

# The Abuan Integrated Watershed Program FY2015 Work and Financial Plan

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## Acronyms

ASTI	Advanced Science and Technology Institute
AWS	Automated Weather Stations
BAS	Bureau of Agricultural Statistics
BSWM	Bureau of Soils and Water Management
CCA	Climate Change Adaptation
CDP	Comprehensive Development Plan
CENRO	City Environment and Natural Resources Office
CLUP	Comprehensive Land Use Plan
CPDO	City Planning and Development Office
CSWDO	City Social Work and Development Office
CVRC	Cagayan Valley Research Center
DA-2	Department of Agriculture Regional Office - Region 2
DCAF	Drought and Crop Assessment and Forecasting
DENR	Department of Environment and Natural Resources
DILG	Department of Interior and Local Government
DREAM	Disaster Risk and Exposure Assessment for Mitigation
DRRM	Disaster Risk Reduction and Management
DRRMC	Disaster Risk Reduction and Management Council
DSSAT	Decision Support System for Agricultural Technology
DOST	Department of Science and Technology
FDSS	Farmers Decision Support System
FLUP	Forest Land Use Plan
GCM	Global Circulation Model
ILAW	Iligan Association of Women
ISU	Isabela State University
KKPFI	Kabang Kalikasan ng Pilipinas Foundation, Inc.
LAI	Leaf Area Index
LGU	Local Government Unit
LIDAR	Light detection and ranging
LOP	Life of Project
M&E	Monitoring and Evaluation
MoA	Memorandum of Agreement
MoU	Memorandum of Understanding
NGA	National government Agency
NGOs	Non-Government Organizations
NDVI	Normalized Difference Vegetation Index
NOAH	Nationwide Operational Assessment of Hazards
NSMNP	Northern Sierra Madre Natural Park
OPA	Office of Provincial Agriculturist
PAGASA	Philippine Atmospheric, Geophysical and Astronomic Services
PENRO	Provincial Environmental and Natural Resources Office
PNRC	Philippines National Red Cross
PWD	Person with Disability
UP-IESM	University of the Philippines - Institute of Environmental Science and Meteorology
USAID	United States Agency for International Development
USG	United States Government
VA	Vulnerability Assessment
VI	Vegetative Index

WISE  
WWF

Weather Integration and System Enhancement  
World Wide Fund for Nature

## I. Scope of Work

### 1.1. Introduction

The United States Agency for International Development (USAID) awarded to Kabang Kalikasan ng Pilipinas Inc, also known as World Wide Fund for Nature – Philippines (WWF), a grant in support to the project “Building Climate-Resilient Ecosystems and Communities in the Abuan Watershed”. The project aims to catalyze local stakeholder support in improving the resilience of communities and watersheds to threats from climate change. The project started in 01 October 2012 and is expected to complete its deliverables by 30 September 2017.

In the western buffer zone of the Northern Sierra Madre Natural Park lies the Abuan watershed, a 63,754 hectare ecosystem supports the livelihoods of some 2900 farming households. The upper catchment comprises 44,000 hectares (or 69%) of the Northern Sierra Madre Natural Park, which is host to last remaining old-growth dipterocarp forests in the country. The lower sub-catchments consist of farm lands, residual forests and brush lands with an area of 19,000 hectares (or 31%) of the watershed area. The watershed is named after the Abuan river, which, together with the smaller Bintacan River, drains into the *Pinacanauan de Ilagan River*, before merging with the Cagayan River. Figure 1 is a map of the Abuan watershed. The lower catchments, in yellow, are the focus of project activities including the flood plain (Figure 1).

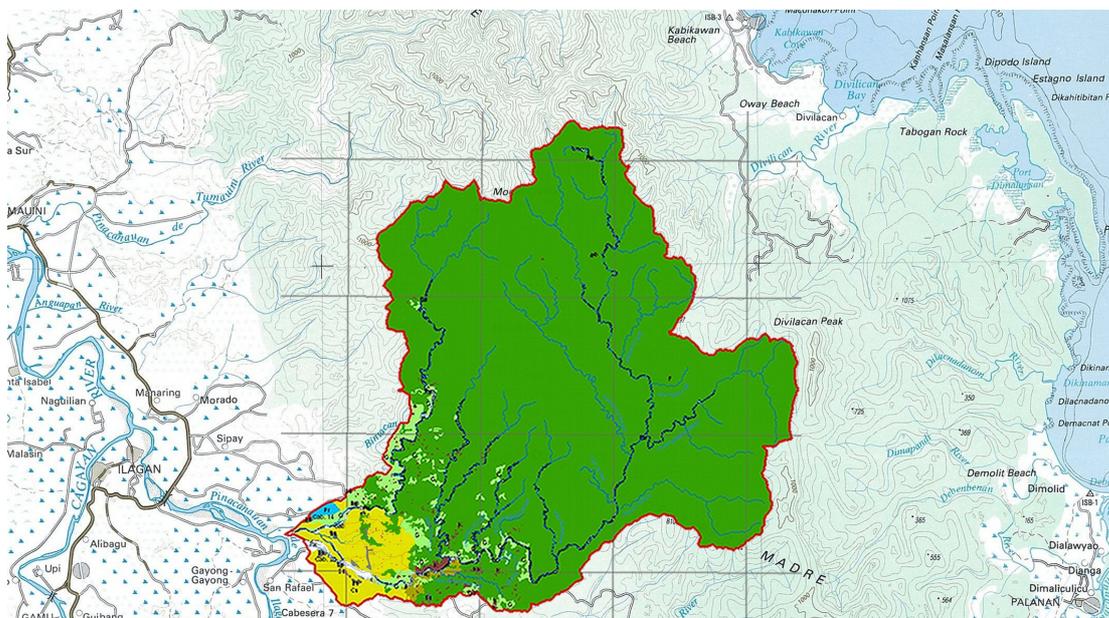


Figure.1. Map of Project Area

### 1.2 Rationale and Strategies

Climate Change poses serious threats to Abuan watershed’s ecological services and to livelihoods of farmers. The increasing frequency of inter-annual anomalies from both typhoons and drought in recent years foretell the impacts from global warming. In 2005, dry spells followed by severe flooding caused extensive farm damage estimated at PHP 838 Million (USD 19.5 Million). In the early half of 2010, prolonged dry spells caused wilting of rice and corn crops. In November of the same year, Typhoon Juan hit Isabela inflicting P 542 Million in damages to the City of Ilagan, with 45% of total damages coming from the agricultural sector. The following year, Typhoon Quiel slammed Isabela causing P115 Million in damages and displacing more

than 500,000 people (NDRRMC 2011). In the Abuan floodplain, some 2,342 residents from 7 barangays were housed in shelters (DRRMO, City Government of Ilagan).

With Climate Change, anomalies occurring the same year are becoming more common and are likely to get worse. According to PAGASA, the 2050 scenario for Isabela will result in a 1.9 to 2.1 C increase in temperature; a 29% decrease in mean rainfall for dry months and a 1.7% to 25.1% increase in rainfall during wet months.

As the highest corn and second-highest rice producer in the country, the Isabela Province is a net exporter of rice and corn. The region is also the most visited by typhoons and has the highest temperatures ever recorded. Climate change impacts food production. Higher temperatures hasten phenology development processes resulting to shorter crop cycles and lower yields. While increases in evapotranspiration rates lead to higher demand for water and increased competition with other water uses. Increase in rainfall variability translates to more intense flooding during wet months and prolonged dry spells during summer. The timely provision of rainwater affects rain fed farms, where most of poor farmers depend.

Improving the resiliency of watersheds and communities is crucial to adapting to dangerous climate change. Building the capacities of communities to reduce their vulnerabilities to typhoons, flooding and dry spells will improve their resiliency to extreme events. Facilitating access to weather information improves decision making by farmers.

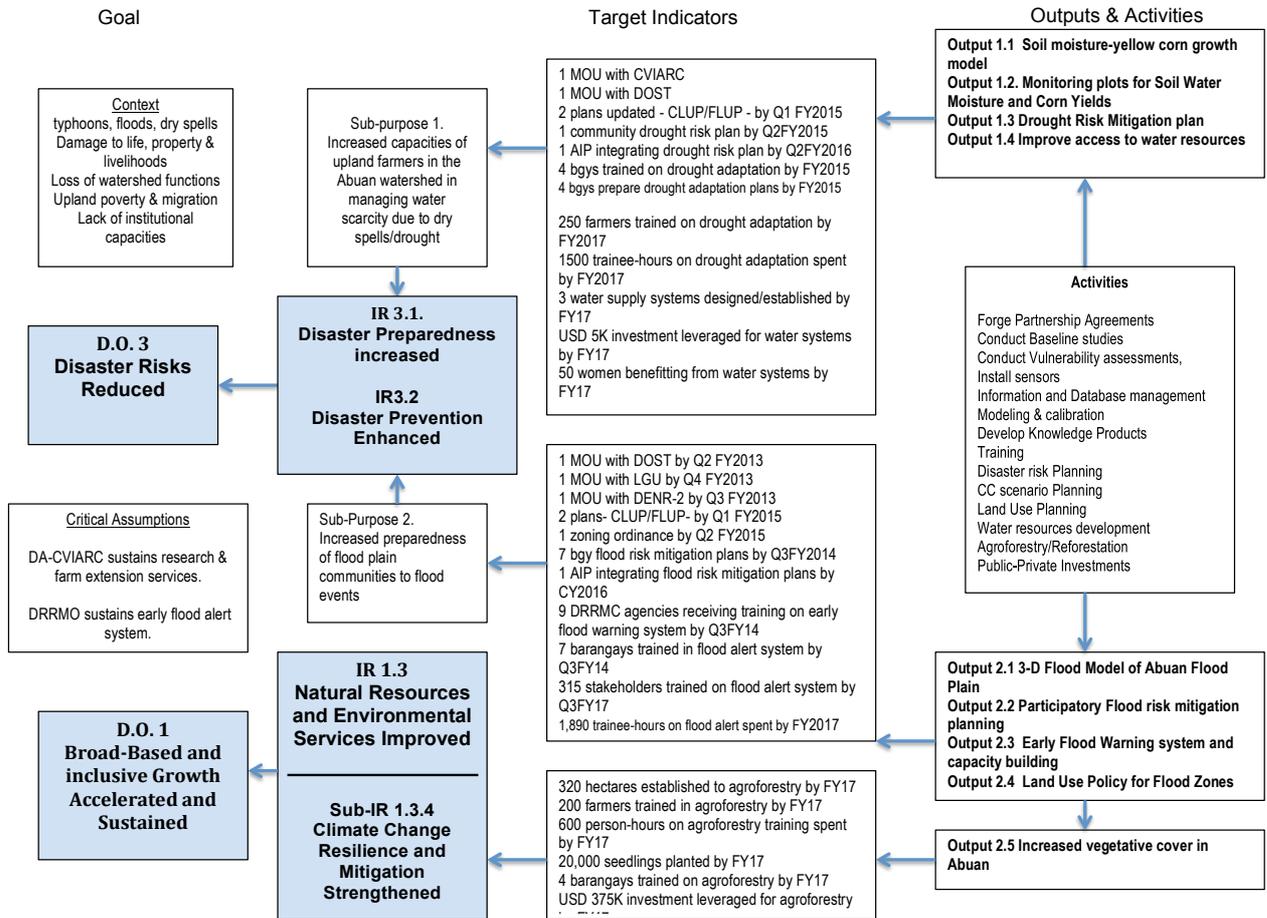
Flood risks will be addressed by timely and accurate access by vulnerable communities to real-time weather and river data, flood evacuation drills and early warning systems informed by watershed and flood models. Risks from dry spells will be addressed by facilitating access by farmers to timely and more accurate seasonal (4-month) forecasts, daily 6-day weather forecasts and crop models as part of a farmer decision support system. To inform farm decisions, the system will be able to predict phenology, crop water and nitrogen requirements and yields.

The long-term impacts of climate change on yields, their quantity and variability is simulated using crop models. Simulating these impacts will require access to Global Circulation Models downscaled for Isabela and fitting them to long-term historical weather data. The risks from Climate Change are better understood by simulating impacts of the future variability of weather on crop yields.

Ecosystem resiliency means watersheds will continue to perform a range of important functions, ranging from water filtration, water retention & storage, flood mitigation, buffering water flows to soil fertilization, nutrient cycling and biomass production. Halting deforestation, mitigating soil erosion and improving forest cover through agro-forestry will help improve ecosystem resiliency and farmer incomes.

The Life of Project Results Framework is presented in the following section, followed by highlights of gains and achievements for the last fiscal year as well as challenges. The last section enumerates the performance targets for the fiscal year FY15, the implementation timetable and budget.

### 1.3 LOP Results Framework



## 1.4 FY2014 Annual Report Summary Highlights

Project activities for FY2105 will build on project achievements, major milestones and challenges for the reporting period (FY2014), which are summarized below:

1. In October 2013, the project installed rainfall and river sensors in Abuan watershed to model the relationship between rainfall and river flows. The project completed a 0.5 m contour map of the Abuan flood plain to build a digital elevation model. Since their installation in October 2013, the weather stations are sending data as expected. The DOST installed a Divilacan rainfall station and shared rainfall data for project use. The BSWM is sharing access to their weather data for use by the project.
2. The DOST-ASTI provides free hosting services and access to an internet-based viewing platform. The rainfall and flood sensors, when combined with other sensors, e.g. satellite, Aparri doppler radar - are providing timely inputs to the City DRRM Center as in the case of Typhoons Luis and Mario in September. In Sept 14, a lag-time of 3.5 hours was recorded at Divilacan station during Typhoon *Luis* between peak rains and peak floods in Abuan bridge where the river rose 2 m.
3. A household map of eight barangays (i.e. Cabizera 14-16, Cab 10, Cab 25, Cab 22, Cab 23, Cab 8, Cab 27, Batong Labang) was prepared using Google Maps and overlaid with the digital elevation model. Floods were simulated using a river routing model. Households were mapped as to vulnerability to flooding. Barangay officials compiled the names of household members into a database/master list which included PWDs, elderly, sickly, women and children.
4. On May 15, 2014 the project facilitated a workshop "Preparing for El Nino and La Nina in 2014" attended by 100 participants from 16 organizations/LGUs. Barangay participants identified the need for evacuation centers, radio equipment, emergency kits, hazard maps, early warning systems and training on hazard management. To mitigate drought risks, they identified water pumps, drought-resilient corn seeds, shallow tube wells and diversion canals for irrigation.
5. From July - August, the Philippine National Red Cross (PNRC) facilitated DRRM trainings in 8 barangays, followed by simulated evacuation drills participated by 2000+ residents in five (5) cluster barangays. The project distributed UHF/VHF base radios, emergency kit and flood gears to barangay first responders.
6. The hydrologist consultant calibrated a flood model using data from past storm events. The simulation showed two flood waves - an earlier but smaller flood wave from Abuan watershed followed by a larger flood wave from *Pinacanauan de Ilagan*. Both waves originate from a combined catchment area of 3600 sq-km - a catchment area large enough to cause catastrophic flooding. Modeling results highlighted the need to monitor rainfall and river flows, not only in the Abuan watershed, but also in the *Pinacanauan de Ilagan* catchment.
7. In May 2014, the Provincial DRRMC of Isabela installed rain gauges and river sensors in the *Pinacanauan de Ilagan*. This was designed to issue warnings to communities to threats from flooding from the *Pinacanauan de Ilagan* River. However, their sensors were designed to log data only during extreme flood conditions and data is transmitted by radio instead of text. This makes integration of sensor data for integrated modeling and real-time forecasting more difficult. The project plans to install a river and rainfall

sensor in the *Pinacanauan de Ilagan River* at San Mariano Bridge, once the construction of the bridge is completed.

8. The project surveyed 162 farmer respondents in the Abuan watershed to gather data on corn farming practices, planting and harvesting calendars, yields, selling prices, quantity and price of inputs, perceived indicators of water stress, yields during the 2010 El Nino, mitigating practices to drought, problems and recommendations. Significant variables affecting yields are El Nino dry spell episodes, amount of nitrogen applied, size of farms and age of farmers. A corn production function was developed that can be used to predict yields, assess areas of improvements and recommend best practices for future training events.
9. Crop data (biomass, height, kernels, LAI, canopy cover and crop genetic coefficients) were derived from field sampling activities. The AQUACROP model simulated crop growth with good results ( $R^2 = 0.95$ ,  $RMSE=1.56$  t/ha). Similar results were achieved using DSSAT in all plots. Mean error between simulated and actual dates of emergence, flowering, start of grain filling and physical maturity were close (<7 days) for all plots. One outlier (11 days) was observed for date of physical maturity in Sindon Bayabo.
10. A forest land use change map (2000-2012) shows the deforestation hotspots in Barangays Bintacan and Sindon Maride of the Abuan watershed. These will be inputted to the CLUP and CDO of Ilagan City, as well as IEC campaigns.
11. The agriculturist/land use consultant is training and mentoring Ilagan City LGU technicians in surveying and preparing land use maps, agricultural maps and soil maps as GIS inputs to the CLUP. Delays were experienced due to unavailability of target LGU personnel. The City LGU of Ilagan hired an urban land use consultant to prepare their CLUP.
12. The project, through financial support from National Geographic Channel, distributed 16,181 tree seedlings to 138 farmers for planting to over 263 hectares of farm areas.
13. The DOST installed agro-meteorological, weather and river sensors in the Cagayan river basin. Through the Weather Integration and System Enhancement (WISE) and Drought and Crop Assessment and Forecasting Projects (DCAF), the DOST through the UP-IESM is funding weather modeling to improve weather forecast from 6 hours to 6 days and an early drought warning systems using satellite data. Both systems will be integrated with crop models to provide crop forecasts and to detect anomalies due to El Nino.
14. On July 30, a Memorandum of Understanding was signed with IBM Philippines, Department of Agriculture Region 2 Field Office, Isabela State University and WWF to develop and pilot a farmer decision support system (FDSS) for Isabela Province. With support from DCAF and WISE projects of DOST, the FDSS will allow farmers and stakeholders to access weather forecasts and crop models to inform their farming decisions.

Evidence-based policy formulation requires science-based articulation of problems, risks and opportunities arising from increasing weather variability and Climate Change. Sensor and field data fed into crop and flood models provided the scientific basis for better understanding of present risks associated with disasters and climate change. These models need further

refinement for making better predictions and risk assessments. These risks are compounded by loss of forests in the Abuan watershed and the ecosystem services that they provide.

Articulating these risks, problems and opportunities through policy instruments, such as CLUP, DRRMP, CDP and AIPs, as well as raising public awareness, will be needed as the first step in institutionalizing solutions and budgets, followed by building capacities of mandated institutions. For FY2015, the project is expected to transition from “research” phase into “capacity building” phase by building the tools - maps, models, databases - for use as decision support by the target institutions.

The target audiences are the province, Ilagan city and barangay local governments in terms of anticipating flood risks in both their short-term and long-term DRRM plans. While the Department of Agriculture Regional Field Office - Region 2 and its local partner technicians and farmers are key actors in addressing drought risks through farmer decision support systems. An assessment of knowledge, skills and attitudes will direct development of future training programs, IEC materials, and knowledge products.

## II. WORK PLAN FOR FY2015 (October 1, 2014 to September 30, 2015)

The annual plan was prepared based on Life of Project results framework and results of the stakeholders plan inception workshop in 2013. The following section provides a technical narrative of the components planned for FY2015 implementation followed by a list of performance indicators. A GANNT chart or monthly implementation schedule is presented in the succeeding section followed by a budget plan by quarter. The total amount requested for FY2015 is PhP 13,488,000 pesos. Total project cost is PhP 17,502,556, of which 29% constitute counterpart contributions from government and corporate partners.

### 2.1. Improving Community Resilience to Flooding

For FY2015, the project will undertake the following:

1. Organize event to present results of flood modeling study and turn over flood equipment to the LGU of Ilagan.
2. Install rainfall and river sensor in San Mariano/Benito Soliven Municipality along the Pinacanauan de Ilagan River.
3. Take water level-velocity readings in the Abuan, Bintacan and Ilagan rivers during storm events and produce a rating curve.
4. Re-calibrate the flood inundation model using the rating curve and data from sensors installed in the *Pinacanauan de Ilagan* catchment. Seek access to rainfall data from Casiguran, Quirino and Dinapigue stations to track typhoons entering the *Pinacanauan de Ilagan* watershed.
5. Propose MOU to integrate and align the Abuan flood model with the Flood Early Warning System of the City LGU of Ilagan and the Provincial DRRMC and propose sharing of flood models and data. The early warning system will be packaged into a decision support system for use by the DRRMCs.
6. Conduct DRRM refresher courses and flood evacuation drills in the eight barangays using lessons documented from the previous year.
7. Assist the City Planning Department in producing and integrating land use, forest, agriculture and soil maps into their CLUP. The project will propose to the City LGU the establishment of flood zones and development of zoning strategies to be embedded in the draft CLUP and draft Zoning Ordinance of Ilagan City. The LGU hired Palafox Co. as a third party consultant to prepare their CLUP.

## 2.2 Improving Community Resilience to Dry Spells

For FY2105, the project will undertake the following:

1. Monitor El Nino dry spell during Q2 and Q3 of FY2015. Conduct El Nino forum with stakeholders to monitor progress of identified actions from the May 2014 workshop titled "Preparing for El Nino/La Nina in 2014".
2. Sensor data collection for wet season (May - September). Present crop modeling results and train agriculture officers and other stakeholders on use of crop models by December FY15.
3. Sensor data collection for dry season (Sept - March). Plant early maturing (Pioneer 105 d) varieties in CVRC experimental plots. Perform NDVI-LAI surveys coinciding with field sampling activities at CVRC. Perform 4 destructive sampling (biomass, yield) and corn phenology modeling using corn hybrid variety for wet and dry seasons in other plots.
4. Introduce uses of FDSS during the Farmers Field Day organized by DA-2 in April-May of 2015. Co-organize IEC and training events with ISU and DA-2 staff.
5. Climate Change Simulation. Access historical PAGASA Echague station data. Develop long-term time series for rainfall, temperature, radiation and humidity. Compare the time series averages with daily values generated from downscaled weather generator (MARKSIM) using various Global Circulation Model (GCM). Identify GCM with best skill and least errors. Use this model to generate daily weather ensemble for 2015, 2050 and 2100 and input values to DSSAT. Simulate corn yields for the ensemble, assess mean, variability, probability distribution of yields. ISU to do the same for rice.
6. Develop crop area production maps and simulate area yields using crop models and station data. Create GIS map interface in FDSS for end-users to view crop status maps.
7. Develop and pilot, through IBM Philippines, a Farmer Decision Support System for Isabela Province using validated crop models, weather data, maps and a server deployed by the project. Pilot test with selected cooperator- farmers for wet and dry seasons.
8. Develop, through UP-IESM<sup>1</sup>, a long-term NDVI time-series for Isabela; categorize NDVI anomalies; automate regular production of satellite products (i.e. NDVI, LAI maps); and apply a validated model to monitor and predict yield anomalies from extreme weather.
9. Develop and construct spring boxes for water systems in Sitio Pulang Lupa.

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<sup>1</sup> The UP-IESM is currently developing a drought and crop assessment and forecasting system (DCAF) funded by the DOST.

## 2.3 Improving Watershed Resilience

In FY2014, the project, through financial support from National Geographic Channel, distributed 16,181 tree seedlings to 138 farmers for planting to over 263 hectares of farm areas.

For FY2015, The project will leverage corporate funds from Sunlife Philippines to distribute 4,000 seedlings to 35 farmers in Bgy Villa Imelda and Sitio Pulang Lupa.

## 2.4 Project Governance

The project facilitated an inception workshop in FY2013 to define the roles and contributions of project partners and to develop an M&E mechanism for the Abuan Project. In FY14, the project entered into agreements and partnerships with various institutions - DOST, LGU of Ilagan City, ISU-Echague, IBM Philippines, IESM and Dept. of Agriculture Region 2. These partnerships has now evolved into project components summarized as follows:

Agency	Component
DOST -Main	SMART agriculture
CPDO, CENRO, CAO of Ilagan City	CLUP, DRRM strengthening, flood risk
ISU-Echague	Rice and Corn - Crop Modeling
IBM	Data warehousing, Analytics
Dept of Agriculture	Farmer Decision Support systems
UP-IESM	Drought forecasting and Remote sensing

Due to growing number of organizations and complexity in project monitoring, annual M&E has become more difficult. Instead of annual M&E, the project will convene the LGU monitoring committee of Ilagan City on July 2015 - mid-term of the project - to present mid-term accomplishments and plans.

### 2.4.1 Exit strategy

The project's exit strategy puts emphasis on quality at entry, weaving mandates through agreements, facilitation role of the project, and enhancing capacities. For the life of project, the following indicators will be tracked to measure buy-in and ownership of project partners over planned activities and outputs.

	Accomplished (Y/N)
1. Project Inception workshop proceedings	Y
2. MOAs with DOST, City LGU of Ilagan and DA-CVIARC	Y
3. M&E Committee Meeting minutes	
4. Updated FLUP/CLUP	
5. Annual Investment Plans of LGU	
6. Post-Disaster reports of DRRMO and member agencies	Y
7. Annual Reports of ISU-Echague	Y
8. Data transmitted by deployed stations under Project NOAH	Y

## **2.5 Project Performance Indicators for FY2015**

The following section presents the performance indicators for FY2015. These indicators correspond to the technical plan narratives in the preceding section. A list of performance indicators is as follows:

Indicator 1. Number of laws, policies, strategies, plans, agreements or regulations addressing climate change officially proposed, adopted or implemented as a result of USG assistance.

Indicator 2. Number of institutions with increased capacity to adapt to the impacts of climate change as a result of USG assistance.

Indicator 3. Number of stakeholders with increased capacity to adapt to impacts of climate variability and change as a result of USG assistance.

Indicator 4. Number of person hours of training in climate change adaptation spent.

Indicator 5. Amount of investment leveraged in USD from private and public sources for climate change.

Indicator 6. Number of climate change vulnerability assessments conducted as a result of USG assistance

Indicator 7. Number of hectares of natural resources under improved management

Indicator 8. Number of water supply systems designed and/or established

Indicator 9. Number of households with improved access to water

Performance Indicator Sheet No. 1			Standard
<b>Indicator 4.8.2-28. Number of laws, policies, strategies, plans, agreements or regulations addressing climate change officially proposed, adopted or implemented as a result of USG assistance.</b>  <b>Unit of measure:</b> No of agreements, plans, regulations	<b>FY</b>	<b>Target</b>	<b>Actual</b>
	13	4	3
	14	9	8
	15	7	
	16	1	
	17	0	
	<b>Total</b>	19	

	FY 13		FY 14		FY 15		FY 16		FY 17	
	Target	Actual								
<b>No of MOAs</b>	4	3	2	1						
<b>No of plans</b>			7	7	6		1			
<b>No of laws</b>					1					

For FY15, the target deliverables are 4 barangay actions plans, 1 CLUP, 1 FLUP and 1 draft zoning ordinance.

The project will produce deforestation/forest cover maps and flood hazard map for inclusion into the city FLUP and CLUP. The project will propose inclusion of flood zones to a draft zoning ordinance. This ordinance will likely be enacted in the next fiscal year FY16.

**Data Collection and Analysis Methodology:** workshop, training and meeting reports with attendance sheets, letter requests

**Disaggregate by:** Type of Instrument

**Data source:** copies of signed MOAs/MOUs, workshop proceedings and training reports, attendance sheets, copy of CLUP, FLUP and draft zoning ordinance

**Data Verification:** Copies of instruments. Community plans will be accompanied by workshop attendance list. Contact information to be provided.

**Baseline Information:** Baseline is October 2012. No agreements, plans or laws as of 1 Oct 2012. All new instruments will contribute to this indicator. Contact persons: Danny Domingo CENRO, Butch Estavillo, Ilagan City DRRM Officer, Engr Rosie Aquino, CVRC OIC-Director

Performance Indicator Sheet No. 2			Standard
<b>Indicator 4.8.2-14. Number of institutions with increased capacity to adapt to the impacts of climate change as a result of USG assistance.</b>  <i>Unit of measure:</i> No of institutions	<b>FY</b>	<b>Target</b>	<b>Actual</b>
	13	0	0
	14	16	18
	15	4	
	16	0	
	17	0	
	<b>Total</b>	20	

	FY 13		FY 14		FY 15		FY 16		FY 17	
	Target	Actual								
<b>No of institutions trained on flood mitigation</b>	0	0	16	18	0		0		0	
<b>No of institutions trained on drought mitigation</b>	0	0	0	0	4		0		0	

**Outputs:**

In October 2014, the project will convene an EL Nino forum to train members from 4 barangays on El Nino drought risk mitigation. ISU will conduct training on use of crop models to staff from BSWM, DA-Research & Planning, LGU City Agriculturist and the private sector (corn traders, suppliers, creditors). The project will organize IEC and training activities to introduce crop models and pilot the Farmers Decision Support System (FDSS) during the Farmers Field day organized by DA in 2015.

For flooding, the project will provide refresher courses on early warning systems and flood evacuation drills to DRRMC member representatives and 8 barangays by July-Sept 2015.

**Disaggregate by:** Institutions and individuals per institution

**Data source:** Project Reports

**Person Responsible:** Project Director

**Data Verification:** signed attendance list, agency contacts will be provided.

**Baseline Information:** Baseline is October 2012, No capacity building activities by the project as of Oct 2012. All new capacity enhancing initiatives will contribute to this indicator.

Performance Indicator Sheet No. 3			Standard
<b>Indicator 4.8.2-26 Number of stakeholders with increased capacity to adapt to impacts of climate variability and change as a result of USG assistance.</b>  <i>Unit of measure:</i> Number of persons trained	<b>FY</b>	<b>Target</b>	<b>Actual</b>
	<b>13</b>	40	39
	<b>14</b>	250	2188
	<b>15</b>	200	
	<b>16</b>	200	
	<b>17</b>	200	
	<b>Total</b>	765	

	FY 13		FY 14		FY 15		FY 16		FY 17	
	Target	Actual								
<b>Number trained in flood response</b>	0	0	210	2050	35		35		35	
<b>Number trained in drought mitigation</b>	0	0	0		125				125	
<b>Number trained in agro-forestry</b>	40	39	40	138	40		40		40	

**Outputs:**

For FY2015, the project will train 160 individuals on flood and drought risk mitigation and 40 farmers on agro-forestry. Specifically, the project will present crop modeling results and introduce the use of FDSS to 125 farmers during the El Nino Forum in October 2014 and on the Farmers Field Day in May 2015. (Note: This target is advanced from FY16 to FY15). The project will deliver refresher course and evacuation drills to 35 individuals coming from the City DRRM Council and each of the 7 barangays by July-Sept 2015. The project will train 40 farmers on agro-forestry by FY2015.

**Rationale:** The indicator will increase awareness; provide information, tools and technical knowledge to adapt to climate change.

**Data Collection and Analysis Methodology:** Project reports with list of trainees by name, barangay and training module.

**Disaggregate by:** barangay and gender

**Data source:** Project reports.

**Data Verification:** photo documentation and signed attendance lists

**Baseline Information:** Baseline is October 2012, No training done by the project as of Oct 2012. All new trainees will contribute to this indicator.

Performance Indicator Sheet No. 4			Standard
<b>Indicator 4.8.2-6. Number of person hours of training in climate change adaptation.</b>  <i>Unit of measure:</i> No of persons - hours	<b>FY</b>	<b>Target</b>	<b>Actual</b>
	13	120	117
	14	1380	6,564
	15	330	
	16	1080	
	17	1080	
	<b>Total</b>	3990	

	FY 13		FY 14		FY 15		FY 16		FY 17	
	Target	Actual								
No of person-hours on flood risk mitigation	0		1260	6150	210		210		210	
No of person-hours on drought risk mitigation	0		0		750		0		750	
No of person-hours on agro-forestry	120	117	120	414	120		120		120	

**Outputs:**

The project will provide 210 person-hours (35 individuals x 6 hours) of refresher course and evacuation drills to members of the City DRRM Council and to the 7 barangays by July-Sept 2015.

The project will provide 750 person-hours (125 persons x 6 hours) to train stakeholders on crop modeling and introduce the use of FDSS during the El Nino Forum in October 2014 and on the Farmers Field Day in May 2015. (Note: This target is advanced from FY16 to FY15).

The project will provide 120 person-hours of training (40 farmers x 3 hours) on agro-forestry by FY2015.

**Data Collection and Analysis Methodology:** Training report with copy of training module and attendance list.

**Disaggregate by:** barangay and gender

**Data source:** Project reports.

**Person Responsible:** Project Director

**Data Verification:** photo documentation and signed attendance lists

**Baseline Information:** Baseline is October 2012. All new trainees will contribute to this indicator.

**Baseline Information:** Baseline is October 2012. All new training initiatives will contribute to this indicator.

Performance Indicator Sheet No. 5			Standard
<b>Indicator 4.8.10. Amount of investment leveraged in USD from private and public sources for climate change.</b>  <i>Unit of measure:</i> US Dollars	<b>FY</b>	<b>Target</b>	<b>Actual</b>
	<b>13</b>	75 K	30K
	<b>14</b>	50 K	
	<b>15</b>	150 K	
	<b>16</b>	50 K	
	<b>17</b>	55 K	
	<b>Total</b>	<b>USD 380 K</b>	

	FY 13		FY 14		FY 15		FY 16		FY 17	
	Target	Actual								
<b>Amount leveraged</b>	75 K	30K	50 K		150 K		50 K		50 K	
<b>Amount leveraged for water systems</b>					5 K					

**Outputs:**

The following table summarizes sources of counterpart funds to be leveraged for FY15-FY17. A large part will be raised through counterparts from DOST projects (WISE, DCAF), IBM-Philippines and ISU-Echague. Sunlife-Phils will finance water improvement in Sitio Pulang Lupa.

Source	Details	Amount (PHP)
IBM Phils	Programming, business analytics for FDSS	1,000,000
UP-IESM/DOST	Drought and crop assessment and forecasting (DCAF)- to develop new drought indices/indicators that are suitable for Philippines conditions for phenology and crop modeling studies, and to establish a reporting system, based on these indices, that will enable the monitoring and dissemination of drought conditions in agricultural regions at different temporal and spatial scale.	5,846,594 <sup>1</sup>
ISU-Echague	Oscar M Lopez grant for rice modeling using DSSAT. This will be used for input to the FDSS.	1,000,000
UP-IESM/DOST	Project WISE (weather Integration System Enhancement)- will improve PAGASA weather forecast from 6 hours to 7 days. This will be piloted in Isabela Province.	10,460,196 <sup>1</sup>
Sunlife Phils.	Water system improvement in Pulang Lupa	200,000
Total PhP		18,506,790
Total USD*		430,390

\*PhP43:1 USD

**Disaggregate by:** adaptation public sector investments, adaptation private sector investments, sustainable landscapes private sector investments, sustainable landscapes public sector investments

**Data source:** Copies of MOAs, project profiles in government websites, certifications with peso amounts indicated

**Person Responsible:** Project Director

**Data Verification:** signed MoAs, Published projects, partner contacts can be made available

**Baseline Information:** Baseline is October 2012. USD 50K worth of seedlings raised for Abuan for the period Q1FY13. Exchange rate is 1 USD: 40 PhP. Value of planted seedlings as of Oct 1, 2012 to be determined.

Performance Indicator Sheet No. 6			Custom
<b>Indicator 1. Number of climate change vulnerability assessments conducted as a result of USG assistance</b>  <i>Unit of measure:</i> Number of barangays with vulnerability assessment studies	<b>FY</b>	<b>Target</b>	<b>Actual</b>
	13	0	0
	14	7	8
	15	4	
	16	0	
	17	0	
	<b>Total</b>	11	

	FY 13		FY 14		FY 15		FY 16		FY 17	
	Target	Actual								
No of Barangays with flood VAs	0	0	7	8			0		0	
No of Bgys with drought VAs	0	0			4					

**Outputs:** For CY2015, the project will organize an El Nino Forum/workshop for 4 barangays (Rangayan, Villa Imelda, Sindon Maride, Sindon Bayabo). The workshop will generate an Issue-Action matrix as basis for action planning to address drought risks by the target barangays.

**Data Collection and Analysis Methodology:** One (1) report consolidating 4 drought risk assessments

**Disaggregate by:** Type of hazard risk and impact barangays

**Data source:** Project Reports with VAs, Issue-Action matrix, risk maps;

**Data Verification:** Stakeholder validation of reports

**Baseline Information:** Baseline is October 2012, No VA s yet as of Oct 2012. Source: DRRMC and CVIARC, Ilagan City. All new VAs will contribute to this indicator.

Performance indicator Sheet No. 7			Standard
<b>Indicator 2. Number of hectares of natural resources under improved management</b>  <i>Unit of measure:</i> No of hectares	<b>FY</b>	<b>Target</b>	<b>Actual</b>
	<b>13</b>	80	50
	<b>14</b>	50	263
	<b>15</b>	50	
	<b>16</b>	50	
	<b>17</b>	0	
	<b>Total</b>	230	

	FY 13		FY 14		FY 15		FY 16		FY 17	
	Target	Actual								
<b>No of hectares</b>	80	50	50*	263	50		50		0	

\*80 hectare target each year scaled down to 50 hectares. DENR reforestation outputs in Abuan through the National Greening Program will no longer be counted.

**Outputs.** Corporate donations will be mobilized to plant in 50 hectares of private farmlands. Agro-forestry established in farm lands are estimated based on farmers' landholdings and not on planting footprint. In the long-term, it is assumed fruit trees will replace seasonal crops over the entire farm area as sources of income.

**Data Collection and Analysis Methodology:** Beneficiary list, farm plans, maps of out planted seedlings as part of Project Report.

**Disaggregate by:** By beneficiaries, farm areas and location

**Data source:** Project Reports submitted to Corporations

**Person Responsible:** Project Director

**Data Verification:** GPS readings of farm plots, names of beneficiaries and no. of seedlings will be provided.

**Baseline Information:** Baseline is 1 October 2012. All 'new' hectares will contribute to this indicator.

<b>Performance Indicator Sheet No. 8</b>		<b>Custom</b>	
<b>Indicator 3. Number of water supply systems designed and/or established</b>  <i>Unit of measure:</i> No of water systems designed and/or established	<b>FY</b>	<b>Target</b>	<b>Actual</b>
	13	0	0
	14	0	0
	15	1	
	16	1	
	17	1	
	<b>Total</b>	3	

	FY 13		FY 14		FY 15		FY 16		FY 17	
	Target	Actual								
<b>No of water systems designed &amp; established</b>	0	0	0	0	1		1		0	
<b>No of water systems designed</b>	0	0							1	

**Output:** For CY2014, the project will develop five (5) spring boxes in So. Pulang Lupa with grant funding from Sunlife-Phils.

**Data Collection and Analysis Methodology:** Copies of pictures of 2 water storage systems, copies of feasibility studies, as-is plans

**Disaggregate by:** Type of water system

**Data source:** Project reports

**Person Responsible:** Project Director

**Data Verification:** signed MoAs

**Baseline Information:** Baseline is October 2012, of Oct 2012. No new water system installed by the project. All 'new' systems will contribute to this indicator.

<b>Performance Indicator Sheet No. 9</b>			<b>Custom</b>
<b>Indicator 5. Number of households with improved access to water</b>  <i>Unit of measure:</i> No of households	<b>FY</b>	<b>Target</b>	<b>Actual</b>
	13	0	0
	14	0	0
	15	31	
	16	0	
	17	0	
	<b>Total</b>	0	

	FY 13		FY 14		FY 15		FY 16		FY 17	
	Target	Actual								
<b>No of HH with water systems</b>	0				31					

**Output:** For FY2015, water improvement projects will benefit 31 households.

**Data Collection and Analysis Methodology:**

**Disaggregate by:** households and gender

**Data source:** Project reports

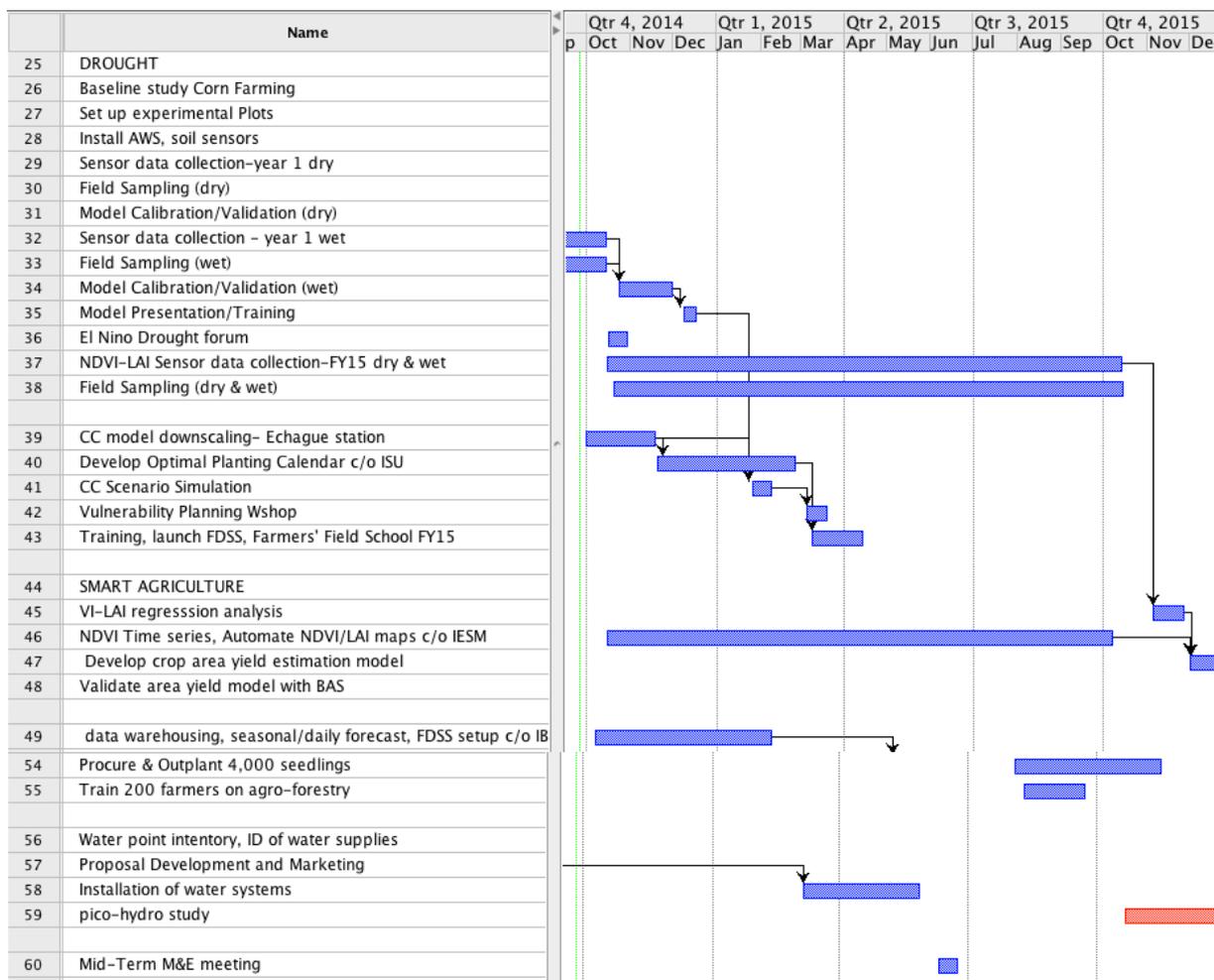
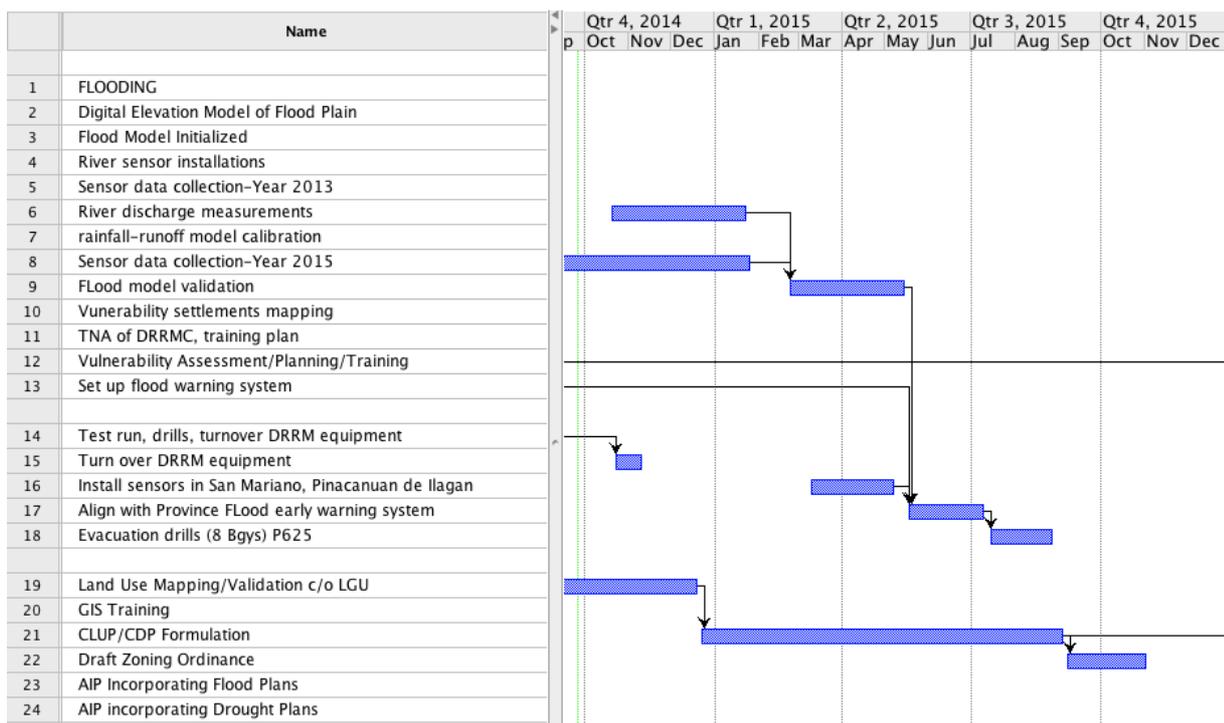
**Person Responsible:** Project Director

**Data Verification:** sketch maps and names of household members, pictures of water systems

**Baseline Information:** Baseline information to be updated.

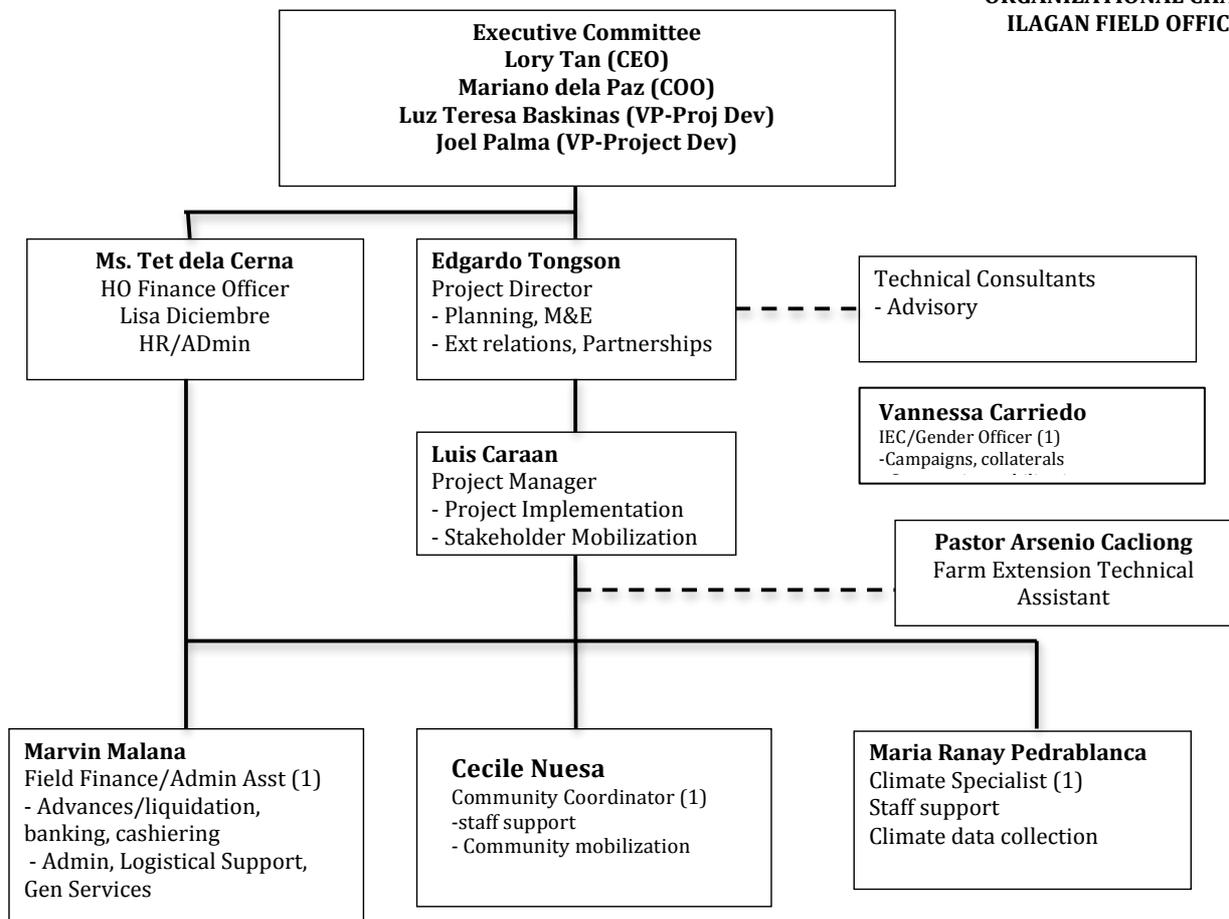
## 2.6 FY2015 GANNT Chart

The project timetable is shown below.



2.8 Organizational Chart, FY2015

**ORGANIZATIONAL CHART  
ILAGAN FIELD OFFICE**



## 2.8.1 Personnel Roles and Duties

### Project Staff

Position Title	Name of Personnel	Description of Duties
Project Manager	Luis Caraan <a href="mailto:lcaraan@wwf.org.ph">lcaraan@wwf.org.ph</a> cell: 0917-522672	Lead in executing the Project's work plan
Climate Specialist	Maria Ranay Pedrablanca <a href="mailto:mpedrablanca@wwf.org.ph">mpedrablanca@wwf.org.ph</a> cell: 0916-3805416	Participate in planning, technical assistance in activities in relation to climate and climate change areas; consolidates, maintains, monitors sensor data, climate information generated and provides these to communication/ IEC material development, and inputs to planning processes
Community Coordinator	Cecil Nuesa <a href="mailto:cnuesa@wwf.org.ph">cnuesa@wwf.org.ph</a> cell: 0917-9872700	At the site level, he/she coordinates and arranges schedules the various project activities of project partners, collaborators/ consultants.
Field Admin/ Finance Assistant	Malvin Malana <a href="mailto:mmalana@wwf.org.ph">mmalana@wwf.org.ph</a> cell: 09062212118	Provides for field-based finance and administrative requirements including procurement of supplies, keeps track of use of revolving fund (to be set up at field level)
Project Director	Edgardo Tongson <a href="mailto:etongson@wwf.org.ph">etongson@wwf.org.ph</a> 0917-836-8153	Project technical design and plan development, translating plans to policies. Lead in tracking the progress towards, performance measurement plan (PMP) table of indicators

Ilagan City Field Office Address:	Room 2 2 <sup>nd</sup> Floor J.L. Cua Building Bgy San Vicente, Ilagab City, Isabela Telephone (Globe) (078) 262-0851
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## 2.8.2 HQ Support Staff

Position Title	Name	Description of Duties
GIS/ RS Specialist	MG Daproza <a href="mailto:mgdaproza@wwf.org.ph">mgdaproza@wwf.org.ph</a> 0918-4930937	GIS technical assistance, map composition and printing, works with hydrologists on the hydrological mapping
Communications Officer	Gregg Yan <a href="mailto:gyan@wwf.org.ph">gyan@wwf.org.ph</a> 0917-8334734	Participates in conceptualization, and review of information, education and communication materials including media releases
VP for Programmes	Joel Palma <a href="mailto:jpalma@wwf.org.ph">jpalma@wwf.org.ph</a> 0920-9477951	Supervision and monitoring over planning, field implementation and evaluation of project activities
VP for Project Development and Grants Monitoring	Luz Baskinas <a href="mailto:lbaskinas@wwf.org.ph">lbaskinas@wwf.org.ph</a> 0918-9100250	Project development and monitoring of grants and project implementation
VP for Marketing	Michelle Mohinani <a href="mailto:mmohanani@wwf.org.ph">mmohanani@wwf.org.ph</a> 0915-8964938	Support fundraising, resource mobilization for private sector involvement
Chief Operations Officer	Mariano de la Paz <a href="mailto:mdelapaz@wwf.org.ph">mdelapaz@wwf.org.ph</a> 0917-7064616	Contracts/ MOUs and compliance to operations policies
Finance Officer	Mrs. Tet dela Cerna <a href="mailto:tdelacerna@wwf.org.ph">tdelacerna@wwf.org.ph</a> 0915-4982046	Financial management, reporting, planning, auditing,
Bookkeeper	Larry Lachica <a href="mailto:llachica@wwf.org.ph">llachica@wwf.org.ph</a> 0917-8079084	Bookkeeping and monitoring of project expenditures, preparation of budgets and financial report
HR Officer	Elisa Diciembre <a href="mailto:ediciembre@wwf.org.ph">ediciembre@wwf.org.ph</a> 0916-2448299	Compensation & benefits system, SSS, PhilHealth, insurance, BIR
Administrative Officer	Angie Rondilla (Admin Officer) <a href="mailto:arondilla@wwf.org.ph">arondilla@wwf.org.ph</a> 0917-8566637	Procurement, fixed assets management, building administration & management, general maintenance, messenger, bank errands

## Annex A. Environmental Mitigation and Monitoring Plan, FY2015

Type of Project: Grant	Project Size: 63,000 hectares of watershed area
Project Name: Abuan Integrated Watershed Management Project	Nearby Communities: N/A inside government property
Implementing Organization: Kabang Kalikasan ng Pilipinas Inc.	Senior Project Manager: Edgardo E Tongson
Location Name: Ilagan City, Isabela	Monitoring Period: Oct 1 2014 - Sep 30 2015

# from ESF	Sub-activity or component	Description of Impact	Description of Mitigation Measure(s)	Responsible Party(ies)	Monitoring Methods			Estimated Cost (in US \$)
					Indicator	Method	Frequency	
1, 13	Construct five (5) 800-liter water systems	Reduced vegetation, Soil erosion	Plant tree seedlings Cover excavated soils with water proof mat'l	Project staff	No of tree seedlings planted	Geo-tagging of seedlings	Once every outplanting	P60/seedling x 10 seedlings = P600
	Install river-rainfall sensors in bridge along Ilagan River	None	None	Installer	None	None	None	None
	Short-maturing GMO corn, planted in 500 sqm experimental plot in DA CVRC (2,667 seeds over 500 sqm)	Possible long-term effects on health;	None	None	None	None	None	None
8		Risk of cross pollination with open pollinated varieties (OPV)	Set aside buffer between OPV and GMO corn areas; delay planting of GMO to avoid cross-pollination with OPVs,	Project Director/Modeler	Buffer area  Late planting for GMO corn	Field Layout including adjacent fields, pictures of plots  Crop model showing planting and pollination dates	Two times/year	4 visits x P400/day = P1,600

11	Application of N-chemical Fertilizers (6 kg/500 sqm)	Leaching to groundwater	Anticipate rain forecast; Apply only when soil moisture is within field capacity	Project Director/modeller	Moisture content at time of application	Soil moisture sensors	Two croppings/year	None <sup>1</sup>
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<sup>1</sup> Same

**ANNEX B. GENDER ACTION PLAN , FY2015**

Project Title: Abuan Integrated Watershed Management Project

Prepared by: KKPF

Date: Sept 30. 2014

Project	Gender Statements (Issues and/or Proposed Actions)	Entry Points	Activities	Actual Progress in FY2015
Kabang Kalikasan ng Pilipinas (KKP) – Abuan Integrated Watershed Management Program	<p>The Abuan Integrated Watershed Management Program seeks to develop a governance mechanism and implementation arrangements to apply an IWRM with climate change adaptation measures responsive to gender and development concerns. Specifically, the project will:</p> <ul style="list-style-type: none"> <li>•highlight gender issues in IEC materials</li> <li>•Integrate gender issues into government plans and programs</li> <li>•Catalyze development of water related infrastructure in upland areas of Abuan to improve access by women to water and</li> <li>•Ensure meaningful participation of women and women advocacy groups in planning, training and M&amp;E activities.</li> </ul>	A. Planning/ Training	<ul style="list-style-type: none"> <li>• Invite ILAW and women individuals in DRRM training and flood evacuation drills</li> <li>• Ensure disaggregation of data by gender in training reports and workshop proceedings</li> <li>• Hire gender-sensitive communications officer, allocate budget</li> </ul>	
		B. Implementation	Water systems installed in Sitio Pulang Lupa, improve water access by women	

Project	Gender Statements (Issues and/or Proposed Actions)	Entry Points	Activities	Actual Progress in FY2015
		C. Monitoring, Evaluation and Learning	<ul style="list-style-type: none"> <li>• Invite ILAW and women individuals to project M&amp;E meetings</li> </ul>	

**Notes:**

1. The Gender Action Plan (GAP) is prepared by USAID/Philippines' implementing partners (contractors, grantees and cooperators) together with their respective C/AORs during the annual Gender Workshop organized by the Program Resources Management Office.
2. The GAP inputs consist of the results of the project/activity's gender analysis during the design phase, the Gender Issues in Project (Table 1), and the gender assessment scores using the Harmonized Gender and Development Guidelines.
3. The GAP is reviewed by the Gender Advisor and approved by the Program Officer.