts of tropical cyclones in the Philippines. Int. J. Climatol., 36: 4638–4650. doi:10.1002/joc.4659

3. **The rural population in the Philippine is especially vulnerable to major climate change impacts because of their direct dependence on agriculture and natural resources.** Three out of four poor Filipinos live in rural areas, including growing peri-urban areas, and most of them depend on ecosystem-based activities, including agriculture, which are affected by disasters and climate change. Poor communities have fewer options for coping and rebounding, and can suffer major setbacks after damage due to climate change impacts. These compelling realities signaled the need for climate change adaptation (CCA) within the Philippines, and with focused actions on the agriculture and natural resources sectors.

4. **The Philippine government began to take action on climate change (CC) in 1991, and has demonstrated a strong commitment to mainstreaming of CCA, as evidenced by the development of supporting institutions and policies and engagement with development partners on the CCA agenda.** An interagency committee on climate change was established as early as 1991, led by the Department of Environment and Natural Resources (DENR) and the Department of Science and Technology (DOST). In 2007, a Presidential Task Force was established to, inter alia, "design concrete risk reduction and adaptation responses, especially to address short-term vulnerabilities."[10] In 2008, CC issues were elevated in importance by Executive Order No. 774[11] that gave direct responsibility and authority for decisions on climate change issues to the Office of the President. The government later developed and signed the Climate Change Act in 2009,[12] which created the Climate Change Commission (CCC) tasked to coordinate, monitor, and evaluate the programs and action plans of the Philippine government relating to CC, and provided the organizational framework for coordinated response. The Act also provided the impetus for development of the National Climate Change Action Plan (NCCAP) and Local Climate Change Action Plans (LCCAPs). A number of development partners (DPs) provided support to the Philippines on its CCA agenda including Department of Foreign Affairs and Trade of Australia (DFAT) (formerly AusAID), United Nations Development Programme (UNDP), Global Environment Facility (GEF), and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) (formerly GTZ). At the local level, there were also a few CCA-related interventions led by the government. For example, the provincial government of Albay spearheaded several CCA initiatives including the first national conference on CCA.

5. **Even though policies and institutions were put in place to support mainstreaming of CCA, the Philippine government recognized that there were constraints that needed to be addressed.** Identified constraints and barriers to CCA included: (i) lack of awareness of climate change and adaptation options among public and top-level decision makers; (ii) insufficient climate risk information, and where available difficulty in using climate change information; and (iii) the relative newness of CCA limited the extent to which it had been incorporated into government plans and program.

6. **The PhilCCAP was therefore designed to help address some of constraints to mainstreaming CCA in the Philippines.** Given their vulnerability to climate change, pilots in the agriculture and natural resources sectors were developed and implemented.

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[10] The Presidential Task Force was established by Administrative Order No. 171, s. 2007, "Creating the Presidential Task Force on climate Change".
[11] Executive Order No. 774, s.2008, "Reorganizing the Presidential Task Force on Climate Change."
[12] Republic Act No. 9729 created the Climate Change Act – An Act mainstreaming climate change into government policy formulations, establishing the framework strategy and program on climate change, creating for this purpose the Climate Change Commission, and for other purposes.

7. **Rationale for Bank Assistance.** The World Bank has been a long-term partner of the government of the Philippines in the areas of agriculture and natural resources management – sectors within the Philippines that are vulnerable to climate change. Furthermore, the World Bank has been a leading actor on CC and has played a key role in advancing the praxis and knowledge of climate change adaptation and resilience.[13] Accordingly, CC was a priority for the World Bank's engagement with the Philippines in the Country Assistance Strategy (CAS) (FY10-12), which aimed to help the government reduce vulnerabilities by, inter alia, "piloting climate change adaptation measures, towards achieving more inclusive growth."[14] The design of PhilCCAP directly supported this CAS objective. The Bank was therefore a strategic partner in helping the government to address constraints to CCA through the PhilCCAP given its extensive experience in CCA, and its commitment to working with the Philippine government on CC as reflected in the CAS.

1.2 Original Global Environment Objectives (GEO) and Key Indicators

8. **The global environment objective as stated in the Grant Agreement is "to develop and demonstrate approaches that would enable targeted communities in the territory of the Recipient to adapt to the potential impacts of climate variability and change."**

9. **The summary table of indicators in the PAD and grant agreement were slightly different in wording (but not substance) from the detailed matrix of "Arrangements for Results Monitoring" in the PAD**. This discrepancy was addressed in the December 2015 restructuring and mentioned in Section 1.3. The GEO as stated in the Grant Agreement will be used for this assessment. The original GEO indicators included in the Grant Agreement are listed in Table 1 below.

Table 1: Original GEO Indicators

Outcomes	Original Indicator
Global Environmental Objective Indicators	
To develop and demonstrate approaches that would enable targeted communities in the territory of the Recipient to adapt to the potential impacts of climate variability and change (GEO).	20% of households surveyed in the targeted areas adopt coping strategies, new technologies or improved farming practices to better cope with climate variability and extremes
	Among stakeholders surveyed in the targeted areas 35% have participated in or are knowledgeable of activities demonstrated by the project to reduce vulnerability or improve adaptive capacity.

1.3 Revised GEO and Key Indicators, and Reasons/Justification

[13] See for example World Bank, 2010 "The Costs to Developing Countries of Adapting to Climate Change", and "World Development Report 2010: Development and Climate Change".

[14] The PhilCCAP supported Strategic Objective 4 of the CAS – "Reduced Vulnerabilities", Result Area 4.2 on Disaster risk management and climate change.

10. **The GEO was not revised. A level-two project restructuring was undertaken in December 2015, which provided the opportunity for revision of the results framework for the project**. Changes were made to the project outcome indicators and intermediate outcome indicators in the form of revisions, additions and deletions to better capture the results of the achievement of the PDO, to add more quantitative measures of results, and to improve on the measurability of results, and attribution of results to the objective. Changes to the PDO indicators are illustrated in Table 2; changes to intermediate outcome indicators are included as Table 6 in Annex 2.

Table 2: Changes to PDO Indicators in the Results Framework

Original Indicator	Change to indicator after restructuring	New/ Revised Indicator
20% of households surveyed in the targeted areas adopt coping strategies, new technologies or improved farming practices to better cope with climate variability and extremes	Revised	Percent of households surveyed in the targeted areas adopt coping strategies, new technologies or improved farming practices to better cope with climate variability and change.
Among stakeholders surveyed in the targeted areas 35% have participated in or are knowledgeable of activities demonstrated by the project to reduce vulnerability or improve adaptive capacity	Revised	Percent of stakeholders surveyed in the targeted areas who have participated in or are knowledgeable of activities demonstrated by the project to reduce vulnerability or improve adaptive capacity.
	New	Number of direct beneficiaries of the project.

1.4 Project Beneficiaries

11. **Primary Beneficiaries**: The primary beneficiaries of the PhilCCAP were farmers and fisherfolk in Regions 2, 6, and 13 that depend on natural resources for their livelihoods.[15] In Region 2, targeted communities included farmers from Tuguegarao East and Penablanca municipalities in Cagayan provinces. Upland communities living in the Penablanca Protected Landscape and Seascape (PPLS) [16] – some of whom are farmers, were also considered

[15] The project sites were situated within three geopolitical regions: 2, 6 and 13. In Region 2, the project operated in the towns of Peñablanca and Tuguegarao in Cagayan Province. Region 6 operations covered four municipalities: Janiuay, Mina, Pototan, and Dumangas, all found in lloilo province. In Region 13, the project implemented activities in Siargao Island, which holds nine municipalities and is found within the jurisdiction of the province of Surigao del Norte (PhilCCAP Project Completion Report, 2017).

[16] The PPLS, measuring about 118,781 hectares in total area, is largely situated in Peñablanca, Cagayan. The protected area is found within the Sierra Madre Biodiversity Corridor, known for the high diversity of its flora and fauna, albeit a significant number of which remains vulnerable, threatened and endangered due to habitat destruction and wildlife hunting. It is bordered on the east by the Philippine Sea, and traversed by several rivers that either exit to the sea or

beneficiaries of the PhilCCAP. In Region 6, targeted communities included farmers from the municipalities of Dumangas, Pototan, and Jeniauy in Iloilo province. In Region 13, fisherfolk and coastal communities were beneficiaries of the project's interventions in the Siargao Protected Landscape and Seascape (SIPLAS).[17]

12. **Other Beneficiaries**: Another group of beneficiaries that were expected to benefit in a significant way from the project were those agencies involved in its implementation, and recipients of data, information and tools generated by the project. These include: the Philippine Atmospheric Geophysical and Astronomical Services Administration (PAGASA); the Agricultural Training Institute (ATI); the Bureau of Soil and Water Management (BSWM); the Climate Change Commission (CCC); the National Irrigation Administration (NIA); and the Philippine Crop Insurance Corporation (PCIC). These agencies were expected to benefit from (i) the development of new tools, information and policies, (ii) capacity development and training, and (iii) strengthening of institutional relationships. Other expected beneficiaries included the protected area offices and managers of PPLS and SIPLAS; the International Rice Research Institute (IRRI); and academe including Isabella State University, West Visayas State University, and University of the Philippines Los Banos.

1.5 Original Components

13. **Component 1: Strengthening the enabling environment for climate change adaptation.** The objective of this component was to support the integration of CCA into the agriculture and natural resources sectors, and to strengthen the capabilities of CCC and other government agencies that play a role in CCA activities in these sectors. The main activities planned under this component included: strengthening the CCC's role in CCA policy oversight; creation of a decision-making framework for adaptation and sector investments; capacity building for focal agencies responsible for coordinating with other government entities and the private sector; knowledge management and assimilation of best practices; and awareness raising and communication in the project's pilot areas. The original cost of component 1 was US $0.71 million of which US $0.59 million was GEF grant financing.

14. **Component 2: Demonstration of climate change adaptation strategies in the agriculture and natural resources sectors.** The objective of Component 2 was to demonstrate methods of adaptation to the impacts of climate change through the implementation of field level pilot activities designed based on scientific information provided under Component 3. The main activities planned under this component included: climate proofing irrigation infrastructure; enhancing delivery and effectiveness of extension services for farm-level climate risk management; pilot-testing the feasibility of weather index-based crop insurance; and strengthening climate change resilience through improved management of protected areas. The

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feed into agricultural areas. Sections of the western fringes of the protected area are populated by indigenous communities. The main industries are agriculture and freshwater fishing. PPLS also falls within the typhoon belt (PhilCCAP Project Completion Report, 2017).

[17] SIPLAS covers an area twice the size of PPLS, at 276,896 hectares, and encompasses nine (9) municipalities. Poverty incidence on the island was recorded at 53% in 2006. Unlike PPLS, SIP LAS is predominately coastal and marine, with terrestrial areas only consisting 24% of the protected area. A large part of the island's forestland, about 30,000 hectares, is cultivated with coconut trees, while a smaller lowland area had been converted into rice farmlands. The primary sources of livelihood for Siargao's 110,653 residents are farming and fishing. While the island is situated far below the typhoon belt, typhoons have notably affected the area right before and during project implementation (PhilCCAP Project Completion Report, 2017).

original costs of component 2 was US $52.8 million of which US $2.944 was GEF grant financing.

15. **Component 3: Enhanced provision of scientific information for climate risk management.** The objectives of this component were to improve the access of end users in the agriculture and natural resources sectors to more reliable scientific information, to enable more rapid and accurate decision-making for climate risk management. The main activities included: strengthening the provision of climate information to guide the design of adaptation actions; and strengthening institutional capacity for effective climate risk management. The original cost of Component 3 was US $1.41 million of which US $1.03 million was GEF grant financing.

16. **Component 4: Project Coordination**. A Project Management Office (PMO) was established within the Foreign Assisted and Special Projects Service of DENR (DENR FASPS) for coordinating project activities and liaising with implementing units and regional offices, as well as ensuring submission of the required reports to the World Bank. The original cost of Component 4 was US $0.81 million of which US $0.41 million was GEF grant financing.

17. **The components of the project were interrelated.** For example, the information generated under Component 3 was designed to be used as inputs for Component 2 (adaptation options) and Component 1 (institutional strengthening). The adaptation options selected under Component 2 informed the type of information that was generated under Component 3, and the type of capacity development needed under Component 1. A schematic of the linkages between components is provided in Annex 2.

1.6 Revised Components

18. **The component activities were not revised during project restructuring, but their scope was changed to better reflect changes in activities that were being implemented, and costs were adjusted to better reflect actual costs during implementation.** The change in scope of component 1 was that the climate screening tool was dropped as the climate-screening tool was developed as part of the Bank's Programmatic Technical Assistance on climate change and so was not considered as part of the contribution of the project. Cost of component 1 was revised from US $0.59 million to US $0.15 million. Due to delays in fund disbursement (described in section 2.2), certain activities in Component 2 and 3 were undertaken by the agencies with their funding. PCIC used its own funds to continue the implementation of the WIBCI trials when project funds were not available, and ATI used agency funds for graduation of ECSFFS trainees and procurement of equipment. PAGASA also used its own funds to procure a super-computer valued at PhP 8.3 million (US $0.16 million). Cost for component 2 was revised from US $2.94 million to US $2.76 million; and cost for component 3 was revised from US $1.03 million to US $0.87 million. The increase in Component 4 was to cover the salaries and operations funds of the PMO. The DENR allocation was exhausted by the end of 2015 thus there were no funds available for the extension period (January – December 2015). Additional activities included under component 4 were a Technical Summit involving all implementing agencies, and an agro-forestry and WIBCI conference in November 2016. Component costs were revised for all components. Cost for component 4 was revised from US $0.41 million to US $1.19 million.

1.7 Other Significant Changes

19. **Changes to the project were made during the December 2015 restructuring, these include (i) extension of the closing date for the project; (ii) change in allocation of funds by component; (iii) change in legal covenants; (iv) and change in the results framework.**

20. **The requirement in Section IIB of Schedule 4 of the Grant Agreement for a periodic internal audit review by the Internal Audit Service of DENR and DA was removed during the restructuring.** The justification for the removal of the covenant was (i) that successive financial management (FM) reviews found that the project was generally able to maintain adequate FM systems and had over time showed marked improvement in FM reporting (e.g. timely submission of IFRs and unqualified opinion on the financial reports); and (ii) since the Internal Audit Services (IAS) were having their internal capacities enhanced with the support of the Commission on Audit, the required semestral internal audit reviews could not be regularly executed. The internal audit requirement was still a part of the overall internal control using existing country systems, and was conducted subject to the IAS professional judgment and discretion in terms of audit scope and in line with the annual audit plans of DENR and DA.
21.

2. Key Factors Affecting Implementation and Outcomes

2.1 Project Preparation, Design and Quality at Entry

22. **Soundness of background analysis. The PhilCCAP was developed on a strong analytical base.** The World Development Report (WDR) 2010 on Development and Climate Change provided some guidance for the PhilCCAP, for example, on the importance of increasing the coping capacity of populations as a part of CCA, and on the need to promote insurance given the uncertainty of climate change. PhilCCAP also drew on assessments from scientific publications on the impacts of climate change in the agricultural, water, coastal, watershed and forest resources in the Philippines undertaken by Lansigan and Salvacion (2007),[18] Perez et al (1999),[19] Jose and Cruz (1999),[20] and Lasco et al (2007).[21, 22] Lessons to inform the design of the project were drawn from international experiences on CCA. For example, the lesson that adaptation should preferably focus on no-regrets strategies and seek soft options embedded in sustainable natural resources management influenced how activities in Component 2 of the project were undertaken with respect to CCA strategies piloted on farms. A summary of these lessons is included in Box 1.

Box 1: Lessons reflected in PhilCCAP's design

[18] Felino P. Lansiganand Arnold R. Salvacion (2007). Assessing the Effect of Climate Change on Rice and Corn Yields in Selected Provinces in the Philippines. 10th National Convention on Statistics (NCS) EDSA Shangri-La Hotel October 1-2, 2007.
[19] Rosa T. Perez, Leoncio A. Amadore , Renato B. Feir (1999). Climate change impacts and responses in the Philippines coastal sector. *Climate Research*, Vol. 12: 97–107.
[20] Aida M. Jose, Nathaniel A. Cruz (1999). Climate change impacts and responses in the Philippines: water resources. *Climate Research*, Vol. 12: 77–84.
[21] Lasco, R.D. Cruz, R.V.O. Pulhin, J.M. Pulhin, F.B. et al. (2007). Adaptation of watershed areas and communities to climate change in Pantabangan-Carranglan watershed.
[22] Climate changes and impacts on rice and corn crop yields in selected provinces in the regions of interest of the project were by Lansigan and Salvacion (2007) using the agronomic model, CERES. Lasco et al (2007) explored potential adaptation strategies developed by the various institution and local communities in the Pantabangan-Carranglan Watershed to cope with the impacts of climate change.

- Climate change and sea level rise need to be treated as major economic and social risks, not just long-term environmental problems;
- Addressing short-term vulnerabilities is the best strategy to prepare for long-term impacts, therefore, work on disaster risk reduction and on climate change adaptation needs to be closely integrated;
- Adaptation needs to have an institutional home close to senior decision-makers in government in order to effectively coordinate investments across sectoral ministries and influence national development planning;
- Adaptation needs to be integrated into economic planning and the preparation of sectoral plans and budgets;
- Adaptation should preferably focus on no-regrets strategies and seek soft options embedded in sustainable natural resources management;
- Adaptation investments need to be informed by a long-term process that links bottom-up consultation with top-down planning and policy;
- Bank projects can only facilitate but not be the catalyst for reforms; i.e., the reform process must already be well underway before the Bank project is initiated.
- To strengthen local ownership of the project, implementation arrangements at the local level would be undertaken through a tripartite agreement involving the provincial governors, DENR, and DA.
- Important to identify committed local actors who can motivate their peers.

Source: PhilCCAP Project Appraisal Document, 2010

23. **Adequacy of government's commitment. The development of PhilCCAP also drew on inputs from consultative processes involving a broad set of government and non-government stakeholders.** Stakeholders at all levels - heads of national government departments and technical staff; representatives of local governments, NGOs, academia, people's organizations, and other donor-funded CCA initiatives; as well as farmers and other beneficiaries at the grass-roots level - were consulted during project preparation. The consultations included (a) one-on-one and small group meetings to discuss targeted issues, for example, consultations were held with Asian Development Bank (ADB) and United Nations Development Program (UNDP) in the Philippines during project preparation for lessons on the design of the PhilCCAP given their international experience in CCA, and in implementing GEF-funded projects; (b) group meetings and focus group discussions at all levels; and (c) hosting of two stakeholder workshops, and participation by team members in several other relevant workshops and seminars.

24. **Assessment of project design. PhilCCAP's activities were grouped under four components, each developed to respond to the constraints described above,[23] and linked to each other, to achieve the PDO**. Component 1 focused on strengthening the enabling environment for climate change adaptation focused on capacity development with the government for planning CCA activities, with a specific focus on the then newly formed Climate Change Commission (CCC) whose mandate included leading the government on climate change related policies and actions. Under Component 1, activities were also envisioned to help build awareness of CCA among government in the central agencies, and at the regional levels. Component 2 focused on piloting climate change adaptation strategies in the agriculture and natural resources (terrestrial upland forest and coastal), and developed methodologies for planning adaptation strategies that were cost effective, and innovative, and given the large rural population vulnerable to climate change, that would be developed with the capacities and

[23] Identified constraints and barriers to CCA included: (i) lack of awareness of climate change and adaptation options among public and top-level decision makers; (ii) insufficient climate risk information, and where available difficulty in using climate change information; (iii) the relative newness of CCA limited the extent to which it had been incorporated in government plans and programs.

constraints of these populations in mind. Component 3 focused on the generation of new climate risk information and the transmission and use of this climate risk information in planning at the regional level and infrastructure design. Component 4 focused on the coordination aspects of the project, but was also very important for collating and disseminating information on the CCA activities especially given the relative newness of CCA in the Philippines. The components of the project also were strongly linked, all contributing to the achievement of the PDO. For example, the information generated under Component 3 was designed to be used as inputs for Component 2 (adaptation options) and Component 1 (institutional strengthening). The adaptation options selected under Component 2 informed the type of information that was generated under Component 3, and the type of capacity development needed under Component 1. A schematic of the linkages between components is provided in Annex 2.

25. **The project piloted several new interventions to respond to CCA in the agriculture and natural resources sectors in the Philippines.** For example, the project piloted weather index based crop insurance (WIBCI) as a climate risk mitigation tool that helped reduce the risks that farmers face because of climate change. Another innovative tool developed was the climate smart decision support system (CSDSS) for rice and corn which is a web-based/ mobile application for providing farmers with real time information on rice and corn cultivation with consideration of weather and climate information. The Climate-Smart Farmers' Field School was another new approach in the Philippines for providing climate change extension information using the Farmer Field School Approach.

26. **The cross-cutting nature of CCA necessitates a multisectoral response, and accordingly the project was designed to be implemented by multiple agencies, and facilitate convergence among different agencies and bureaus of the DA, DENR and DOST and CCC**. Although sub-components of the project were led by a single agency, the design of the project was such that the involvement of multiple agencies/ bureaus were necessary for successful implementation. For example, subcomponent 2.2 enhancing delivery and effectiveness of extension services for farm-level risk management was led by the Agricultural Training Institute (ATI), but required climate risk information input from PAGASA, information on soils and climate change from BSWM, information on irrigation from NIA, and working with PCIC on the weather index based crop insurance. The decision to implement the project among the selected agencies was made on the basis of the alignment of the mandates of these agencies with the project's components. For example, the CCC is legally mandated to lead on climate change policy issues. In the agricultural sector, the ATI and BSWM both provide extension services to farmers, and the demonstration of CCA is a form of extension. In terms of generating climate information, PAGASA has the mandate to do this. Ownership and integration of CCA in agency operations would also be strengthened by involving government agencies in the implementation of CCA measures pertinent to their agency mandate. The multisectoral arrangement pushed the agencies to develop ways to work together, to find opportunities for convergence at the municipal level, and at the national/ central level.

27. **Assessment of risks. Several risks to achieving GEO and project results were identified during project preparation and respective mitigation measures raised.** These risks and respective mitigation measures are appropriate, and their identification reflects learning from other climate change related initiatives.[24] For example, with the uncertainty of climate change and impacts there is a risk that adaptation efforts introduced may not be suitable. The mitigation measure considered by the project in this respect was to focus on reducing vulnerability to

[24] Risks and mitigation measures are summarized on pages 16 and 17 of the PAD.

climate impacts, for example reducing farmers' vulnerability through diversifying farms, and improving water management of farms. Detailed environment and social assessments were carried out as part of project preparation to inter alia, identify possible risks of the project to the environment and to the communities implementing the project, and necessary mitigation measures. These assessments found overall positive benefits of the project on the environment and implementing communities.

2.2 Implementation

28. **Physical progress of the project was slower than planned during the early stage of project implementation due to a number of factors: (i) the protracted recruitment of specialist consultants, (ii) slow disbursement of funds to implementing agencies from the DBM and DA; and (iii) change in government administration following national election in June 2016.** The project became effective on January 31, 2011, and it took about one year to establish the project management office (PMO), including the hiring of a project manager. Following the establishment of the PMO, the government focused on recruitment of technical consultants, which was completed largely by about September 2012 - about 21 months into the project implementation. Technical work on the project began in earnest about 2 years following the start of the project resulting in an overall delay by about 21 months for project activities to commence and funds to be disbursed.

29. **The project's implementation progress was further delayed by slow liquidation of project expenditure by the implementing agencies, the late issuance of Special Allotment Release Order (SARO) by the Department of Budget and Management (DBM), and the inadequate amounts authorized by the SARO.** For example, in 2016, the process for obtaining a SARO, including the approval process for the work plan within the DENR took three months, the equivalent of one quarter. The SARO for the DA components, the request for which was communicated earlier than that of the DENR, was issued late in June 2016, leaving DA executing agencies with less than half of the one-year extension period to pursue its remaining activities. Another issue contributing to the slow downloading of project funds to implementing agencies was the DA memorandum circular No. 001 issued by the Commission on Audit (COA) in 2012, which barred agencies with unliquidated funds from previous projects to receive funds for another project. The memorandum circular affected PCIC and PAGASA as these agencies were unable to locate the documents related to the unliquidated project funds; the issue was resolved in 2015.[25] For example, the progress of the development and testing of the WIBCI by PCIC was delayed due to PCIC's inability to access funds for several months.

30. **The effect of the June 2016 elections on project implementation caused some delays in implementation**. For example, following the 2016 elections, a new administration took over the management of DA, and reorganization took place, including change of the Bids and Awards Committee (BAC) and signatories in DA also changed. This resulted in a delay in the finalization of contracts for activities led by NIA on the retrofitting of irrigation infrastructure.

31. **A Mid Term Review (MTR) of the project was conducted in December 2013, and a survey undertaken during the MTR confirmed progress of project implementation**. Results of the survey undertaken by the Asian Institute of Development Studies Inc. (AIDSI) on the extent to which climate change adaptation strategies were adopted by the communities showed

[25] This refers to previous projects, and not the PhilCCAP.

progress towards achieving the project objective. The survey found that at MTR, 18% of households in the targeted areas had adopted climate change adaptation strategies in agriculture. The end of project target for percentage of households adopting CCA was 20%. The survey also found that 45% of stakeholders in the targeted areas had participated in or were knowledgeable of activities demonstrated by the project, exceeding the target of 35 % by over 10 percentage points.

32. **Although the project saw results at MTR that indicated progress in achieving the PDO, project progress was still delayed due to earlier delays in project implementation,** particularly those under the components handled by DA due to fund download issues as in the case of the PCIC and PAGASA. The earlier issue on downloading of funds to PAGASA due to issues concerning unliquidated funds from previous projects was resolved by PAGASA. The implementation progress of the project was downgraded from Moderately Satisfactory to Moderately Unsatisfactory in January 2015 (disbursement at 57%/ target disbursement 91%), and further downgraded to Unsatisfactory in September 2015 (disbursement at 62%/ target disbursement 98%). The Bank team proposed recommendations on faster processing and feedback on liquidation and better expense planning by DENR and DA.

33. **A request for project restructuring was made by the government in February 2015, and restructuring was completed by December 2015.** An internal portfolio review was carried out by the Philippine country team in FY13 that includes an assessment of the quality of the Results Frameworks and the progress of achieving portfolio results/outcomes for all active projects in the portfolio and identify areas to improve or strengthen project results framework, possibly leading to a formal restructuring of projects. PhilCCAP was one of those projects subjected to the review which resulted to a number of proposed changes discussed with DENR to better align outcome indicators with the PDO, and improve measurability of results. DENR welcomed the opportunity to correct the deficiency of the results framework and agreed with the Bank four major changes to the project: (i) extension of the closing date for the project; (ii) change in allocation of funds by component; (iii) change in legal covenants; and (iv) change in results framework.

34. **The effect of the delays in project implementation was the cancellation of some project activities.** These included: NIA's inability to complete two consultancy contracts and workshop for rehabilitation of irrigation infrastructure as a result of change in administrative leadership at NIA; (ii) cancellation of some equipment for PAGASA that could not be procured and delivered because of late release of project funds; PCIC's inability to contract PhilRICE for the GIU development due to late release of funding to PCIC; and the cancellation of a study tour on weather index insurance planned for PCIC officials.

35. **The project closing date was extended by one year from December 15, 2015 to December 31, 2016**. The extension of the project was undertaken to allow the completion of a number of activities which were delayed due to factors including: the adoption of the climate change adaptation measures developed out of PhilCCAP; pilot testing of key adaptation measures including weather index-based crop insurance, supplemental manual for climate change integration in the design, construction and operation of irrigation systems, and adaptation measures described in the revised protected area management plans; and capacity enhancement on the generation and dissemination of climate information. The disbursement schedule was accordingly adjusted to match the extension of the closing date.

36. **The project's implementation progress improved steadily in the last year of the project**. With the guidance of the Bank, the DA and DENR agreed on several measures to increase the implementation progress including development of a "catch-up plan," discussions

with DBM on the SARO release, an increase in the designated account, and monthly submission of withdrawal applications to the Bank by the DA and DENR, and delaying recoupment of the designated account balance. As a result of these introduced measures the project's implementation progress improved, and was upgraded from Unsatisfactory to Moderately Satisfactory in May 2016, and further upgraded to Satisfactory by the last supervision mission for the project in December 2016.

2.3 Monitoring and Evaluation (M&E) Design, Implementation and Utilization

M&E Design

37. **The project developed a results framework that comprised two GEO level indicators and ten intermediate outcome indicators to help assess progress of the project and to guide implementation. The results framework was later revised during the restructuring to include three GEO level indicators and 11 intermediate outcome indicators.** Revisions to indicators were to improve the measurability of the indicators, and the addition of indicators to improve the ability to measure outcomes. Guidance was included in the project appraisal document on data collection, the types of instruments to be used, and the entities responsible for data collection. The indicators were appropriate for assessing the PDO, and it is evident that the preparation focused on ensuring the link between outcome indicators, outcomes, and the project objectives (see page 35 of the PAD). The results framework was found to be overall appropriate as the data required for the indicators was not difficult to obtain, and the data collection instruments – surveys and progress reporting – were appropriate for collecting the data needed for the indicators.

38. **The project was designed for project monitoring and reporting to be undertaken by the PMO housed in the DENR as part of the Foreign Assisted and Special Projects Service (FASPS).** The tasks of the PMO included convening and facilitating meetings of the Project Steering Committee (PSC),[26] supporting supervision and technical missions, and collecting and organizing project results. An M&E Specialist was to be recruited to strengthen the M&E function at PPSO.

39. A baseline survey among the proposed beneficiaries on their awareness/ knowledge of climate change and use of climate change adaptation technologies was designed. The survey was to also include institutions which use information provided by PAGASA, on how they use and measure scientific climate information. It was also planned to use the METT tool to evaluate progress with METT results for 2010 being part of the project's baseline and M&E. The M&E design planned to engage an independent institution to evaluate the implementation of the proposed activities in each selected pilot area. This evaluation was planned to include household surveys and focus group discussions with representatives of beneficiary groups.

M&E Implementation

[26] The PSC decides on overall project policy directions. It is jointly led by the designated undersecretaries of the DENR and DA, and comprises of representatives from the executing agencies and NEDA. As per project design, the committee is supposed to meet quarterly.

40. **The PMO facilitated regular meetings of the Project Steering Committee (PSC),[27] meetings among implementing agencies, and coordinated implementation support missions of the World Bank.** These meetings provided the opportunity to verify progress of the project's activities, and collect data on project results. In addition to regular meetings, the PMO also conducted workshops and trainings for its staff and focal persons of executing agencies. These included annual technical summits where executing agencies discussed physical accomplishments. For reporting, the PMO prepared and submitted quarterly project status reports and quarterly financial management reports to the DENR and to the World Bank. These submissions were in addition to the annual report submitted by the PMO to the DENR. A monitoring and evaluation (M&E) specialist was hired to support the PMO in M&E. The specialist prepared the project's results-based M&E reports from 2013 to the first quarter of 2015.

41. **In accordance to the project's design the PMO led the implementation of M&E.** Data for indicators were collected by the PMO from the implementing agencies and used to report on the progress against the results framework. Field visits to project sites were also undertaken by the PMO to collect data for example on progress on livelihood development, and rehabilitation of upland forests and mangroves. The data collected (namely reports) were considered to be sufficient for assessing the results. Data collected for the GEO indicators were collected using surveys that were undertaken at the mid-term, and then at the end of the project. Detailed guidance on the survey tool was developed by the Asian Institute of Development Studies (AIDSI) and is included in the Final Evaluation Report of the PhilCCAP. The PMO reported on the progress against the results framework in quarterly status reports which were shared with the Bank and among the implementing agencies. Annual reports were also produced by the PMO which reported on implementation achievements, implementation performance, project results, lessons learned and key issues. The METT survey was not used as planned, and instead was included in the management recommendations for PPLS and SIPLAS

42. **Bank supervision missions were undertaken two to three times per year during the implementation**, during which the task team engaged implementing agencies in discussions about progress of the project against the project objective, its physical progress and disbursement progress.

M&E Utilization

43. **Monitoring data were used to evaluate physical progress, disbursement progress, measure progress towards achievement of the PDO, and adjust workplans of the implementing agencies.** Regular meetings with the implementing agencies and PSC used project results to inform the workplans of the implementing agencies. The PMO initiated the concept of holding the first technical summit in 2013 for the purpose of establishing links among consultants and agencies. The first summit provided the much-needed coordination among consultants and agencies while the succeeding summits provided updates and progress in works and outputs and review of the agreements on coordination and sharing of information and outputs. The first summit helped the PMO adjust the global work plan of the project which was developed at the start of the project in 2011. The adjustment in the plan was necessary to accommodate the adjustments made on the consultants and the timing of their engagements.

2.4 Safeguard and Fiduciary Compliance

27

44. **Safeguard policies – Environmental Assessment (OP/BP 4.01) and Indigenous Peoples (OP/BP 4.10) – were triggered during appraisal, and the project was categorized as environmental assessment (EA) category B.** The triggering of these safeguard policies was appropriate given the scope and nature of the project. Accordingly, a detailed environmental assessment was conducted as part of project preparation, and it ascertained that the overall environmental benefits of the project outweighed the envisaged negative environmental impacts. Mitigating measures to address potential impacts of enhancing irrigation infrastructure and agroforestry and livelihood activities were identified during appraisal. Recommendations for enhancing the environmental benefits of the project were made following the mid-term review site visit in Penablanca Protected Landscape and Seascape (PPLS). A social assessment was also undertaken, and it found that the project improved the income streams and distribution of opportunities among farmers, indigenous peoples and other beneficiaries.

45. **Safeguard compliance was satisfactory during the implementation of the project.** Supervision missions noted the compliance with migrating measures identified during the project appraisal for OP/BP 4.01, and OP/BP 4.10. The EA category was maintained at B following the project restructuring.

46. **Financial management (FM).** Financial management reviews have found that the project was generally able to maintain adequate FM systems, compliance with the legal covenants, and improvements were observed in FM reporting, for example, timely submission of quarterly interim financial reports and unqualified opinion on the financial report audits. The project experienced bottlenecks in fund transfers mainly due to delays in the issuance of the allotment release documents, and changes in the requirements for project fund liquidation between 2012 and 2015,[28] which resulted in delays in disbursement even up to the first quarter of 2016. The rating for financial management was upgraded from moderately unsatisfactory to moderately satisfactory in the last year of the project, after the major challenge of liquidation of project expenditure by the DA was resolved allowing for disbursement of funds for the implementation of project activities. The DA is delayed in refunding the unutilized balance of the project funds. The unutilized balance should have been refunded following the deadline for submission of Withdrawal Applications on April 30, 2017. At the time of completing the ICR, the unutilized fund balance in the DA designated account had not been refunded to the Bank.

47. **Procurement.** Procurement reviews found that there was overall compliance with procurement procedures as outlined in the grant agreement, including development and timely submission of procurement plans. Geotagging was found to be an innovative tool that helped in procurement and monitoring. However, overall procurement progress was hindered by several delays early in the project implementation. Earlier setbacks were due to delays in the processing of major contracts with firms at the DENR as well as the contracts of individual experts through the DA, as well as getting interests from qualified individual experts. The procurement rating was downgraded from Satisfactory to Moderately Satisfactory in the last semester of the project in view of a number of delays in procurement in the DA component of the project.

[28] The DA was unable to download funds to PAGASA and PCIC due to memorandum circular No. 001 issued by the Commission on Audit (COA) in 2012, which barred agencies with unliquidated funds from previous projects to receive funds for another project. The funding issue was prolonged because both agencies were unable to locate the documents related to the unliquidated project funds. This issue was resolved in 2015 (Borrower's Project Completion Report: 43).

2.5 Post-completion Operation/Next Phase

48. **Given the continued relevance of climate change adaptation and resilience in the Philippines, and the commitment of the government led by its Cabinet Cluster on Climate Change Adaptation and Mitigation and Disaster Risk Reduction (CCAM-DRR), there are several identified opportunities for uptake of the tools, information and approaches generated by PhilCCAP**. Already there is integration of PhilCCAP results, for example new climate change projections in the work programs of NIA, ATI, PCIC and BSWM. The technologies/ learnings of the ECSFFS and CSDSS are being integrated in the new Adaptation and Mitigation Initiative in Agriculture (AMIA) project of the DA. The Inclusive Partnership for Agricultural Competitiveness (IPAC) program of the Department of Agrarian Reform (DAR) will have an agri-extension component that can draw on for example the ECSFFS as an approach for providing climate-informed agricultural extension. The National Greening Program's (NGP) planning and investments could benefit from the use of climate information in the planning of NGP sites and determination of the type of forest trees that should be planted based on climate projections. The Risk Resiliency and Sustainability Program (RRSP) being developed by the CCAM-DRR. In the months following closing of the project, the implementing agencies have agreed to develop a sustainability plan with clear steps. A draft concept note for a second phase of the PhilCCAP was developed by the implementing agencies, and contains some ideas for sustainability that can be translated to a sustainability plan.

3. Assessment of Outcomes

3.1 Relevance of Objectives, Design and Implementation

49. **The relevance of PhilCCAP's objectives is rated high.** Increasing adaptive capacity and resilience to climate change impacts are high priorities in the Philippines due to its high exposure and vulnerability to a range of climate-related impacts. The PhilCCAP objectives and components are well aligned with four of the seven priority areas of the National Climate Change Action Plan (NCCAP)[29]: Food Security; Water Sufficiency; Ecosystems and Environmental Stability; and Knowledge and Capacity Development – see objectives of these seven priority areas in Box 3. And the results of the PhilCCAP contribute to each of these Strategic Priority Areas. For example, PhilCCAP piloted CCA measures among farming communities in Regions 2 and 6, and CCA measures among fishing communities on Siargao Island; upland watershed management interventions were introduced in Penablanca; measures for enhancing climate resilience of irrigation infrastructure were analyzed and implemented; and new climate information was generated, and new climate services infrastructure were developed.

Box 3: NCCAP Strategic Priorities

Food Security
- Enhanced CC resilience of agriculture and fisheries production and distribution systems
- Enhanced resilience of agricultural and fishing communities for climate change

[29] The NCCAP (2011-2028) is the government's current climate change plan. Other NCCAP strategic Priorities are Human Security, Climate Smart Industries and Services, and Sustainable Energy.

Water sufficiency
- Water governance restructured towards integrated water resources management in watershed and river basins
- Sustainability of supplies and access to safe water ensured
- Knowledge and capacity for CC adaptation in the water sector enhanced.

Ecosystems and Environmental Stability
- Ecosystems protected, rehabilitated and ecological services restored

Knowledge and Capacity Development
- Knowledge on the science of climate change enhanced
- Capacity for CC adaptation and mitigation at the national and local level enhanced
- CC knowledge management established and accessible to all sectors at the national and local levels

Source: National Climate Change Action Plan, 2011

50. **PhilCCAP was also well aligned with the 2004-10 Medium-Term Philippines Development Plan (MTPDP) and Philippine Development Plan, 2011-2016.** On the former, PhilCCAP contributed to the development of CCA models to support innovation in the agriculture sector, and to the environment and natural resources strategy goals of the MTPDP. On the latter, PhilCCAP directly contributed to Agriculture Sector Outcome 4c of 'increased sector resilience to climate change'; Infrastructure Sector Outcome 5c – 'Environmental quality improved'; and Natural Resources Sector Outcome 10c – 'Resilience of natural systems enhanced with improved adaptive capacities of human communities'.

51. **The project was well aligned with, and supported the Bank's engagement strategy with the Philippines**. The Bank's FY10-12 country assistance strategy (CAS) with the Philippines recognized the need to reduce vulnerability to impacts of climate change, which is a threat to economic growth and development. Accordingly, the CAS emphasizes reducing CC risks, and piloting CCA measures in the agriculture and natural resource sectors that will allow development and inclusive growth to continue. PhilCCAP contributed directly to Results Area 4.2, Outcome 1 of the CAS: 'Disaster- and climate change-related risks reduced.' The Country Partnership Strategy (CPS) FY15-18 was also supported by the PhilCCAP. Similar to the CAS, the CPS emphasizes the importance of reducing vulnerability to climate change through increasing physical and financial resilience to natural disaster and climate change impacts (Engagement Area 4). The institutional capacity strengthening on the use of climate change information in planning, and the introduction of adaptation approaches on farms, in upland watershed and coastal areas as part of the PhilCCAP, all contribute to Engagement Area 4. The project contributed data and information on enhancing resilience of irrigation infrastructure to the Participatory Irrigation Development Project (PIDP) in the Philippines (P088926); and provided inputs to the Participatory Rural Development Project (PRDP) (P132317 and P132424).

52. **The relevance of <u>design and implementation</u> is rated substantial.** The design of the activities under PhilCCAP, arranged by components was adequate for achieving its objective. As noted in Section 2.1, the components of PhilCCAP and their respective outcomes were well aligned with the key challenges being faced by the Philippine government in addressing CC. The focus on generation of new climate information, institutional strengthening through increasing the capacity of institutions to use climate information in planning, and the demonstration of new approaches for CCA in the agriculture and natural resources sectors, were all responsive to identified needs of the country at appraisal and that continued to be relevant during project

implementation. The approach of piloting approaches in two provinces was important for 'learning by doing' in terms of CCA, for developing CCA options in a controlled manner, and for building confidence of government ad stakeholders in CCA approaches and planning. The project's results framework presented a clear results chain and linkages among activities, outputs and outcomes, including a clear statement of the project's objective.

53. **The project benefitted from targeted funding for CCA through a grant from the GEF under the Special Climate Change Fund (SCCF).** The SCCF was created as a fund under the UNFCCC to address the specific needs of developing countries for addressing climate change, with adaptation being a top priority of the SCCF. As planning and systemically implementing CCA was relatively new in the Philippines, the grant was strategic for supporting capacity development on CCA through pilots. In this respect, the grant supported development of pilot cases in the Philippines to demonstrate specific institutional and planning improvements, and investments for climate risk management.

54. **During implementation, a number of different agencies of the government were involved in the implementation of the project, which made it multisectoral in its approach, and promoted cross-agency dialogue and convergence on activities.** This was a significant undertaking of the project as such cross-agency dialogue is normally difficult. The Bank's involvement during implementation was also important for bringing technical expertise for example from the agriculture sector and International Finance Corporation (IFC) to support the project, and for supporting the project restructuring to ensure that the objectives could be achieved.

3.2 Achievement of Global Environmental Objectives

55. **Efficacy in achievement of the global development objective is rated substantial.** The rating of the achievement of the objective is based on the two sub objectives of the PDO: (i) to develop approaches that would enable targeted communities to adapt to the potential impacts of climate variability and change; and (ii) to demonstrate approaches that would enable targeted communities to adapt to the potential impacts of climate variability and change. In both cases, the achievement is rated as substantial.

56. **The theory of change underpinning the PDO:** The development and demonstration of approaches that enable targeted communities to adapt to the potential impacts of climate variability and change was contingent on the achievement of certain outcomes: strengthened capacity of selected government agencies for developing CCA approaches; and enhanced provision of climate change information by PAGASA, and in complementary manner, enhanced capacity of agencies to use climate information. Increased knowledge of CCA was a key outcome of the participation of the implementing agencies and other stakeholders in the PhilCCAP. Following the development of approaches was the demonstration of these among pilot communities as "proof of concept" that the tools enabled adaptation in agriculture and natural resource management sectors. The demonstration of approaches contributed to improved farm management capability under climate risk; improved access to risk management options such as weather index insurance; and strengthened ecosystems. The key outcome of the demonstration was the adoption of coping strategies, improved farming practices, and technologies for strengthening ecosystems.

The PDO consists of two distinct sub objectives and each is assessed as follows:

Sub-objective (a) to develop approaches that would enable targeted communities to adapt to the potential impacts of climate variability and change. Rating: Substantial

57. **In order to develop approaches that would enable targeted communities to adapt to climate change the project undertook activities to (i) improve the information base for climate hazards and risk that would influence the design and selection of approaches; (ii) enhance capacity of government staff to use climate hazard and risk information in the development of approaches; and (iii) enhance capacity to identify options for climate change adaptation among agricultural and natural resource-dependent communities.** The approaches developed, which include both methods and tools, included: manual of good adaptation practices; COP web platform; Good Climate Change Adaptation Practices Manual; Climate Change Adaptation Among Farm Families and Stakeholders; ECSFFS for providing extension on climate smart agriculture;
CSDSS; climate resilience-enhanced irrigation infrastructure; WIBCI; and climate resilience-enhanced protected area plans for PPLS and SIPLAS. The development of approaches are captured by the following indicators:

i. % of stakeholders surveyed in the targeted areas who have participated in or are knowledgeable of activities demonstrated by the project to reduce vulnerability or improve adaptive capacity.
ii. Number of agencies adopting the manual of good adaptation practices in terms of the design of adaptation interventions.
iii. Enhanced Climate Smart Farmers Field School (ECSFFS) Resource Manual approved and adopted by DA as the manual for climate-smart farming practices.
iv. Number of adaptation supportive policies in the agriculture and or ENRM Sectors endorsed.
v. Number of automatic weather stations established and utilized for each of the pilot sites.
vi. Number of agencies, institutions, and stakeholders using the climate information generated by PAGASA including hazard maps, monthly seasonal forecasts, and climate projection report for adaptation.

58. **Improve the information base for climate hazards and risk that would influence the design and selection of approaches**. The project supported PAGASA in the development of new climate information for example new climate projections, and making these publicly available. For example, the State of the Philippine Climate 2015 report was supported by the project, and was the first of an intended annual publication that provides a summary of observations of climate trends (rainfall, temperature, typhoon incidence and frequency, ENSO events and monsoons) in the Philippines from 1951 to 2014. New climate projections using the Conformal-Cubic Atmospheric Model (CCAM) model were included in the "Climate Scenarios for the PhilCCAP" publication. Under the project, three automatic weather stations (AWS) were set up in the towns of Peñablanca in Cagayan (Region 2), Mina in Iloilo (Region 6), and San Benito in Siargao Island, Surigao del Norte (Region 13), and these provided data on solar radiation, soil moisture, soil temperature, atmospheric pressure, relative humidity, wind direction/speed, and rainfall which were used in the development of adaptation approaches. For example, data from the AWS were used in generating hazard maps (for Cagayan, Iloilo, PPLS and SIPLAS), climate projections (2030 and 2050), and seasonal climate forecasts at the implementation sites. Trainings were provided for municipal agricultural office staff by PAGASA on the physical maintenance of the AWS equipment and use of data.

59. **Enhance capacity of government staff to use climate hazard and risk information**. Weather forecasting and climate information were made available to agencies by PAGASA and training sessions were conducted with agencies on how to use climate change information in their

work streams. Personnel of NIA, University of the Philippines (UP) and the Housing and Land Use Regulatory Board (HLURB) were trained in using climate information for retrofitting of irrigation facilities, flood modeling, and in local planning. Climate projections (from PRECIS model) and hazard data from PAGASA were used by NIA in the development of the supplemental manual for the planning, design, construction and operation of irrigation infrastructure. Climate hazard maps and climate projections were also used by DENR, and LGUs of PPLS and SIPLAS for revision of the protected area management plans in the respective areas. Hazard maps and climate information were provided to ATI for use in the ECSFFS, including tropical cyclone tracks in the project sites, and potential evapotranspiration data were also generated for two project sites Iloilo and Tuguegarao. Weather forecast information from the AWS was also provided by PAGASA for use in the CSDSS, and to PCIC for the WIBCI development and implementation. Regional Climate Outlook Fora were supported under the project for Regions 2 and 6 in May, June, October 2016, and provided updates on weather and climate forecast information for farmers and extension workers. Going forward, the sharing of climate information is meant to be supported by the protocol on the access and sharing of climate information developed under Component 1 of the project, which includes a policy for access and sharing of climate information among institutions and with the public. The protocol is important for formalizing information sharing, and ensuring clear guidelines on procedures for information sharing, which is sometimes unclear between and within Departments. The CCC will lead on the enforcing of the protocol.

60. **Enhance capacity to identify adaptation options that could enable agricultural and natural resource-dependent communities to adapt to climate change risks.** The project supported the development of climate adaptation guidance tools such as Good Climate Change Adaptation Practices Manual, the Enhanced Climate Smart Farmers Field School (ECSFFS) Resource Manual for Trainers, and the Manual on Basic GIS Mapping using Manifold. The manual of good climate change adaptation practices is a collection of international and local good CCA and mitigation practices that was developed to serve as a resource guide for government agencies, NGOs, private organizations, and other users. The manual was adopted by BSWM, ATI, PAGASA, NIA, PCIC, and DENR. The ECSFFS Manual for Trainers provided guidance to extension personnel on how to use climate information to adapt agricultural systems, and how to deliver extension on climate change adaptations in agriculture. As the manual was approved as the official manual for CCA extension by the DA[30], it harmonizes the way CCA in the Agriculture sector is done in the Philippines. The ECSFFS manual was utilized by GEF5 Sustainable Land Management project in the Philippines in the conduct of FFS with the assistance of ATI. LGUs of Siargao, Iloilo and Cagayan were trained on climate hazard map development using the Manifold software for GIS Mapping, and a guidance document was produced by PAGASA on using Manifold Software. and the result of training was the development of climate hazard maps for municipalities in Siargao, Iloilo and Cagayan. Forty-three persons from the LGUs of Penablanca and Tuguegarao in Region 2 and Iloilo in Region 6, and ATI staff from Region 2 and Region 6 were trained as trainers to deliver the ECSFFS.

61. **Provision of climate change information.** A community of practice (COP) web platform was developed as a clearinghouse of information to support NGAs and LGUs in incorporating climate risk into their operations, including online fora for discussions on different climate risks. The web platform is a dynamic tool that is populated as new information is developed and is managed by the CCC. The various tools and reports developed by PhilCCAP for

[30] Department of Agriculture Memorandum Circular No. 03 approved the ECSFFS manual as the manual for climate smart farming practices.

example the ECSFFS and the "CCA among Farm Families and Stakeholders" toolkit are included on the web platform. The "CCA among Farm Families and Stakeholders" toolkit includes a set of tools that assess and analyze CCA among agricultural households and monitor change over time. Tools developed by other CCA interventions for example the climate proofing for development training toolkit developed with support from GIZ are included in the COP website. A COP user manual was developed, and provides guidance on how to use the online platform including registration, creating and uploading content and creating forum content. There is evidence of use of the COP web platform, where questions were posed to experts requesting information per climate risk, and each of the fora have subscribed members. A total of 46 members are subscribed across all the fora, although some members may not be unique.

Sub-objective (b) to <u>demonstrate approaches</u> that would enable targeted communities to adapt to the potential impacts of climate variability and change" Rating: Substantial

62. **The project demonstrated several of the developed approaches for climate change adaptation among the target communities in Regions 2, 6 and 13, and showed the potential of these for enabling adaptation to the potential impacts of climate variability and change.** These approaches included: ECSFFS for providing extension on climate smart agriculture; CSDSS; climate resilience-enhanced irrigation infrastructure; WIBCI; and climate resilience-enhanced protected area plans for PPLS and SIPLAS. The demonstration of approaches are captured by the following indicators:

i. % of households surveyed in the targeted areas adopt coping strategies, new technologies or improved farming practices to better cope with climate variability and change.
ii. Number of direct beneficiaries of the project.
iii. Number of irrigation infrastructure in PIDP areas redesigned to incorporate CCA parameters recommended by PhilCCAP.
iv. Number of extension workers and farmers who are able to access and utilize the Climate Smart Decision Support tool for rice and corn.
v. Geographic Insurance Unit (GIU) protocol approved and utilized in developing weather index-based crop insurance by PCIC.
vi. Evaluation report issued on the outcome of the weather-index based insurance in two pilot areas.
vii. Number of LGUs supporting the implementation of the climate change adaptation management prescriptions contained in the revised PA plans.

63. **Enhanced climate smart farmers' field school (ECSFFS) and climate smart decision support system (CSDSS)**. 441 farmers in Region 6 and 889 farmers in Region 2 were trained through ECSFFS on climate smart farming, integrated farming system and organic farming, and use of weather and climate information in fertilizer and water management, and crop selection. Six learning sites were established for ECSFFS training that upon completion of training became a local farmer center cum 'learning laboratory for CCA in agriculture'. Farmers in Region 2 participating in the ECSFFS noted decrease in cost of production by 15% because of biomass utilization and vermi-composting; and proper crop management practices. Region 6 farmers similarly noted 30% reduction in cost of farm inputs; these results indicate cost-effectiveness of the adaptation measures. The CSDSS tool for rice and corn provided farmers with guidance for better adapting the management of rice and corn to uncertain weather within a cropping season. Average yield increases from 12 farms under rice in 2014 wet season showed increase in grain yields by about 8% for farms using CSDSS compared with adjacent fields where CSDSS was not used to guide farmer's decisions. The added net benefit of the CSDSS' use was about PHP 5,728/ ha (US$115/ha). Average yield increases from 5 farms under corn in 2014 showed increase in

grain yield by 16% for a farm informed by CSDDS compared to adjacent farm where this was not done, with added net benefit of PHP 9,903/ ha (US$178/ ha). The technologies/ learnings of the ECSFFS and CSDSS are being integrated in the new Adaptation and Mitigation Initiative in Agriculture (AMIA) project of the DA.

64. **Climate resilience-enhanced irrigation infrastructure.** The final feasibility study reports on the proposed improvement works on the Pinacanauan and Jaluar River Irrigation Systems provided recommendations on how to use climate information to re-design irrigation infrastructure to be better suited to the climate variability and change conditions. These recommendations were used to retrofit two river irrigation systems at the sites. At Jalaur, changes to the irrigation system included automation of sluice and intake gates, and construction of settling basin to trap sediments, and ramp to facilitate easy maintenance of the irrigation system. At Pinacanauan, these changes included increase in drainage canal capacity and redesign of the flume to increase water flow capacity. The changes made to the irrigation systems, though not yet assessed, will help to improve the water available for irrigation, and are important adaptation measures for irrigated agriculture systems particularly during the 'dry' or summer seasons in the Philippines or during conditions of drought exacerbated by climate change. The retrofitting was expected to (i) increase supply of irrigation water to farms served by the irrigation systems; (ii) increase irrigation service area; (iii) reduce downstream incidences of downstream flooding due to expansion of the irrigation system; and (iv) reduce the operation and maintenance costs of the river irrigation systems. The two retrofitted river irrigation systems were within NIA's Participatory Irrigation Development Project (PIDP),[31] and the PhilCCAP therefore contributed to the general robustness of the investments made for irrigation development under the PIDP.

65. **Weather index based crop insurance (WIBCI)**. The evaluation report on the piloting of WIBCI in Regions 2 and 6, provided details on the process of piloting the WIBCI with farmers over successive planting seasons for rice and corn crops, and in so doing provided valuable recommendations for (i) the enhancement of the tool; (ii) the scale-up of the tool and considerations for supporting climate information, involvement of private insurance providers; and (iii) the role of the government in supporting the weather based index insurance. For example, the report emphasized the importance of detailed weather and climate information for the development of the GIUs and the implementation of the WIBCI, and recommended the expansion of weather stations. The report was also key for demonstrating the feasibility of this approach for reducing weather and climate risk as a CCA strategy. 201 rice and 333 corn farmers in Region 2 participated in the WIBCI pilot between 2014 and 2016; 73 rice farmers in Region 6 participated in the WIBCI pilot. Of these, 54 rice farmers suffered crop losses and received total indemnity payments of PHP290,856 (US$5817); and 180 farmers received a total indemnity payments of PHP 716,652 (US$14,333).

66. **Climate resilience-enhanced protected area plans.** The project supported the development of recommendations in the PPLS Management Plan for increasing the resilience of upland forest ecosystem in Penablanca thru promoting agroforestry for improving forest cover and biodiversity, reducing soil erosion, conserving water resources, and reducing downstream flooding. Capacity building activities were provided for 77 farmer-cooperators of PPLS, and

[31] The objectives of the PIDP (P088926) were to transform NIA into a strategically focused and financially viable service agency through the implementation of the Rationalization Plan; enhance participation of IAs through capacity building in irrigation development and management and Irrigation Management Transfer; and improve irrigation service delivery through rehabilitation, improved Operation & Maintenance (O&M) and Modernization of 58 National Irrigation Systems (NISs).

included farm planning that led to development of agroforestry farm plans; soil and water conservation (SWC) training that led to the implementation of SWC measures and establishment of watershed areas that are supported by a MOA between DENR and the 77 farmers, and plantation development that resulted in 134 ha planted with agroforestry trees. Recommendations for enhancing the resilience of the SIPLAS Management Plan were developed,[32] and included zoning of areas, and guidance on M&E. PAMB Resolution No. 2015- 44, adopted the Updated and Climate-Smart SIPLAS Management Plan thereby increasing likelihood of uptake of measures. The project supported rehabilitation of forty (40) hectares of mangrove areas in partnership with local people's organizations in Dapa municipality. Mangrove rehabilitation and conservation for coastal resilience and to support livelihoods, are also included in the SIPLAS management plan.

Table 3: Achievement of PDO and Intermediate Outcome Indicators

PDO Sub-objectives	PDO Indicators	Baseline Value	Target (PAD)	Actual (ICR)
To develop and demonstrate approaches that would enable targeted communities to adapt to the potential impacts of climate variability and change	% of households surveyed in the targeted areas adopt coping strategies, new technologies or improved farming practices to better cope with climate variability and change	0	20	35
	% of stakeholders surveyed in the targeted areas who have participated in or are knowledgeable of activities demonstrated by the project to reduce vulnerability or improve adaptive capacity	0	35	46.5
	Number of direct beneficiaries	0	2,031	2,104

3.3 Efficiency

67. **Efficiency is rated substantial.** The benefits of the project are substantive considering that the project was a relatively small investment of less than US$5 million. In particular, it has produced a variety of tools and approaches for CCA, led to the convergence of agencies for developing adaptation options for example PAGASA, BSWM and ASTI on automatic weather station (AWS) harmonization and planning, and PCIC, PAGASA, BSWM, and ATI on the WIBCI development and implementation, and developed capacity in the use and integration of climate data and information into work programs. There are public good, environmental and societal benefits which were not quantified but that arise from project activities, for example the rehabilitation of vegetation in PPLS and in SIPLAS provides several ecosystem services that benefit the Philippines for example marine and terrestrial biodiversity conservation, carbon sequestration, and hydrologic regulation. Reduced use of inorganic fertilizers on farms have onsite soil conversation benefits as well as downstream and coastal benefits of less polluted water

[32] 9 SIPLAS municipalities entered in to a MOA with DENR and provincial government of Surigao del Norte for implementation of the SIPLAS mgt. plan.

to communities and ecosystems there.The majority (56%) of project funds were allocated to development and demonstration of CCA strategies which is sensible given the need to finance "hard elements" like equipment. In terms of project design, it was important and strategic to involve agencies of DENR and DA as implementing agencies for components that were aligned to their work program in order to create incentives for delivery on the project components. Also on project design, it was also efficient to focus on three regions for piloting the adaptation approaches that would allow for comparison of results, while at the same time not spreading resources too thin. It is noteworthy that the project was able to achieve the project development objective with 78% disbursement, indicating that the project was able to achieve more with less.

68. **Economic analyses were conducted for different measures for enhancing resilience of irrigation infrastructure in order to determine the most cost effective option.** The analysis was conducted to help prioritize the best options for rehabilitating irrigation infrastructure, and the approach serves as a model for rehabilitating other types of irrigation infrastructure. No other activity under the PhilCCAP required this detailed economic analysis. Net present value (NPV), economic internal rate of return (EIRR), and benefit-cost ratio (B/C) assessment was applied to three options for enhancing resilience of irrigation infrastructure in the Jalaur and Pinacanauan river irrigation systems to determine the most cost-effective measures. The results of analysis are presented in Table 4 and full details of the economic analysis including assumptions and sensitivity analysis for EIRR, are included in Annex 3. Based on the results of the analysis, retrofitting appears to be more beneficial than retrofitting and climate proofing combined. New construction with climate proofing was assessed to yield negative discounted cash flows, and a cost to benefit ratio of less than 1 and will not be a favourable option.

Table 4: Economic analysis of options for enhancing resilience of river irrigation systems at Jalaur and Pinacanauan river irrigation systems

Options	**EIRR (%)[33]**	**NPV at 15% (PhP million)**	**B/C**
Jalaur river irrigation system			
Retrofitting	30.64	235.04	1:2.25
Retrofitting with Climate Proofing	20.57	164.58	1:1.44
New Construction with Climate Proofing	14.14	-124.57	1:0.92
Pinacanauan river irrigation system			
Retrofitting	20.59	38.65	1:1.46
Retrofitting with Climate Proofing	19.84	34.66	1:1.40
New Construction with Climate Proofing	12.93	-50.90	1:0.81

69. **Simple economic analysis undertaken for some of the other introduced adaptation measures indicate that these were cost effective.** The annualized costs of modern and traditional fish pots were estimated using data collected from beneficiaries of the fish pots on Siargao Island,[34] and it was found that for traditional fish pots the estimated annualized cost was PhP 4,545 and for modern fish pots the estimated annualized cost was PhP 836 (see details in Annex 3). Fisherfolk here also noted increased incomes from the fishpots. The PCIC noted that

[33] NEDA had established an EIRR hurdle rate of 15% at the time of calculation. The hurdle rate was lowered in September 2016 to 10%.

[34] Traditional Fish pots are made from bamboo and last for about 4 months. Modern fish pots are made from plastic mesh and last for ten years with maintenance costs to replace the frame of the fish pot once in the lifetime of the pot.

the economic benefits of the WIBCI vs. traditional agricultural insurance were derived from the reduction in settlement response time (time for payment of indemnities), and the reduced transaction costs associated with field verification and processing of claims.[35] These benefits have been noted by other weather index-based insurance schemes in other parts of the world. PCIC also noted that the development of the WIBCI is however an expensive undertaking, as it requires the development of GIUs which are highly technical, and the systems to provide weather information must be in place. A full economic analysis of the WIBCI should consider the start-up costs, the enabling services, and the costs of administering the insurance product over time. Case studies of farmers participating in the ECSFFS, have noted reductions in input costs after implementing CCA measures. For example, in Region 6, farmers have noted an approximate 30% reduction in the cost of farm inputs, as farmers use less synthetic fertilizers and developed their own mulch. Similarly, in Region 2, farmers noted decreased costs of production by 15% because of biomass utilization, vermi-composting and new crop management practices. While these results are positive, the confidence in the results could be strengthened with more robust data collection on input costs (PhP), output (kgs of produce), and change in labour (no. of hours for undertaking a particular activity).

3.4 Justification of Overall Outcome Rating

70. **The overall outcome rating for the project is satisfactory.** The rating is based on substantial achievement of the GEO, high relevance of the objectives, substantial relevance of design and implementation, and substantial rating of efficiency. The project's objectives were found to be appropriate in the context of the vulnerabilities that the Philippines faces due to climate change, and were important for helping to advance the understanding and skills for adapting to climate change. The project's achievements, as captured by the indicators and other evidence indicate that the two objectives of the PDO were achieved. The project was also found to be implemented in cost-efficient manner, and provided several public good, environmental and societal benefits.

3.5 Overarching Themes, Other Outcomes and Impacts

(a) Poverty Impacts, Gender Aspects, and Social Development

71. **Although social development impacts in particular poverty and gender or were not formally measured during project implementation, observations indicate that there were some poverty and gender impacts**. As noted in the previous section, there is anecdotal evidence of income increase among some farmer and fisherfolk beneficiaries who suggest that the CCA measures may help improve incomes and contribute to poverty reduction. More evidence is however needed to substantiate this. An interesting development within a fisherfolk people's organization (PO) in Dapa, Siagao Island was that the increased income from the modern fish pots was used as capital for micro-loans for members of the organization. On gender, it was observed that the PO of the project-supported abalone farm livelihood program in SIPLAS, is almost exclusively composed of women. For example, the PO only has seven men in its roster of 42 members. Another organization, the Tawin Tawin Fisherfolks Association, which completed the reforestation of 20 hectares of mangrove areas in Siargao, has women as its president,

[35] In the WIBCI the trigger for indemnity payments is linked to a certain level of weather peril that is assumed to result in a certain level of crop damage. In traditional agricultural insurance, the indemnity payments are linked to actual field verification of crop losses. The transaction costs of WIBCI is therefore reduced as there is reduced need for field verification following a weather event.

secretary and treasurer. In the farming communities of Regions 2 and 6, it has been noted that nearly all attendees to meetings with project implementers are women. These observations suggest that thru the project women may have been empowered to leadership roles in their respective communities.

(b) Institutional Change/Strengthening

72. **There have been notable results on institutional strengthening and capacity development as a result of PhilCCAP that are expected to have long-term benefits for the Philippines.** Institutional frameworks for monitoring and evaluating climate-related risks and developing and promoting appropriate adaptation measures have been strengthened through better climate information systems and new weather stations, facilitating integration of climate data and information into sector and agency operations. Several planning processes have been enhanced because of the PhilCCAP. Extension services through the ECSFFS, and the COP knowledge platform are helping to ensure strong community participation in CCA and awareness of its benefits, and practices. There have also been experiences of convergence of data, expertise and resources under the project which also support institutional strengthening. At the macro level this convergence is among DOST, DA and DENR, and at the agency level, for example all PhilCCAP agencies participated in the development of the enhanced climate smart farmer field school (ECSFFS) manual; PAGASA, BSWM and ASTI on harmonization of automatic weather stations and planning to improve the climate information base across the Philippines; PCIC, PAGASA, BSWM and ATI on development and implementation of the weather index based crop insurance product. Convergence is likely to continue for the generation of weather and climate information – supported by the AWS investment plan, and between PAGASA and other agencies.

3.6 Summary of Findings of Beneficiary Survey and/or Stakeholder Workshops

73. **Neither a beneficiary nor stakeholder workshop was undertaken for the preparation of the ICR.** Feedback from implementing agencies are included in the Borrower's Report and the wrap-up presentation for the ICR mission.

4. Assessment of Risk to Development Outcome

74. **Risk to development outcome is rated moderate.** Assessments of specific types of risk considered in determining the overall risk are presented below.

75. **Technical risks are rated moderate.** These risks have to do with (i) the technical capacity to develop some adaptation measures, for example the WIBCI, which requires the development of highly technical GIUs and consistent weather information to support the WIBCI implementation; and (ii) the turnover of regional technical staff resulting in loss of institutional memory and built-up capacity. Mitigation measures developed by the project to offset these risks include: (i) development of technical documentation for adaptation measures including developing the GIUs; (ii) installation of three new AWS; and (iii) development of an AWS investment plan that identifies the investment needs for weather stations across the Philippines, and annual maintenance costs for AWS.

76. **Financial risks are rated moderate**. The sustainability of interventions relies on the commitment of the government to make financing available to support CCA interventions. A number of government financing sources now exist to support CCA interventions in the

agriculture and natural resource sectors including the People's Survival Fund (PSF), AMIA, and IPAC, and the government is enhancing measures to better direct and coordinate funding for CC through climate change expenditure tagging, the Risk Resiliency Program, and the Risk, Resiliency and Sustainability Program under development.

77. **Political risks are rated moderate**. This type of risks has to do with the change in priorities with the change in municipal government. It is mitigated partly by the institutionalization of some tools and approaches by different agencies, and by the sustained interest of the central government in taking action on climate change, and supporting action at the local level on climate change through the LCCAP, comprehensive land use plans (CLUPs) and comprehensive development plans (CDPs).

78. **Institutional support risk is rated moderate.** Institutionalization of tools has occurred for some tools, but not in every case. This risk is offset by the plans for institutionalization developed by the different implementing agencies, for example NIA plans to officially adopt guidelines on irrigation design for CC by December, 2017, and CCC is integrating the IDMF into the process of developing the national adaptation plan as part of its NCCAP.

79. **Natural disaster exposure/ environmental risks are rated high.** The Philippines has high exposure to typhoons, which places its population, infrastructure and assets at risk of damage from flooding, high winds etc. The PhilCCAP has developed several measures to reduce risks associated with typhoons and other hazards such as drought, through enhancing resilience of infrastructure and livelihoods, and increasing adaptive capacity.

80. **Economic and socials risks are rated low.** There is recognition among communities in the targeted areas of climate change, the risks its poses and the need to act differently in response to climate change. There is a reception to the concept of adaptation, and the development and demonstration of adaptation approaches especially on farms shows how these could be done, and in a manner that can lead to improvements in livelihood, for example through improved economic returns.

5. Assessment of Bank and Borrower Performance

5.1 Bank

(a) Bank Performance in Ensuring Quality at Entry: Satisfactory

81. **The design of PhilCCAP benefitted from extensive consultations and stakeholder workshops** with upper-management and technical government officials, local government officials, civil society organizations including NGOs, academia, people's organizations, farmers, and development partners involved in CCA – DFAT, GIZ, and UNDP, and with project leaders of the Environmental and Natural Resources Project (ENRMP) and PIDP. The project design also incorporated lessons learnt from other Bank interventions (see Box 1) to ensure that the project had technical soundness, feasibility, and incorporated good practices; and adopted operational guidance from other Bank-supported interventions like the ENRMP and PIDP. The project was also well aligned with the Bank's engagement with the Philippine government through the MTPDP 2004-2010 and PDP 2011-2016, and in this manner, the project was well placed to make a strong contribution to the agreed results in the MTPDP and PDP. Certain fiduciary covenants were included to address some of the weaknesses identified in the government's fiduciary systems, and technical assistance and training for DENR and DA on procurement and financial management were also designed as part of the project.

(b) Quality of Supervision: Satisfactory

82. **The task team provided close and regular supervision of the PhilCCAP during its implementation.** Twelve supervision missions were undertaken, at about six-month intervals during the implementation of the project between 2011 and 2016. The missions included subject matter specialists who provided technical guidance to the implementing agencies, and undertook site visits to provide technical feedback on the project progress Formal supervision missions took place twice per year during the implementation, during which the task team consisting of the task team leader, financial, procurement and safeguard specialists led discussions with implementing agencies, monitored progress of the project against the project objective, its physical progress and disbursement progress. This however did not preclude, the government's interaction with the Bank outside of the formal mission period. Technical specialists were also included in need-based supervision missions to provide specific guidance to components of the project. Implementing agencies noted improvement in the quality of supervision over time and design of supervision missions such that there was less formality and more of open discussion which facilitated sharing and problem-solving. The Bank provided consistent advice to the implementing agencies when the project faced delays in implementation. For example, the Bank recommended the PMO to submit a PSC-approved Catch-Up Plan and accordingly revised work and financial plans to the Bank, and as part of this Plan, the DA and DENR should prepare a cash disbursement program and projection to ensure the adequacy of the cash held in the Designated Account. The Bank facilitated delay in the recoupment of the Designated Account balance, and increase of the project's Designated Account balance to support the government in completing the project. The Bank joined DENR and DA in discussions with DBM to effectively address the constraints in project implementation posed by the DBM's manner of issuing SAROs. A midterm review was undertaken that provided opportunity for in-depth assessment of the project, and revision of the project, including to refine the results indicators.. Documentation of supervision missions, and fiduciary documentation were adequately done, and collated in the Bank's document repository system. Restructuring of the project was facilitated by the Bank to improve the attribution and measurement of project results. At project closing, the Bank provided adequate guidance to the project implementing agencies on fiduciary closing procedures.

(c) Justification of Rating for Overall Bank Performance: Satisfactory

83. **The satisfactory rating is in line with the evaluation criteria and ratings of satisfactory for quality of entry, and satisfactory performance during supervision.**

5.2 Borrower
(a) Government Performance: Satisfactory

84. **Throughout the preparation and implementation of the PhilCCAP the government has demonstrated strong ownership of the project, and high-level participation in the project**, for example at the level of Secretary of the DA and DENR. The existing legal and institutional framework (Climate Change Act, NCCAP, and CCC) for supporting the project was developed prior to the project, and supported the implementation of the project. The government facilitated a participatory and consultative project preparation process, involving stakeholders at all levels-heads of national government departments and technical staff; and representatives of local governments. Significant counterpart funding was provided by the government to support

project implementation through contribution of staff time, and there was good compliance of the government with the legal covenants, and fiduciary measures including procurement. The government also maintained stakeholder inclusiveness during the implementation through the public sharing of project progress and achievement, and the undertaking national workshops for dissemination of project products.

(b) Implementing Agency or Agencies Performance: Moderately Satisfactory

85. **The six implementing agencies of the project demonstrated strong commitment to the project**. This commitment was reflected in the high completion rate of activities for the project. The agencies performed satisfactorily in terms of fiduciary requirements, and showed improvements over the project in submitting liquidation of project expenditure reports on a timely basis. Participation of agencies in project activities, project supervision, and dissemination was satisfactory among the implementing agencies. The PMO established and housed in the DENR supported the implementation of the project and undertook M&E functions adequately. The PMO was staffed using project funds, and as well the government contributed staff time to the PMO team. A similar project management arrangement was planned for the DA through Special Projects Coordination and Management Assistance Division (SPCMAD), but over the course of implementation of the project, the SPCMAD focused on the fiduciary aspects of the project for the DA agency-led components of the project. The PMO performed satisfactorily in monitoring and reporting on the implementation of the project. Closing arrangements for the project were handled satisfactorily by the project.

86. **A shortcoming in the implementing agencies' performance was the significant delays in the downloading of project funds to implementing agencies** due to the DA memorandum circular No. 001 issued by the COA in 2012, which barred agencies with unliquidated funds from previous projects to receive funds for another project. This delay in the release of funds resulted in slower than planned completion of project activities. By the close of the project disbursement was about 78%. The shortfall in disbursement from the target was due to (i) inability to complete two consultancy contracts and workshop (value $64,000) for rehabilitation of irrigation infrastructure as a result of change in administrative leadership at NIA; (ii) cancellation of some equipment for PAGASA that could not be procured and delivered because of late release of project funds (value $321,000); (iii) inability to contract PhilRICE for the GIU development due to late release of funding to PCIC (value $38,000); and (iv) and the cancellation of a study tour on weather index insurance planned for PCIC officials (estimated at $200,000).

(c) Justification of Rating for Overall Borrower Performance: Moderately Satisfactory

87. **The moderately satisfactory rating is in line with the evaluation criteria and ratings of satisfactory for government performance, and moderately satisfactory performance of implementing agencies during implementation of the project.**

6. Lessons Learned

88. **Lesson: Pilot projects such as PhilCCAP require a clear and upfront methodology for assessing costs and benefits, in order to properly assess the pilot.** The pilot project is essentially an experiment to understand if an approach is feasible, and replicable. A critical aspect of feasibility is the benefits and costs of implementing the project. Projects often fail to devote

sufficient attention in systematically assessing the costs and benefits of interventions, and this ultimately challenges conclusions about their feasibility, and decision on replication and scale up. The PhilCCAP as a pilot was not designed to capture this aspect of feasibility, and only collected costs and benefits data for one intervention, and undertook subsequent economic analysis. The emerging lesson here is about the importance of clear and upfront methodology for assessing costs and benefits of CCA interventions. Based on this and other experiences of projects of similar type and scale, it is recommended to develop in collaboration with implementing agencies, templates and guidelines for data collection on benefits and costs.

89. **Lesson: Climate change is a cross-cutting issue which requires multisectoral and multi-agency engagement; such engagement requires project design that is flexible, and accommodates the time it takes for cross-sectoral collaboration.** PhilCCAP facilitated convergence of DA, DENR, and DOST agencies on a number of CCA interventions, and subsequent lessons emerging from the experience of these convergence opportunities are that they require flexibility to accommodate (i) time and space to learn how to work with multiple sectors and agencies; and (ii) the iterative process required to ensure that that agencies derive sufficient benefits from convergence.

90. **Lesson: Early orientation and sustained engagement of local government is essential to achieve progress in climate change adaptation and sustainability of introduced interventions**. A challenge in the Philippines, and in other countries, is the fairly high turnover of local government staff. In the case of the Philippines this has potential to occur every three years. With changes in local government there are likely to be changes in priorities, and therefore government and financial support at the local level are important. The experience of PhilCCAP was that early engagement with new local government, and sustaining this engagement through integrating local government in project activities, was important for the progress of the project, and is likely to impact on its sustainability. The key lesson here being that early orientation and sustained engagement with local government is essential for progress and sustainability of CCA initiative. Related to this point is the need to align CCA with the development priorities of the local government. Having robust data on the costs and benefits of CCA interventions, help to make the case for the importance of CCA interventions as part of development.

7. Comments on Issues Raised by Borrower/Implementing Agencies/Partners

(a) Borrower/implementing agencies

The evaluations of the Bank and the borrower are broadly in agreement and the Bank has no comments on issues raised (see Annex 7) in the Borrower's completion report. The Borrower had not submitted comments on the Bank's final ICR draft prior to the ICR date. Any comments received will be publicly disclosed as a separate document in the project files in WBDocs and on the Bank's external website.

(b) Cofinanciers

There were no co-financiers for the project.

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Annex 1. Project Costs and Financing

(a) Project Cost by Component (in USD Million equivalent)

Components	Appraisal Estimate (USD millions)	Actual (USD millions)	Percentage of Appraisal
Component 1: Strengthening the enabling environment for climate change adaptation.	0.59	0.15	25.4
Component 2: Demonstration of climate change adaptation strategies in the agriculture and natural resources sectors.	2.944	2.2	74.7
Component 3: Enhanced provision of scientific information for climate risk management.	1.03	0.63	61.2
Component 4: Project coordination.	0.4	0.90	225
Total Project Costs	4.974	3.88	78.1

Note the costs of the components in the above table do not reflect expected reimbursement of unutilized funds to the Bank.

(b) Financing

Source of Funds	Type of Cofinancing	Appraisal Estimate (USD millions)	Actual (USD millions)	Percentage of Appraisal
Borrower		50.45	6.95	13.8
Global Environment Facility (GEF)		4.97	3.88	78.1
Total Financing		55.42	10.83	19.5

Annex 2. Outputs by Component

Table 5: Project Components and Outputs

Component	Main Outputs
1. Strengthening the Enabling Environment for Climate Adaptation	Community of Practice User Manual Good Climate Change Adaptation Practices Manual Protocol on the access and sharing of climate information
2. Demonstrating Climate Change Strategies in the Agriculture and Natural Resources Sector	
2.1 Climate-Proofing Agricultural Infrastructure	Final Feasibility Study Report on the Proposed Improvement Works on Pinacanauan and Jalaur Irrigation Systems
2.2 Enhancing delivery and effectiveness of extension services for farm-level climate risk management	Enhanced Climate-Smart Farmers' Field School: Program Manual for Trainers Protocol on Geographic Insurance Unit (GIU)
2.3 Pilot test the feasibility of weather index-based crop insurance	Report on the Pilot-Testing the Feasibility of WIBCI
2.4 Strengthening Climate Change Resilience through Improved Management of Protected Areas	Penablanca Protected Landscape and Seascape (PPLS) Management Plan Siargao Islands Protected Landscape and Seascape (SIPLAS) Management Plan Climate Change Adaptation Among Farm Families and Stakeholders: A Toolkit for Assessment and Analysis
3. Enhanced provision of scientific information for Climate Risk Management	State of the Philippine Climate 2015 Climate Change Scenarios for the Philippine Climate Change Adaptation Project with accompanying policy brief Manual on Basic GIS Mapping using Manifold

Table 6: Evidence and sources of data for indicators in the Results Framework

Revised Indicator	Evidence and Source of Data
Percent of households surveyed in the targeted areas adopt coping strategies, new technologies or improved farming practices to better cope with climate variability and change.	• AIDSI final Evaluation Report on the PhilCCAP Outcome Indicators
Percent of stakeholders surveyed in the targeted areas who have participated in or are knowledgeable of activities demonstrated by the	• AIDSI final Evaluation Report on the PhilCCAP Outcome Indicators

Revised Indicator	Evidence and Source of Data
project to reduce vulnerability or improve adaptive capacity.	
Number of direct beneficiaries of the project.	• Project Management Office (PMO) progress update reports. Beneficiaries include: farmers and extension workers in Regions 2 and 6 that participated in the enhanced farmers' field school and weather index based crop insurance pilot; upland farmers in PPLS; and fisherfolk in SIPLAS.
Number of adaptation supportive policies in the agriculture and/or ENRM sectors endorsed.	• Protocol on the access and sharing of climate information submitted to CCC for endorsement in Feb. 2016
Number of agencies adopting the manual of good adaptation practices in terms of the design of adaptation interventions.	• PMO Progress Update Reports. The six agencies include BSWM, ATI, PAGASA, NIA, PCIC, DENR (and its attached agencies).
Enhanced Climate Smart Farmers Field School (ECSFFS) Resource Manual approved and adopted by DA as the manual for climate-smart farming practices.	• ECSFFS Manual • Department of Agriculture Memorandum Circular No. 03, Series of 2016 approving the Manual
Geographic Insurance Unit (GIU) protocol approved and utilized in developing weather index-based crop insurance by PCIC.	• The GIU protocol was finalized and approved by the PCIC on May 03, 2016
Number of irrigation infrastructure in PIDP areas redesigned to incorporate CCA parameters recommended by PhilCCAP.	• Feasibility studies for Pinacanauan (Region2) and Jalaur (Region 6) with recommendations for incorporating CCA parameters • Supplemental manuals on planning, design, construction and operation and maintenance of irrigation systems approved by NIA
Evaluation report issued on the outcome of the weather-index based insurance in two pilot areas.	• PCIC Final Evaluation Report
Number of LGUs supporting the implementation of the climate change adaptation management prescriptions contained in the revised PA plans.	• Memorandum of Agreement (MOA) between Protected Area Management Board (PAMB) of PPLS and DENR instituting joint management with the regional DENR of the community watersheds in PPLS. • MOA signed by local chief executives of nine LGUs and PAMB in SIPLAS • Updated protected area management plans for PPLS and SIPLAS
Number of extension workers and farmers who are able to access and utilize the Climate Smart Decision Support (CSDSS) tool for rice and corn.	• Records of participation in CSDSS training, and records from BSWM/ IRRI on CSDSS users • 19 extension workers used CSDSS by June

Revised Indicator	Evidence and Source of Data
	2016 – the extension workers are considered the users of the CSDSS. • 17 farmers participated in the field testing of CSDSS
Number of agencies, institutions, and stakeholders using the climate information generated by PAGASA including hazard maps, monthly seasonal forecasts, and climate projection report for adaptation.	• PMO progress update reports. Institutions and stakeholders included: • NIA (feasibility studies); BSWM (ECSFFS Manual); ATI (ECSFFS); PCIC (WIBCI); PhilRice (WIBCI); OIDCI (PA Management Plans) • LGUs – Penablanca; Tuguegarao; Janiuay; Mina; Pototan; Dumangas • LGUs of SIPLAS: Burgos; Dapa; Del Carmen; General Luna; Pilar; San Benito; San Isidro; Santa Monica; Socorro
Number of automatic weather stations established and utilized for each of the pilot sites.	• Reports of PAGASA; sites visits to weather stations
Project Steering Committee reviews project progress every six months and PMO provides monthly status update identifying implementation bottlenecks, issues, and actions as reported in the minutes.	• Monthly and quarterly progress reports submitted by the PMO.

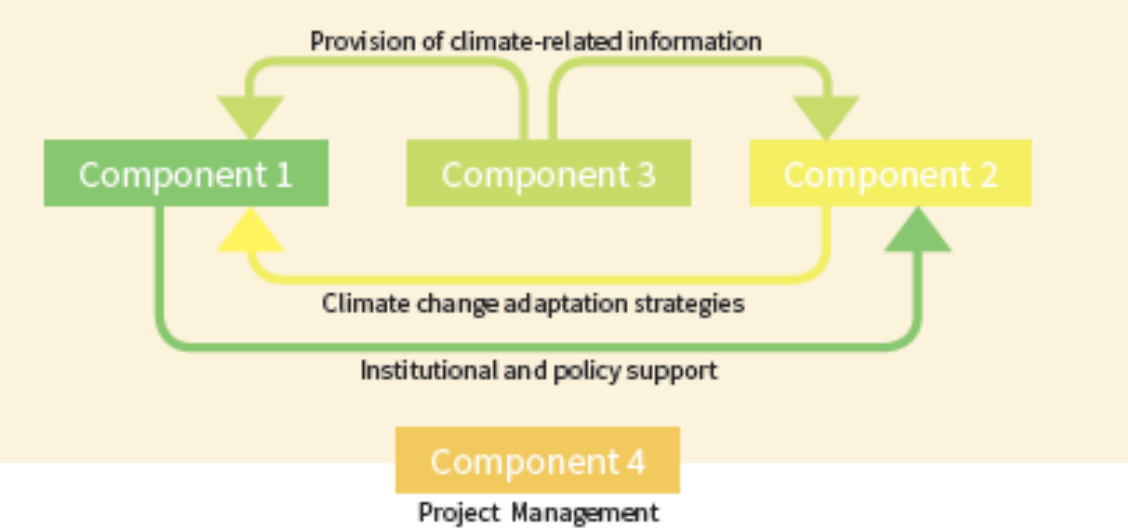

Figure 2: Relationships between Components

Source: Borrower's Project Completion Report

Table 7: Changes to Indicators in the Results Framework

Original Indicator	Change to indicator after restructuring	New/ Revised Indicator
20% of households surveyed in the targeted areas adopt coping strategies, new technologies or improved farming practices to better cope with climate variability and extremes	Revised	Percent of households surveyed in the targeted areas adopt coping strategies, new technologies or improved farming practices to better cope with climate variability and change.
Among stakeholders surveyed in the targeted areas 35% have participated in or are knowledgeable of activities demonstrated by the project to reduce vulnerability or improve adaptive capacity	Revised	Percent of stakeholders surveyed in the targeted areas who have participated in or are knowledgeable of activities demonstrated by the project to reduce vulnerability or improve adaptive capacity.
	New	Number of direct beneficiaries of the project.
Approval of adaptation-friendly policies in the agriculture and/or ENRM sectors (such as revised rural infrastructure guidelines, revised extension guidelines, modified training curricula).	Revised	Number of adaptation supportive policies in the agriculture and/or ENRM sectors endorsed.
DENR and DA regularly use climate screening tool to assess projects in the annual work plan (incorporated in project assessment criteria).	Dropped	
Best-practice manual developed by the project being utilized in the design of other adaptation interventions in the country.	Revised	Number of agencies adopting the manual of good adaptation practices in terms of the design of adaptation interventions.
	New	Enhanced Climate Smart Farmers Field School (ECSFFS) Resource Manual approved and adopted by DA as the manual for climate-smart farming practices.
	New	Geographic Insurance Unit (GIU) protocol approved and utilized in developing weather index-based crop insurance by PCIC.
Irrigation infrastructure in two PIDP irrigation systems is redesigned/ rehabilitated to	Revised	Number of irrigation infrastructure in PIDP areas redesigned to incorporate CCA parameters recommended by PhilCCAP.

Original Indicator	Change to indicator after restructuring	New/ Revised Indicator
incorporate CCA parameters recommended by PhilCCAP.		
Evaluation report issued on the outcome of the weather-index based insurance pilot.	Revised	Evaluation report issued on the outcome of the weather-index based insurance in two pilot areas.
At least 25% of farmers surveyed in the targeted areas who receive extension advice apply an element of the new extension packages developed with project support (for example, use weather data and/or climate projections in making farming decisions, use of on-farm rainwater harvesting or other soil moisture management technologies).	Dropped	
Revised management plans for PPLS and SIPLAS incorporates climate change adaptation activities and are being implemented.	Dropped	
	New	Number of LGUs supporting the implementation of the climate change adaptation management prescriptions contained in the revised PA plans.
	New	Number of extension workers and farmers who are able to access and utilize the Climate Smart Decision Support tool for rice and corn.
Completion of documented designs for apposite information delivery to users in Components 1 and 2 sub-projects	Dropped	
Documented evidence that the information has been delivered and used throughout all subcomponents of Components 1 and 2 in appropriate ways to add value consistent with the original documented designs or modified according to updated designs.	Revised	Number of agencies, institutions, and stakeholders using the climate information generated by PAGASA including hazard maps, monthly seasonal forecasts, and climate projection report for adaptation.

Original Indicator	Change to indicator after restructuring	New/ Revised Indicator
	New	Number of automatic weather stations established and utilized for each of the pilot sites.
Project Steering Committee reviews project progress on a six monthly basis as reported in the minutes.	Revised	Project Steering Committee reviews project progress every six months and PMO provides monthly status update identifying implementation bottlenecks, issues, and actions as reported in the minutes.

Annex 3. Economic and Financial Analysis
(including assumptions in the analysis)

3.1 Economic analysis of options for enhancing irrigation infrastructure to be climate resilient

The options for enhancing the irrigation infrastructure were: (1) Retrofitting; (2) Retrofitting with Climate Proofing: (3) New Construction with Climate Proofing (assumes no existing irrigation and drainage facilities in the area).

Jaluar River Irrigation System (Source: Jaluar River Irrigation System, Final Feasibility Report).

Summary of proposed Civil Works for Options 1 and 2 for are provided in the Table below:

Table 8: Summary of proposed civil works for options 1 and 2 for the Jalaur River Irrigation System

Actions	**Option 1: Retrofitting**	**Option 2: Retrofitting with climate proofing**
Diversion Dam and Appurtenant structure	Modification of skimming weir	Overall repair and modernization including automation of sluice and intake gates
Construction of settling basin and ramp	Regular removal of deposited silt is mandatory	Regular removal of deposited silt is mandatory
Provisions of long crested weirs	To control water level and improve distribution of available water	To control water level and improve distribution of available water
Canal lining	To increase canal velocity and capacity	To increase canal velocity/ capacity and irrigated area
Construction of Drainage Facilities		Construction of adequate drainage facilities for the whole service area

Assumptions in the Economic Analysis

Pricing of Agricultural Outputs and Inputs

a. Agricultural Outputs (Rice)
The financial and economic farm gate price of paddy rice was derived from IBRD Commodity Price Forecast of April 13, 2013. Appropriate adjustments were made for the freight and insurance, quality differentials and internal cost. For by products, the prevailing prices in the project area were used.

b. Agricultural Inputs
Fertilizer
The financial and economic price of fertilizers of (Urea, Triple Super Phosphate, and Muriate of Potash) were also derived based on the IBRD Price Commodity Forecast of April 13, 2013

adjusted for ocean freight and Insurance and internal distribution cost to arrive at the farm gate prices.

Seeds and Agrochemicals

The price of seeds used in the economic analysis is those prevailing in the subproject area. For Agrochemicals, the prevailing prices used in the financial analysis were adjusted by applying a factor of 1.17 for purposes of the economic analysis.

Cost of Labor, Draft Animals and Farm Machineries

For purposes of economic analysis, the current wage rate for farm labor of P200 per day was shadow priced by applying a conversion factor of 0.6; tractor rate for land preparation was average to about P4, 500/ ha and was shadow priced by a factor of 1.15, while the cost of draft animal was priced at the prevailing rate of P150 per animal day.

Cost of Rice Production

The cost of rice production was computed on a per hectare basis under "without" climate proofing" and "with" climate proofing conditions, however, due to the assumption that there will be no change in yields in the future "with" climate condition the cost of rice production will also be the same as "without" the project. On the basis of physical input requirements for rice crop production and the price assumption used, the financial and economic costs of rice production per hectare were estimated.

Economic cost of Farm Labor

The labor requirements in all the farming activities starting from seedbed preparation up to the storing of production were accounted. The prevailing average wage rate in the service area was P200 per man-day. The economic value of farm labor was determined by applying a shadow wage rate factor of 0.6. The total economic cost of farm labor in the future without retrofitting is P136.04 million while with retrofitting is P164.528 for the "without" climate proofing and the future "with" climate proofing change are P136.034 million and P173.486 million respectively, Likewise for the new construction with climate proofing the total economic cost of farm labor is P173.540 million compared to without new construction is P77.940 million.

Economic Analysis

Project Benefits

Direct project benefits include additional income from crop production estimated at P127.038 million pesos annually at full project development for retrofitting/ 161.924 million for with climate proofing and P482.207 million for new construction with climate proofing. These were derived by taking the difference "with" retrofitting and climate proofing "new construction with climate proofing and "without" retrofitting and climate proofing "without" construction net values of crop production and deducting the imputed cost of farm labor. The benefits were assumed to build-up at the rate of 33%, 66% and 100%of full incremental benefit during the 3-year agricultural development period.

Project Costs

The economic cost of the project concerning retrofitting is P190.25 million; likewise, with the provision of climate proofing it was estimated at P 493.66 Million. A higher cost is required with the new construction with climate proofing estimated at P 2,003.77 This includes the construction of settling basin. Additional yearly cost of operation and maintenance equivalent to P1, 500/ha or equivalent to P9.6 million was also considered.

The investment costs were converted to economic value by applying a 20% premium to the foreign currency component. The O&M cost was also converted to economic values by applying a factor of 1.02 to the financial cost. Moreover, provisions for price escalation, interest during construction and taxes were not considered.

Project Economic Viability and Sensitivity Analysis

Net Present Value (NPV), Benefit Cost Ratio (B/C) and Economic Internal Rate of Return (EIRR)

The annual current flow of costs and benefits over the project life were developed and subjected to discounted flow analysis. The project's profitability criteria resulting from the analysis are as follows.

Table 9: Summary of economic analyses results for the three options of civil works proposed for the Jalaur River Irrigation System

Options	EIRR (%)	NPV (P million)	B/C
Retrofitting	30.64	235.04	1:2.25
Retrofitting with Climate Proofing	20.57	164.58	1:1.44
New Construction with Climate Proofing	14.14	-124.57	1:0.92

Sensitivity Analysis

The economic internal rate of return (EIRR) was also subjected to sensitivity analysis considering likely changes in the basic assumptions. The results of the analysis are summarized as follows:

Table 10: Summary of sensitivity analyses results for the three options of civil works proposed for the Jalaur River Irrigation System

Sensitivity Case	Retrofitting	Retrofitting with Climate Proofing	New Construction with Climate Proofing
S1: 20% increase in investment costs	27.06%	17.91%	12.33%
S2: 20% decrease in benefits	25.75%	17.03%	11.87%
Combination of S1 and S2	22.61%	14.71%	10.22%

The implementation of either of the two cases/options; 1) retrofitting and 2) retrofitting considering only climate proofing costs and benefits is justified on the basis of its economic viability and its impact to beneficiaries. The results of the economic evaluations for both cases strongly suggest that the proposed improvement works for Jalaur RIS are economically feasible. However, the Project under Case 3 situation is marginally viable in terms of its economic potentials.

Option 1- Retrofitting

At a discount rate of 15%, the Net Present Value (NPV) of net benefit flows over the project life estimated at P235.04 million is positive; the Benefit Cost Ratio (B/C) of the same discounted rate is more than unity. The Project Economic internal Rate of Return (EIRR) of 30.64% is over and above the cut off rate of 15%.

1. The incremental annual production of 12,480 tons due to the project would enhance the stability of domestic supply for rice.
2. The project is expected to generate additional employment opportunities. For rice crop production alone, an additional of 28,494 could be generated and help mitigate underemployment in the project area.
3. Full owner farmer directly benefited by the project would expect an incremental net income from P88, 315 to P101, 287 per farm per year. This would enable them to improve present level of living.

Option 2 – Retrofitting Considering only Climate Costs and Benefits

The EIRR for the normal case is 20.57% which is also economically feasible for it exceeds the cut off rate of 15%. The net present value at 15 % interest rate (NPV) is P164.58 million and the benefit cost ratio is 1:1.44.

1. The incremental annual production of 16,145 tons due to the project would enhance the stability of domestic supply for rice.
2. The project is expected to generate additional employment opportunities. For rice crop production alone, an additional of 312,099 man days could be generated and help mitigate underemployment in the project area.
3. Full owner farmer directly benefited by the project would expect an incremental net income from P88, 315 to P101, 287 per farm per year. This would enable them to improve present level of living.

Option 3-New Development/Construction with Climate Proofing

The EIRR for the normal scheme is 14.14% which is marginal based on the cut off rate of 15%. The net present value at 15 % obviously is negative at P124.57 million.

1. The incremental annual rice production would be 45,030 metric tons due to the project because the whole service areas which are cropped to rainfed rice would be converted to irrigated rice.
2. Additional employment of about 796,720 manday per annum would be created in the farms sector due to the double cropping of rice hence will reduce unemployment in the area.

The Project under three (3) situation; Option 1 – retrofitting, Option 2 retrofitting with climate proofing and Option 3 - new development/construction with climate proofing of the Jalaur River irrigation System Project are technically feasible and will not adversely affect the environment but would rather contribute in mitigating possible effects of climate change in the province.

The JRMP II implementation is expected to adhere to the provisions of the DENR MC No. 5 series of 2011. Therefore, the Jalaur RIS retrofitting works is mandated to include provision for climate change proofing. Under such situation, the Case 2 (Retrofitting with Climate Proofing) is recommended for implementation as Pilot Project under Phase 1 of the PhilCCAP for demonstrating the developed recommendations to strengthen the climate resilience of vulnerable irrigation infrastructures.

Pinacanauan River Irrigation System (Source: Pinacanauan River Irrigation System, Final Feasibility Report).

Summary of proposed Civil Works for Options 1 and 2 for are provided in the Table below:

Table 11: Summary of proposed civil works for options 1 and 2 for the Pinacanauan River Irrigation System

Actions	Option 1: Retrofitting	Option 2: Retrofitting with climate proofing
Provision of Ramp at the Settling Basin	Regular removal of deposited silt is mandatory	
Redesign of Flume Section	PIDP design limits the conveyance of the required water volume of 2.7cms to 2.09cms at this section. The length of the flume was reduced by 182m. It will be concrete lined instead.	
Redesign of Irrigation Canals and Structures	The existing canal sections from sta.8+902 to 11+800 should be enlarged.	
Semi-Permanent Water level Maintaining Structure		This is required to minimize water intake deficiency during drought/ dry season.

Basic Assumptions

The major assumptions used in the analysis are as follows:

The project is shall serve a net irrigable area of about 1,200 hectares.

Land use and Cropping Pattern

From the 1,200 net irrigable area, some 550 hectares are currently cultivated to rainfed paddy and 650 hectares are irrigated during the wet season. During the dry season, 625 hectares are cultivated to irrigate paddy. The same land use and cropping pattern are assumed in the future without the project. With retrofitting and project climate proofing, the area for the rainfed paddy would be developed and cultivated to irrigated paddy rice. Consistent with the available supply of irrigation water the whole project area would be planted to paddy rice both during the wet and dry season respectively.

In the case of new construction and provision of climate proofing the assumption is the whole service area of 1,200 has. is planted to rainfed rice at the without project condition and with the project it will be all be irrigated and planted to rice both during the wet and dry season.

Crop Yields

The average production per hectare is currently 3.0 tons for rainfed wet season rice; 4.25 tons for the irrigated rice in the wet season; and during the dry season the average yield is 4.40 tons for the irrigated rice. With the retrofitting and climate proofing the same yield of paddy rice is assumed as that of the present condition both for wet and dry season rice. There may be changes in yield in the future with climate change but was assumed and considered insignificant.

Physical Production Inputs Assumptions

The physical inputs required for rice crop production under the present and future conditions are computed based on the average data taken from agro-economic survey.

Prices of Agricultural Outputs and Inputs

1. Agricultural Outputs

Financial and economic farmgate price of paddy rice was derived from the IBRD Commodity Price Forecast of April 3, 2013. In deriving the farmgate price, adjustments have been made for

quality, freight, insurance, handling, processing and internal transport. The calculation of price structure is shown in Table 7. For the rice by-product the prevailing price in the project area was used. All prices are at constant 2013 levels.

2. Agricultural Inputs

Fertilizer- The financial and economic farmgate prices of fertilizers like urea, triple super phoshate, and muriate of potash (Urea, TSP and MP) were also derived from the IBRD Commodity Price Forecast of April 3, 2013. Prices are adjusted for ocean freight and insurance and internal distribution costs to arrive at the equivalent farmgate prices.

Seeds and Agro-chemicals- The price of seeds use in the economic analysis are those prevailing in the project area. For agro-chemicals, the prevailing prices in the project area was also adopted and adjusted to economic terms by applying a premium of 17% to the financial price.

Cost of Labor, Draft Animals and Farm Machineries- For the purpose of economic analysis the current financial wage rate for farm labor is average at P150/man day and converted to economic terms by applying shadow price of 0.6. For the draft animals the current hiring rate is P1,800/man-animal day. Tractor rate for land preparation is average at P2,500 per hectare and converted to economic terms by applying a shadow-price of 1.15.

Foreign Exchange Component

The official exchange rate (OER) adopted is P40.5/ US $1.00. For purposes of economic analysis, the foreign exchange component of all project costs and benefits are converted to economic value using a shadow exchange rate (SER) of 1.2.

Cost of Rice Production

The cost of rice production was computed on a per hectare basis under “without” climate proofing” and “with” climate proofing conditions, however, due to the assumption that there will be no change in yields in the future “with” climate condition the cost of rice production will also be the same as “without” the project. On the basis of physical input requirements for rice crop production and the price assumption used, the financial and economic costs of rice production per hectare were estimated.

Economic cost of Farm Labor

The labor requirements in all the farming activities starting from seedbed preparation up to the storing of production were accounted. The prevailing average wage rate in the service area was P150 per man-day. The economic value of farm labor was determined by applying a shadow wage rate factor of 0.6. The total economic cost of farm labor in the future “without” climate change and the future “with” climate change are P13.027 million and P17.064 million respectively, while for the new construction and climate proofing amounts toP8.64 million and P17.064 million.

Farm Labor Supply and Economic Cost of Farm Labor

The supply of available farm labor was assumed adequate to meet the future requirements of rice crop production with the project. The present available labor force was estimated at 3,140 people. Assuming that one person can work 240 man-days per year the total available labor supply would be 753,600 man-days per year or equivalent to 62,800 man-days per month. The present labor requirement for the whole project is 144,700 man days per year which is equivalent to 12,058 man days per month. In the future with project situation the computed labor requirements is 189,600 man days per year equivalent to 15,800 man days per month. The comparison between labor supply and requirements shows that there will be a labor surplus by 79,490 man days.

Construction Period, Agricultural development Period and Economic Life of the Project

Physical construction of the irrigation project is assumed to be completed in a period of five years. A four-year period after project construction is allowed for full agricultural development to be realized. The project economic life was assumed to be 30 years starting from the initiation of project activities.

Economic Analysis

Project Benefits

Direct benefits include additional income from rice production estimated at P38.79 million annually at full development in the first two cases and in the 3rd case it is valued atP82.83 million. The irrigation benefits would be generated from the increase cropping intensity and the conversion of rainfed paddy at present to irrigated paddy in the future with project. This was derived by taking the difference between the with retrofitting as well as with provision of climate proofing and without retrofitting and climate proofing net values of rice production and by deducting the imputed costs of farm labor. Generation of irrigation benefit would start on the fourth year and assumed to build up at the rate of 25%, 33%, 50% and 100 % of full incremental benefit during the 4-year agricultural development period.

Project Costs

Three sets of cost estimate were computed and these are (1) costs for retrofitting works only plus the updated original cost prepared by PIDP with the total amount of P118.03 million in economic terms. (2) the cost retrofitting plus the cost of climate proofing plus the updated original cost prepared by PIDP with a total amount of P123.00 million and,(3) the cost of new project construction with the provision of climate proofing totaling to P352.18 million in economic terms. The three sets of costs were applied separately in the economic analysis of the three scenarios to determine their economic viability. Indirect costs for the projects are physical contingency, GESA and management fee. Provision of price escalation, VAT, interest during construction and taxes were excluded.

Project Economic Viability and Sensitivity Analysis

Net present Value, Benefit Cost Ratio And Economic Internal Rate of Return

The annual current flow of costs and benefits over the project life were develop and subjected to discounted flow analysis for each of the two scenarios. The project profitability criteria resulting from the analysis are as follows:

Table 12: Summary of economic analyses results for the three options of civil works proposed for the Pinacanauan River Irrigation System

Options	**EIRR (%)**	**NPV (P million)**	**B/C**
Retrofitting	20.59	38.65	1:1.46
Retrofitting with Climate Proofing	19.84	34.66	1:1.40
New Construction with Climate Proofing	12.93	50.90	1:0.81

Sensitivity Analysis

The economic internal rate of return (EIRR) was also subjected to sensitivity analysis considering likely changes in the basic assumptions. The results of the analysis are as follows:

Table 13: Summary of sensitivity analyses results for the three options of civil works proposed for the Pinacanauan River Irrigation System

Sensitivity Case	Retrofitting	Retrofitting with Climate Proofing	New Construction with Climate Proofing
Normal	20.59%	19.84%	12.93%
S1: 20% increase in investment costs	17.93%	17.27%	11.28%
S2: 20% decrease in benefits	17.17%	16.53%	10.60%
Combination of S1 and S2	15.27%	14.26%	9.35%

The implementation of either of the two (2) options; 1) retrofitting or 2) retrofitting considering only climate proofing costs and benefits is justified on the basis of its economic viability and its impact to beneficiaries. The results of the economic evaluations for both options strongly suggest that the proposed improvement works for Pinacanauan RIS are economically feasible. However, the Project under Option 3 situation is technically feasible but marginally viable in terms of its economic potential.

Option 1- Retrofitting (1,200 ha)

At a discount rate of 15%, the Net Present Value (NPV) of net benefit flows over the project life estimated at P38.65 million is positive; the Benefit Cost Ratio (B/C) of the same discounted rate is more than unity which is 1:1.46. The Project Economic internal Rate of Return (EIRR) of 20.59% is over and above the cut off rate of 15%.

1. The incremental annual production of 3,218 tons due to the project would enhance the stability of domestic supply for rice.
2. The project is expected to generate additional employment opportunities. For rice crop production alone, an additional of 44,900 could be generated and help mitigate underemployment in the project area.
3. Full owner farmer directly benefited by the project would expect an incremental net income from P43,293 to P68,919 per farm per year. This would enable them to improve present level of living.

Option 2 – Retrofitting Considering Climate Costs and Benefits (1,200 ha)

The EIRR for the normal case is 19.84% which is also economically feasible for it exceeds the cut off rate of 15%. The net present value at 15 % interest rate (NPV) is P34.66 million and the benefit cost ratio is 1: 1.40.

1. The incremental annual production of 3,218 tons due to the project would enhance the stability of domestic supply for rice.
2. The project is expected to generate additional employment opportunities. For rice crop production alone, an additional of 44,900 could be generated and help mitigate underemployment in the project area.
3. Full owner farmer directly benefited by the project would expect an incremental net income from 43,293 to P68,919 per farm per year. This would enable them to improve present level of living.

Option 3. New Project Development /Construction with Climate Proofing

1. The EIRR under Option 3 at normal scheme is 12.93 % which is marginal considering the cut off rate of 15 %. The computed NPV at 15% is negative with P50.90 million while the Benefit cost ratio is less than one (1:0.81).

2. All the three (3) options are technically feasible and will not adversely affect the environment but would rather contribute in mitigating possible effects of climate change in the province.

3.2 Benefits of the Weather Index Based Crop Insurance (WIBCI)

The following extracts are drawn from the Final Evaluation Report of the WIBCI produced by PCIC.

Faster Settlement of Claims/ Reduce time for indemnity payments
"Farmer-claimants in Region 2 pilot site experienced faster settlement of claims. They received the payouts within 7 days from date of crop loss due to excessive rainfall. As compared to the traditional indemnity-based crop insurance scheme this is faster by 8 days from the standard claims settlement response time (CSRT) of within 15 days from submission of complete claim documents by the farmer for the traditional indemnity-based crop insurance. The farmers were satisfied with the faster receipt of their recoveries as this scheme gave them the opportunity to replant or engage in other business activities immediately after suffering from crop damage."

Reduced Transaction Costs
"The adjustment and payout processing expenses under WIBCI scheme was less compared to traditional crop insurance operation because the transportation and other expenses for field claims adjustment and verification were not incurred under WIBCI procedures".

3.3 Estimation of the annualized cost of modern fish pots

The values below were gathered during interviews with fishermen of the Dapa municipality on Siargao Island on February 22, 2017. The data is not based on recorded information, but is the volunteered information of the fisherfolk.

Traditional Fish Pot
- Dimensions: 13ft x 15ft
- Main material: Bamboo
- Estimated lifetime: 4 months (based on experience)
- Total estimated cost: PhP 1,500
- Estimated annualized cost: PhP 4,545

Modern fish Pot
- Dimensions: 13ft x 15ft
- Main material: Plastic mesh; wooden frame
- Estimated lifetime: 10 years (best case scenario). Total estimated costs (over 10 years): PhP 2,235
- Estimated annualized cost: PhP 224

Table 14: Summary of cost information for modern fish pots

	Initial investment			**Maintenance Cost**		
Item	Costs	# of units	Unit Cost	Costs	# of units	Unit Cost
Sticks	270	1	270	270	1	270
Nylon	350	1	350	350	1	350
Nails	60	1	60	60	1	60

Plastic roll	5000	8	625			
Labour	2000	8	250			
Total (PhP)			1,555			680

Annex 4. Bank Lending and Implementation Support/Supervision Processes

(a) Task Team members

Table 15: Task Team members for PhilCCAP

Names	Title	Unit	Responsibility/ Specialty
Lending			
Carolina V. Figueroa-Geron	Lead Rural Development Special	GFA02	Technical guidance and support
Victoria Florian S. Lazaro	Operations Officer	GSURR	Technical guidance and support
Alexander Lotsch	Senior Carbon Finance Specialist	GEN2B	Technical guidance and support
Gayane Minasyan	Lead Environment Specialist	GEN03	Technical guidance and support
Maria Theresa G. Quinones	Senior Operations Officer	GFA02	Technical guidance and support
Joseph G. Reyes	Financial Management Specialist	EAPDE	Technical guidance and support
Noel Sta. Ines	Senior Procurement Specialist	GGOGI	Technical guidance and support
Josefo Tuyor	Senior Environmental Specialist	OPSPF	Technical guidance and support
Felizardo Jr K. Virtucio	Agricultural Spec.	GFA02	Technical guidance and support
Samuel G. Wedderburn	Sr Natural Resources Mgmt. Special	EASER – HIS	Team Leader
Maarten K van Aalst	HQ Consultant ST	GCCCI	Technical guidance and support
Supervision/ICR			
Maurice Andres Rawlins	Natural Resources Management Specialist	GEN2B	Team Leader
Cecilia D. Vales	Lead Procurement Specialist	GGO08	Procurement Specialist
Aisha Lanette N. De Guzman	Financial Management Specialist	GGO20	Financial Management Specialist
Felizardo Jr K. Virtucio	Agricultural Spec.	GFA02	Technical guidance and support
Geraldine Visitacion Bacani	Program Assistant	EACPF	Transaction Specialist
Gerardo Pio Francisco Parco	Senior Environmental Engineer	GEN2B	Safeguards Specialist
Marivi Amor Jucotan Ladia	Social Development Specialist	GSU02	Safeguards Specialist
Reinaluz Ona	Program Assistant	EACPF	Transaction Specialist
Leonardo Jr. Batugal Paat		GEN02	Team Leader
Idah Z. Pswarayi-Riddihough	Country Director		Technical guidance and support

Samuel G. Wedderburn		EASER	Team Leader
Susan S. Shen	Practice Manager	GSU02	Technical guidance and support
Noel Sta. Ines		GGOGI	Procurement Specialist
Joseph G. Reyes		EAPCO	Financial Management Specialist
Tomas Jr. Sta. Maria	Financial Management Specialist	GGO20	Financial Management Specialist
Ademola Braimoh	Sr. Natural Resources Management Specialist	GFA13	Technical guidance and support
Douglas A. Forno	Consultant	GEN2A	Technical guidance and support
Joop Stoutjesdijk	Lead Irrigation Engineer	GWA02	Technical guidance and support
Josefu Tuyor	Senior Environmental Specialist	OPSPF	Technical guidance and support
Maria Consuelo Sy	Program Specialist	EACPF	Team member
Mildren H. Penales	Program Specialist	EACPF	Team member
Pai-Yei Whung		AES	Technical guidance and support
Peter J Mallari Carreon		EACPF	Technical guidance and support
R. Cynthia Dharmajaya		GFA02	Technical guidance and support
Stephen Paul Hartung		GGO20	Technical guidance and support
Victoria Florian S. Lazaro		GSURR	Safeguard specialist
Maria Liennefer Rey Penaroyo	Financial Management Specialist	GGO20	Financial Management Specialist

(b) Staff Time and Cost

Table 16: Staff time and cost for PhilCCAP

Stage of Project Cycle	Staff Time and Cost (Bank Budget Only)	
	No. of staff weeks	USD Thousands (including travel and consultant costs)
Lending		
FY07	5.68	47.58
FY08	15.66	64.14
FY09	20.88	120.07
Total:	42.22	231.79
Supervision/ICR		
FY10	14.27	103.027
FY11	9.4	37.938

FY12	8.05	40.749
FY13	14	65.049
FY14	10.14	46.272
FY15	14.3	41.776
FY16	0	0.236
FY17	14	59.695
Total:	84.16	394.985

Annex 5. Summary of Borrower's ICR and/or Comments on Draft ICR

A. Borrower Completion Report (summary text extracted from the Government's Project Completion Report, April 2017, which is archived in project files)

Overview
The Philippines Climate Change Adaptation Project (PhilCCAP) was a grant agreement between the World Bank and the government of the Republic of the Philippines. The grant, which amounted to US$4.974 million, was sourced from the Global Environment Facility, an international partnership that provides funding for environmental projects in developing countries. PhilCCAP's primary aim was to develop and demonstrate approaches that would enable vulnerable communities to adapt to the effects of climate change. The project maintained sites in three key provinces: Cagayan (Region 2), Iloilo (Region 6) and Surigao del Norte (Region 13), all of which were noted for their susceptibility to extreme weather.

Project Results
Among the major milestones achieved by the project were the development of the Climate-Smart Decision Support System (CS-DSS), the completion of the operations manual and guidelines of the National Irrigation Administration (NIA) on redesigning irrigation infrastructure, the conduct of the Enhanced Climate-Smart Farmers Field School (ECSFFS) and the completion of its manual, the pilot-testing of the feasibility of the Weather Index-Based Crop Insurance (WIBCI) for rice and corn in Regions 2 and 6, the approval of the updated management plans for the Siargao Island Protected Landscape and Seascape (SIPLAS) and the Peñablanca Protected Landscape and Seascape (PPLS), and the development by the Climate Change Commission (CCC) of the knowledge management (KM) system for climate information. Also completed under the project were climate projections and other seasonal climate forecasts by Philippine Atmospheric Geophysical and Astronomical Services Administration (PAGASA). Project results included:

- Development of manuals for government programs;
- Capacity building for relevant government personnel;
- Use of seasonal climate forecast by different sectors;
- Climate change projections developed for decision making;
- Knowledge management system for climate information and adaptation practices developed;
- Weather index based crop insurance developed;
- Management plans for protected areas revised.

Project Performance
Of the eight main targets, six have been accomplished as of April 2017. The remaining two targets – the redesign of at least four irrigation systems and the policy recommendation papers from CCC – were scheduled to be completed before the end of the project, but these were left unfinished due to certain impediments. The NIA targets were not accomplished due to procurement problem (lack of material time due to the effect of national elections on agency changes). CCC, likewise, encountered problems with their consultant which resulted to the incompletion of their targets. Given that the objectives were basically accomplished, the project performed satisfactorily, at least as measured by its physical performance (Figure 1). On the other hand, the project was not expected to reach full utilization of the grant fund (Figure 2), owing to impediments, which prevented the project from obligating funds to certain major activities. The activities pushed through using the regular funds of the concerned executing agencies, effectively causing the project to underspend. Hence, a noticeable dissonance between physical and financial

accomplishment rates up to closing date happened. Qualifying impacts, however, of project outputs can only be derived from measuring its socio-economic and environmental effects. This cannot be determined within the project period, as the project is limited only to piloting strategies. Although it is ideal for the project to consider accounting for economic and environmental impacts of project outputs to their targeted communities, the institution of its outputs within executing agencies effectively hands over the exacting responsibility of output impact assessment to these agencies. It is clear, based on project objectives, that the project merely serves as a springboard, where relevant government agencies are afforded the means to identify and develop nominal adaptation strategies.

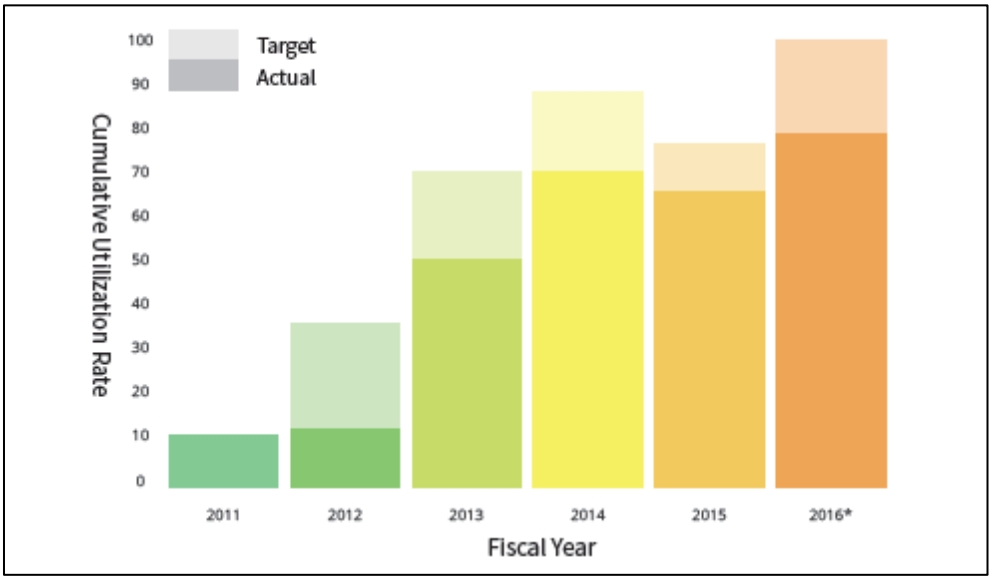

Figure 3: Cumulative Physical Accomplishment Rate per Year.

Initial delays in project implementation led to a widening slippage rate in the second year of implementation (2012). This gap between the target and actual physical accomplishment rates were sustained mainly due to fiduciary issues, with funds for project implementation consistently being released belatedly, forcing executing agencies to either postpone or cancel activities. The target of 2015 was readjusted to account for activities previously cancelled and rescheduled to the extension period.

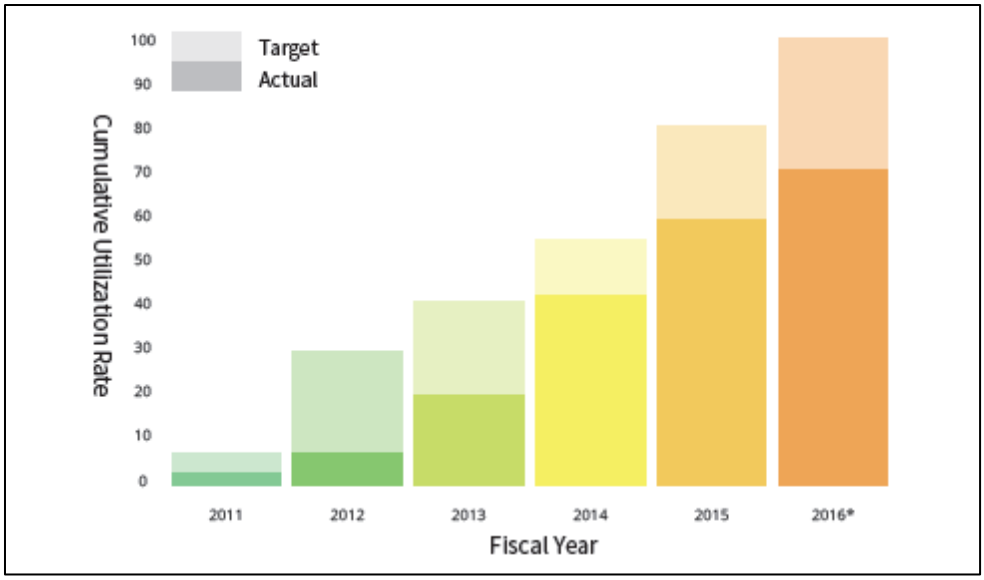

Figure 4: Cumulative Financial Utilization Rate, per Year.

The graph depicts the utilization rate achieved by the project, accounting for all components, during a given year. The solid colors represent the actual utilization rate, while he faded colours measure the target. The different between the target and actual rates is called a slippage, which peaked in 2012, 2013, and 2015. Wide slippages are normally indicative of poor financial performance, which is cause by a number of factors.

Regardless, notable and quantifiable environmental effects can be gleaned from the outcomes of project activities in protected areas. The project has reforested, with seedlings yet to mature, about 123 hectares of upland areas and about 40 hectares of mangrove areas in Penablanca and Siargao respectively. Maintenance of these reforested areas is part and parcel of the revised management plans, which in turn were approved by the PAMBs.

Bank Implementation Performance

As the facilitator of the grant funds from GEF, the World Bank has consistently monitored project performance using the standards employed by them. As part of its regular monitoring activities, the Bank has conducted quarterly (later conducted as biannual) implementation support missions, which involved leveling off meetings with representatives of executing agencies, and visiting project sites for validation. The Bank's Task Team Leader for the project, while having been filled in by different Bank personnel over the course of the project, has consistently kept communication with the PMO. The Bank has also been responsive, often instantaneously, to any communication from the PMO, whether through formal or expediently informal means. Task Team Leaders are usually quick to observe activities that need adjustment, and has urged and facilitated the process for project extension.

Government Implementation Performance

Department of Agriculture - The delivery of outputs by executing agencies under the supervision of the DA-SPCMAD, which also included the PAGASA, was considerably delayed by fiduciary issues. These issues were administrative in nature, most are unrelated to the project, but were unforeseen by the executing agencies. This led to a constant high slippage rate for the Components under the DA since the beginning of the project until its extension phase. Nonetheless, the unavailability of funds had forced some agencies, particularly ATI, PCIC and PAGASA, to utilize regular funds to avoid further delays in the implementation of the project. This led to a backlog in the disbursement of funds, resulting in unutilized funds amounting to US$ 323,683.99 as of the end of 2015. The outputs of the DA executing agencies and PAGASA,

under Components 2.1, 2.2, 2.3 and 3, were largely achieved by 2016. The redesign of the two PIDP irrigation facilities was finished in 2014. Civil works based on the redesign are currently being undertaken by the PIDP. Redesigns of two additional irrigation facilities in Region 8, based on the manual developed from the first two redesigns, is currently being undertaken by NIA. The redesigns are expected to be completed in 2016. The ATI had completed the ECSFFS in 2015, with a total number of 1,142 graduates from Cagayan and Iloilo. The ECSFFS was implemented by about 40 regional and national personnel, who underwent trainings in 2012, 2013 and 2014. The ongoing pilot-testing of the WIBCI was delayed by the funding issue, and proceeded only by using the regular funds of the PCIC.

Department of Environment and Natural Resources - The DENR had relative ease in accomplishing its activities and completing its outputs. Under the DENR, the executing agencies include the CCC, and DENR Regional Offices 2 and 13. In addition, the PMO also operated under the supervision of the Foreign-Assisted and Special Projects Service (FASPS) of the DENR. As of the end of the first quarter, 2016, the DENR components of the project have achieved a cumulative physical accomplishment rate of 99.26%, measured by the ratio of activities accomplished to the activities scheduled for completion within the period covered. Generally, a high accomplishment rate is indicative of the agency's satisfactory performance. Delays in the submission of deliverables are usually attributed to a limited number of factors: consultants' performance and capricious bureaucratic procedures. Delays relating to consultants' performance particularly hampered the timely completion of activities in Components 2.4, under DENR Regional Offices 2 and 13, and Component 1, under the CCC.

Lessons Learnt

The following are Lessons Learned during project implementation:

- A one-year pre-implementation period must be negotiated with the funding agency for inclusion in the project timeline. This period will be devoted to preparatory activities, such as the establishment of the project management office, procurement of goods and services, etc. The project had difficulty in punctually proceeding with implementation, causing a backlog of activities, which, in the long run, had become one of the reasons that led the project to pursue an extension. Including a pre-implementation period will relieve the project of the delay that might potentially push actual implementation behind schedule.
- The Project Manager (PM) can be empowered further and allowed to make project management decisions for as long as decision areas are not in conflict with office and project policies. The PM deciding on project matters will allow for a smoother and more rapid execution of courses of action. The PM's organizational proximity to the actual implementers of the project should strategically place him as the most appropriate person to decide on project matters. In turn, the PM assumes a wider scope of responsibilities, as well as a commensurate expansion of liability. A list of action areas that the PM can handle should be included in the project design.
- The practice of creating a steering committee and a technical working group can be dynamically handled. As soon as the project management office (PMO) is fully capacitated to handle responsibilities on its own, guided by office policies and project agreements, and supervised by oversight bodies such as DENR-Foreign Assisted and Special Projects Service (FASPS), the steering committee and the technical working group can be rationalized and streamlined in order for them to provide more focused support on the relations of the PMO with higher administrative bodies. While it is recommended that intrinsic project matters be decided by the PMO and implementers, administrative matters beyond the PMO's scope of allowable action areas will

occasionally require the assistance of a steering committee or a technical working group consisting of administrative officials.

- Disbursement alone should not be the principal factor in gauging progress in implementation especially where output-based design is the consideration. While it is beyond the project's scope to prescribe financial policy reform, limiting the primary measure of project performance to disbursement, while seemingly practical, is shortsighted. Disbursement is indicative of the spending behavior of project implementers, or the performance of the fiduciary system of projects. It does not look into project impacts, nor measure effects on the wellbeing of the environment and the project's stakeholders. To better gauge the success of the project, economic measures should be included in the results framework. Anthropogenic interactions with the environment are largely, if not inherently, economic. Specific and appropriate figures on yield, income and even spending habits of targeted communities, taken at strategic periods during the project, are more indicative of project impacts and may even signal a flaw in the project design. Admittedly, PhilCCAP, as it was designed, is lacking an assessment of the economic demography of target areas, which should consider baseline and end-of-project measures. While it is understandable that disbursement performance may be an appropriate measure given the prevailing culture in governance, the strong emphasis on disbursement, and the continued ignorance in utilizing tangible measures of impacts, might render project activities, and even regular government activities, as mere perfunctory exercises. Disbursement performance may also be an incentive for implementers to spend without regard to the impacts of their activities. Funds allotted for a given activity or program are better maximized when they produce tangible, measurable improvements.

B. Borrower Comments on Bank ICR

The Borrower had not submitted comments on the Bank's final ICR draft prior to the ICR date. Any comments received will be publicly disclosed as a separately document in the project files on the Bank's website.

Annex 6. List of Supporting Documents

1. PhilCCAP Project Appraisal Document
2. PhilCCAP Mid-term Review Report
3. PhilCCAP Restructuring Paper
4. Implementation Support Reports numbers 1 to 12
5. Aide Memoires and Management Letters for supervision missions: June 2011; December 2011; June 2012; September 2012; December 2012; May 2013; July 2015; July 2016; September 2016; December 2016
6. Borrower's Project Completion Report (in Draft)
7. AIDSI, 2017. Final Evaluation Report of the PhilCCAP. Asian Institute of Developmental Studies, Inc. (AIDSI)
8. Draft Concept Note for Second Phase of PhilCCAP
9. Enhanced Climate Smart Farmers Field School Manual
10. Manual in GIS Mapping using Manifold
11. Climate Change Adaptation Among Farm Families and Stakeholders
12. Climate Scenarios for the Philippines Climate Change Adaptation Project
13. Good Climate Change Adaptation Practices Manual
14. State of the Philippine Climate 2015
15. Technical Policy Brief: Climate Change Projection in the Philippines
16. Siargao Islands Protected Landscape and Seascape Management Plan
17. Penablanca Protected Landscape and Seascape Monitoring and Evaluation Plan
18. Feasibility Study Reports for Jaluar and Pinacanauan River Irrigation Systems

MAP


IBRD 33466R5
PHILIPPINES
SELECTED CITIES
PROVINCE CAPITALS
REGION CAPITALS
NATIONAL CAPITAL
RIVERS
MAIN ROADS
RAILROADS
PROVINCE BOUNDARIES
REGION BOUNDARIES
INTERNATIONAL BOUNDARIES
I Ilocos Region
1 Ilocos Norte
2 Ilocos Sur
3 La Union
4 Pangasinan
CAR Cordillera Admin. Reg.
5 Abra
6 Apayao
7 Benguet
8 Ifugao
9 Kalinga
10 Mountain Province
II Cagayan Valley
11 Batanes
12 Cagayan
13 Isabela
14 Nueva Vizcaya
15 Quirino
III Central Luzon
16 Aurora
17 Bataan
18 Bulacan
19 Nueva Ecija
20 Pampanga
21 Tarlac
22 Zambales
NCR National Capital Reg.
IV-A CALABARZON
23 Batangas
24 Cavite
25 Laguna
26 Quezon
27 Rizal
MIMAROPA
28 Marinduque
29 Mindoro Occidental
30 Mindoro Oriental
31 Palawan
32 Romblon
V Bicol
33 Albay
34 Camarines Norte
35 Camarines Sur
36 Catanduanes
37 Masbate
38 Sorsogon
VI Western Visayas
39 Aklan
40 Antique
41 Capiz
42 Guimaras
43 Iloilo
VII Central Visayas
44 Bohol
45 Cebu
46 Siquijor
VIII Eastern Visayas
47 Biliran
48 Eastern Samar
49 Leyte
50 Northern Samar
51 Samar
52 Southern Leyte
IX Zamboanga Peninsula
53 Zamboanga del Norte
54 Zamboanga del Sur
55 Zamboanga Sibugay
--- City of Isabela
X Northern Mindanao
56 Bukidnon
57 Camiguin
58 Lanao del Norte
59 Misamis Occidental
60 Misamis Oriental
XI Davao Region
61 Compostela Valley
62 Davao del Norte
63 Davao del Sur
64 Davao Oriental
65 Davao Occidental
XII SOCCSKSARGEN
66 Cotabato
67 Sarangani
68 South Cotabato
69 Sultan Kudarat
--- Cotabao City
XIII Caraga
70 Agusan del Norte
71 Agusan del Sur
72 Dinagat Islands
73 Surigao del Norte
74 Surigao del Sur
NIR Negros Island Region
75 Negros Occidental
76 Negros Oriental
ARMM Autonomous Reg. in Muslim Mindanao
77 Basilan
78 Lanao del Sur
79 Maguindanao**
80 Sulu
81 Tawi-Tawi
** Shariff Aguak (Maganoy) and Sultan Kudarat serve as co-capitals of the province.
Luzon Strait
Babuyan Islands
Babuyan Channel
Luzon
Philippine Sea
Mindoro
Mindoro Strait
Sibuyan Sea
Samar
Leyte
Leyte Gulf
Cebu
Panay
Negros
Bohol
Mindanao
Sulu Sea
Palawan
Celebes Sea
Moro Gulf
Mindanao Sea
Visayan Sea
Laoag City
Vigan
Tuguegarao
Baguio
San Fernando
Lingayen
Tarlac
Olongapo
Iba
Balanga
MANILA
Pasig
Antipolo
Trece Martires
Calamba
Santa Cruz
Lucena
Batangas
Calapan
Mamburao
Boac
Daet
Virac
Legaspi
Sorsogon
Masbate
Romblon
Catarman
Catbalogan
Borongan
Tacloban
Naval
Kalibo
Roxas City
San Jose de Buenavista
Iloilo
Jordan
Bacolod
Cebu
Madsin
Dumaguete
Siquijor
Tagbilaran
San Jose
Surigao
Tandag
Butuan
Cagayan de Oro
Oroquieta
Dipolog
Iligan
Malaybalay
Marawi
Pagadian
Tubod
Ipil
Nabunturan
Tagum
Davao
Mati
Kidapawan
Digos
Cotabato City
Shariff Aguak (Maganoy)
Isulan
Koronadal
General Santos
Malita
Alabel
Zamboanga City
Isabela City
Basilan
Jolo
Sulu
Tawi-Tawi
Panglima Sugala
Bongao
Puerto Princesa
Dumaran
Cuyo Islands
Semirara Islands
Lubang Islands
Polillo Islands
Marinduque
Burias
Ticao
Tablas
Busuanga
Culion
Linapacan
Balabac
Bugsuk
Cagayan Sulu
Sarangani
Siargao
Camiguin
Basco
Batan Islands
MALAYSIA
PHILIPPINES
0 50 100 150 Kilometers
0 50 100 Miles
5°N
10°N
120°E
125°E
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