MDG ACHIEVEMENT FUND

(MDG-F 1656 Outcome 3.4)
Climate Resilient Farming Communities in Agusan del Norte
through Innovative Risk Transfer Mechanism

PARTICIPATORY VULNERABILITY AND ADAPTATION (V&A) ASSESSMENT FOR FARMING COMMUNITIES: THE AGUSAN DEL NORTE CCAP EXPERIENCE

(A Tool Kit)

A Climate Change Adaptation Project
implemented by the
INTERNATIONAL LABOUR ORGANIZATION
a specialized agency of the United Nations

with GOP Partners:
Department of Labor and Employment (DOLE),
Department of Trade and Industry (DTI),
and the Province of Agusan del Norte

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DEPARTMENT OF TRADE & INDUSTRY PHILIPPINES

Acknowledgement

This tool kit is a collaborative and painstaking endeavor of the main writers from the MDGF ILO-CCAP (Ms. Lurraine Villacorta, the Project Manager and Mr. Kurt Montero, staff) and Penpen Libres (of SUCCEED, Inc.), with support from Mr. Mario Castillo and Ms. Fidelina Valle, lay out artist and technical Editor, respectively (also both from SUCCEED, Inc.).

Greatest thanks are extended to numerous participants within and outside the farming communities, who, in one way or the other had contributed and been involved in the whole process of the V&A assessment, which form the basis of rich practical experiences (in a learning- by-doing approach) of this tool kit, such as the vulnerable farmers and communities themselves, the tireless MFT members and LGUs of the four pilot municipalities (i.e. Buenavista, Jabonga, Las Nieves and RTR), the critical mentors from the UPLB who provided the technical knowledge, PAGASA for furnishing the scientifically generated climate data, the well-meaning members of the TWG from the selected government line agencies (i.e. DTI, DA, DOLE) and the Provincial LGU of Agusan del Norte, and to all others who we inadvertently failed to mention.

Foreword

Box 1: The V&A Methodology

In accordance with the overall approach of the CCAP, this V&A Assessment was done in a participatory and collaborative manner ensuring full participation all key stakeholders particularly from the LGU and farmers in concerned communities. Moreover, in keeping with the capability-building thrust of the Project, the V&A was conducted through a "learning-by-doing" approach with the members of the Municipal Focal Teams (MFTs) and the Partners Technical Working Group (TWG composed of ILO, DOLE, DTI, Province of Agusan del Norte along with DA and DENR), trained and mentored on the methodology by V&A experts from the academe (UPLB).

Guided by the TWG and the academe mentors, the MFTs gathered available written materials, consolidated secondary information sources, conducted Focus Group Discussions (FGDs) and Key Informant Interviews (KIs) in the communities and mapped out production and settlement areas as well as hazards with farmers. This report, as well as the other three Municipal V&A Assessment Reports were prepared and written by the MFTs. The report is enhanced and finalized through cliniquing sessions with the TWG anchors, V&A mentors and packaging and lay-out support group, SUCCEED, Inc.

A full description of the methodology can be obtained in this V&A Toolkit.

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Acronyms

ADN	-	Agusan del Norte
AT	-	Agricultural Technician
CBMS	-	Community Based Monitoring System
CCA	-	Climate Change Adaptation
CCAP	-	Climate Change Adaptation Project
CLUP	-	Comprehensive Land Use Plan
DA	-	Department of Agriculture
DOLE	-	Department of Labor and Employment
DTI	-	Department of Trade and Industry
DA	-	Department of Agriculture
DENR	-	Department of Environment and Natural Resources
FA	-	Farmer's Association
FGD	-	Focus Group Discussion
GIS	-	Geographic Information System
GOP	-	Government of the Philippines
HDI	-	Human Development Index
HH	-	Number of Household
IPCC	-	Intergovernmental Panel on Climate Change
JP	-	Joint Programmes
ILO	-	International Labour Organization
LGU	-	Local Government Unit
LSPN	-	Caraga Learning Service Provider's Network
MA	-	Municipal Agriculturist and/or Municipal Assessor
MAO	-	Municipal Agriculture Office/ Officer
MBO	-	Municipal Budget Officer
MDG	-	Millennium Development Goal
MDG –F	-	Millennium Development Goal Achievement Fund
ME	-	Municipal Engineer
MFT	-	Municipal Focal Teams
MPDO/C	-	Municipal Planning and Development Office/Coordinator
MOU	-	Memorandum of Understanding
NSO	-	National Statistic's Office
NGO	-	Non-Governmental Organization
PAC	-	Project Advisory Committee
PAGASA	-	Philippine Atmospheric Geophysical, Astronomical Services Administration
PAO	-	Provincial Agriculture Office
PPDO	-	Provincial Planning and Development Office
PPDC	-	Provincial Planning and Development Coordinator
RBOs	-	Rural Based-Organization
RHU	-	Rural Health Unit
RTR	-	Remedios Trinidad Romualdez
SUCCEED	-	Sustainable Cooperation for Equitable Enterprise Development, Inc.
UN	-	United Nations
UNFCC	-	United Nations Convention on Climate Change
UPLBFI	-	University of the Philippines Los Baños Foundation, Inc.
V & A	-	Vulnerability and Adaptation

The ILO CCAP and the V&A Assessments in CCAP Areas

The Project Brief

The International Labour Organization (ILO), a specialized agency of the United Nations, in partnership with the Department of Labor and Employment (DOLE), Department of Trade and Industry (DTI) and the Province of Agusan del Norte is implementing a three-year Climate Change Adaptation Project (CCAP) entitled, "Climate Resilient Farming Communities in Agusan del Norte through Innovative Risk Transfer Mechanisms". This is under Outcome 3 of the Joint Programme on "Strengthening the Philippines' Institutional Capacity to Adapt to Climate Change", a joint programme of the United Nations and the Government of the Philippines implemented with support from the Spanish Government through the UN Millennium Development Goals- Achievement Fund (MDG-F) Thematic Window on Environment and Climate Change.

This CCAP in Agusan del Norte aims to showcase key determinants of adaptive capacity at work [economic conditions as well as availability and access to financial and productive resources], where target vulnerable populations are provided access to financial and productive resources for purposes not only of helping them cope in the event of climate change triggered disasters but of improving their socio-economic lot, especially through diversified livelihoods schemes. Livelihood diversification is deemed critical as new types of livelihoods are often required to effectively adapt to disasters and climate change vulnerabilities.

The Project Site

The CCAP is implemented by the ILO and its partners in Agusan del Norte, one of the four provinces in the Caraga Region (Northeastern Mindanao) in Southern Philippines which economy is primarily based on agriculture. It is the region's leading rice producer and other major crops include coconut, banana, corn, mango and an emerging crop-abaca. The province continues to be a major timber producer, with plywood plants operating in Butuan City, Buenavista and Magallanes. It has a land area of 273, 024 hectares and a population of 314,027 (2007 Census), 49% of which are women. Approximately 31,913 or more than half of the households (55.6%) live below poverty line, [more than twice higher than the national average of 24.4%].

Four priority municipalities in the Province of Agusan del Norte have been selected namely: Buenavista, Jabonga, Las Nieves and Remedios T. Romualdez (RTR). These areas were selected on the basis of a set of criteria which included: (a) contribution to provincial agricultural production in terms of area/yield and number of families dependent on farming as a main income; (b) general environmental condition and history of climate risk exposure based on incidence of extreme events and proportion of farming families affected by these events; (c) availability and access to support providers of training, markets and technology; (d) availability and access to financing institutions; (e) availability and access to insurance schemes and other risk transfer mechanisms; (f) level of pertinent knowledge and skills for agribusiness, environmental and resource management; climate and disaster risk management; (g) existence of GO-LGU -NGO/PO and/or collaborative initiatives relating to agribusiness and climate/disaster risk reduction; (h) poverty incidence; and (i) peace and order issues and concerns.

Box 2: The Project Objective and Expected Outputs

Project's specific objectives are two-folds: (1) To develop and test financial safety nets for vulnerable population, especially women, and (2) To develop the capacities of vulnerable populations to participate and avail of the benefits under economic diversification and a democratized governance system.

To these ends, under the project, innovative financing and insurance schemes will be developed, tested together with viable climate change adaptation options and documented to aid replication and up-scaling. Specifically, the Project's SMART outputs are:
(1) Guidelines for the Innovative Financing;
(2) Agreement with a Financing Institution to implement the Financing scheme;
(3) Climate Change Adaptation Insurance Fund; and
(4) Knowledge Management products & Policy Paper on possible up-scaling/replication

The priority areas cover 52.39% of the land area in the province or 143,045 hectares which is home to 37.03% of the provincial population or 116,289 people. Likewise, the areas are the home of 38.97% of the households living below poverty line (12,440 households) and 67.35% of the households living below the food threshold in the province (2,046 households). 106 NGOs/POs, including Financing Institutions, are reported to operate within these areas (39.70% of the reported 267 provincial data).

The updated profile of the province and its farming communities was produced in December 2009 through the baseline study conducted with the participation of more than 1,500 Key Informant farmers providing basis for the selection of the Project's priority areas: Buenavista, Jabonga, Las Nieves and R.T.Romualdez.

Three in-depth, municipal level studies were done following the baseline study. The "Vulnerability and Adaptation Assessment (V&A)" was done in parallel with the comprehensive "Farming Value Chain Analysis (FVCA). These two provided bases for the third study- the Market research on alternative livelihood or economic diversification and the appropriate financing schemes and other risk transfer mechanisms which yield the scheme which is the focus of this undertaking. All three were conducted in a participatory and collaborative manner with the municipal governments and the communities giving as much importance to the process, sharing of the skills for the conduct of such studies, ownerships of the results by the stakeholders not only because of the capacity development thrust of CCAP but also because "ownership" is deemed paramount to sustained action in response to the results.

The V&A Reports of the four municipalities looked into the bio-physical, socio-economic and institutional characteristics of the area vis-à-vis the past and current exposure to natural and climatic hazards. They pointed out that while only one is located within the typhoon track (Jabonga), experience of flooding (fast and slow rise) coming from excessive rain and rise in lake and river levels, occurring for extended periods as long as two weeks to more than two months, have caused damage to farms located in the municipalities and not only those in the very low-lying areas. In the other end of the spectrum, drought in several occasions including incidence of pest and diseases have been experienced historically causing similar damages and losses. These had been compounded by lack of facilities for storage, transporting and marketing, as well as lack of easy to access and affordable financing. With the damage to crops and inability to sell what can be salvaged easily, they are also prevented from engaging in production activities immediately after such calamities and extreme events due to the mentioned lack of capital and access to financing. Scenario analysis conducted in the V&A, predicted more damages and losses, as 2020/2050. Climate change scenario indicates more severe droughts during the normally dry seasons at the same time, more rainfall during normally wet seasons.

The V&A also outlined several adaptation strategies employed by communities in response to these past events and risk exposures as well as to the future scenarios. It also mapped out and identified its most vulnerable areas to climate change. High on the list of priority climate change adaptation options are economic and technological adaptation options in support of enhancing current production activities and diversifying income bases- both on farm and outside.


COLORADO ELEMENTARY SCHOOL

1 Principles and Key Concepts of V&A

1. Principles and Key Concepts of V&A

1.1. What is Climate Change and Vulnerability to Climate Change?

Weather refers to the mix of events that happen each day in our atmosphere including temperature, rainfall and humidity. Climate is described in terms of the mean and variability of temperature, precipitation and wind over a period of time, ranging from months to millions of years. Climate change, as defined by the Intergovernmental Panel on Climate Change (IPCC) is "any change in climate over time, whether due to natural variability or as a result of human activity." The United Nations Framework Convention on Climate Change (UNFCC) however puts more emphasis on human activities on its definition which is the "change in the climate attributed directly or indirectly to human activities, in addition to natural climate variability observed, over a comparable time periods"

Key to understanding Climate Change is to look at the earth as a greenhouse. Greenhouse gases (GHGs), the gaseous constituents of the atmosphere, both natural and man-made like Carbon Dioxide (CO2), methane, nitrous oxide, absorb and trap heat preventing it from escaping into space. While this process is important to keep the earth's temperature within a life-sustaining range, increase in the GHG levels at a fast rate has caused global warming. Human activities, like burning of fossil fuels for industrial process causes increase of GHG levels at very fast rate. Compounded by the rapid increase in deforestation, which has eliminated a great portion of the carbon sink, the high GHG levels led to global warming

Currently, CO2 level is greater than 387 ppm and continues to rise. The IPCC predicts temperatures to rise between 1.8 degrees and 4 degrees Celsius by 2100. With the temperature already higher than pre-industrial levels- the earth already being at a "warm period", any increase in temperature beyond 2 degrees Celsius, is predicted to have devastating impact on human lives, economic infrastructure and the natural environment (ADB, Climate Change 2009).

Climate change impacts refer to the effects of climate change to natural and human systems. Climate change through the weather variability and changing weather patterns it brings has in fact resulted to more extreme events – coming in higher frequencies and causing greater magnitude of weather-related hazardous events. As experienced in the Philippines and many other parts of the world, there is high likelihood that floods, droughts and tropical cyclones will become more severe.

Climate Change impacts on activities dependent on climate. It impacts on crop yields, as it affects temperature and water supply. It impacts on human settlements as well as coastal and marine ecosystems.

Vulnerability is by the IPCC as "the degree, to which a system is susceptible to, or unable to cope with, adverse effects of climate change,

including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate change and variation to which a system is exposed, its sensitivity, and its adaptive capacity".

People dependent on good weather and/or climate for their livelihood are potentially vulnerable. The poor, especially those residing in rural areas, like the farmers are vulnerable to the impacts of climate change. Disruptions to their income [oftentimes their only income source] are expected as unpredictability of weather sets in, more so when climate change brings about more extreme events.

In the long term, Climate Change, if unmitigated and with people not able to adapt effectively, is likely to result in the reversal of any economic gains made by the local communities and countries as a whole.

1.2. What is a V&A Assessment?

A Vulnerability and Adaptation (V&A) Assessment takes stock of the area characteristics, current and observed climate changes impacts along with natural hazards; and adaptation strategies employed in response to these, as well as looks at climate change scenarios for a particular locality.

A V&A is a risk assessment. It provides a methodology to determine the nature and extent of risk [or hazard] to which an area and its population are exposed to or will be exposed to in the future. It does this by evaluating existing conditions of vulnerability that together could potentially harm exposed people, property, services, livelihood and the environment on which they depend upon. It employs risk mapping which involves a review of the technical characteristics of hazards such as their location, intensity, frequency and even probability. It includes analysis of exposure and vulnerability in terms of the following dimensions: physical, social, health, economic and environmental.

A V&A assessment, as the term connotes, also take a look of the prevailing and alternative adaptation mechanisms and/or coping capacities with respect to the likely risk scenarios.

In these respect, the V&A corresponds to the risk assessment mandated by the Philippine Disaster Risk Reduction and Management Act of 2010 [R.A. 10121], under Sec. 3 (ii).

A V&A as the IPCC puts forward is an important process through which duty-bearers, projects like the CCAP, can recommend climate change adaptation options for its stakeholders. It is a scientific and data-based assessment, a crucial component of which is the practice of identifying "options to adapt to climate change and evaluating them in terms of criteria such as availability, benefits, costs, effectiveness, efficiency and feasibility".

Adaptation is defined by the IPCC as an "adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects,

which moderates harm or exploits beneficial opportunities". In addition, climate change adaptation was defined by Angus Mackay of the United Nations Development Program (UNDP) as a "type of a risk management strategy that aims to reduce vulnerability to climate change impacts and reduce human and material losses". This is complemented by another risk management strategy, known as climate change mitigation which aims to reduce green house gas emissions and magnitude of global warming.

Adaptation options can come in various forms and run the range of socio-political-institutional, technological, economic and physical infrastructure. The V&A results in a prioritized set of these options. A crucial first step to adaptation is addressed by the actual conduct of the V&A Assessment, through the collection, consolidation and making available the weather, exposure and vulnerability data to the planners and others,

The V&A Assessment Report of each locality provides a comprehensive reference on the following (a) area characterization: biophysical; socio-economic; and institutional environment; (b) characterization of the current hazards and observed climate change impacts; (c) current adaptation strategies; as well as (d) scenario analysis. Mapped out in the V&A reports are the zones facing threats and risks to both natural and climatic hazards. The scenario analysis section of the report point to the projected magnitude of these risks as well as priority climate change adaptation option based on downscaled scenarios [in the case of the CCAP in Agusan del Norte, these were for 2020 and 2050.]

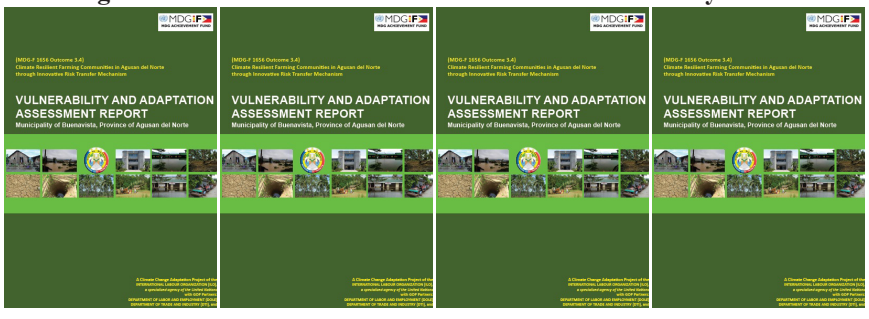
1.3. Who are involved in the V&A Assessment?

The V&A is a scientific and data-based assessment, as such, its conduct would necessitate the involvement of technical personnel from concerned institutions- date providers, collectors, analysts and other technicians including map preparers and computer experts.

The V&A, however, as the experience in Agusan del Norte show, needs to be a participatory and a collaborative process involving local stakeholders, actual farmers, representatives of farmers associations in the case of the agriculture sector.

The locals are the best source of information providing the historical accounts and completing the picture often left gaping by statistics and traditional data sets. In addition, the conduct of the activities under the V&A provides a great opportunity for raising awareness on climate change and the risks it brings. The mapping exercises done with the actual

Figure 1: V&A Assessments in the CCAP's Four Priority Areas



farmers are excellent venue not only for identification of the extent of area and types of crops exposed to hazards like floods, excessive rainfalls but also for sensitization of the farmers to climate change.

Moreover, the prioritized climate change adaptation options have greater chances of being followed-through and carried out if their identification and prioritization are not only recommendations of technical experts but likewise owned by the local stakeholders.

Local Government Units

The local government units (LGUs) play a key role as a primary mover for a V&A assessment. It can put together a composite technical team from various departments to carry out the activities from data collection [consolidation of secondary data and primary data collection using Key informant interviews and Focus Group Discussion] to mapping and analysis workshops. LGUs are mandated to protect its vulnerable populations including the children, women, farmers and fisher folk.

The Agusan del Norte experience showed the priority LGUs (municipalities) conducting the V&A through its Municipal Focal Teams [MFTs]. These teams are composed of the LGU's heads of relevant units to include the Municipal Agriculturists [MA], Municipal Planning and Development Coordinator [MPDC], Municipal Engineer[ME], Municipal Environment and Natural Resources Officer[MENRO], Municipal Social Welfare and Development Officer [MSWDO], Head of the Rural Health Unit[RHU]. In other cases, the Municipal Budget Officer [MBO] and Municipal Assessor are also involved.

The V&A assessment involves a number of facilitation and technical tasks [as will be presented in the next section of this toolkit]. These can be divided among the members of the Municipal Focal Team. The team

Box 3: The CCAP V&A TWG

In the CCAP, the V&A TWG was led by the ILO Project Manager and is composed of Focal Persons from the 3 implementing partners-DOLE, DTI and Province of Agusan del Norte (particularly Provincial Dept of Agriculture and Dept. of Environment and Natural Resources. Additionally, Focal Persons from the regional offices of the Department of Agriculture and Dept. of Environment and Natural Resources were invited into the TWG. Each municipality was provided an Anchor from the TWG. PAGASA provided the historical weather data and the downscaled climate change scenario for 2020 and 2050.

Figure 2: The CCAP V&A MFTs, together with UPLB V&A Mentors and TWG during the V&A Training.

would also be in the best position to identify the local stakeholders that need to be involved in each step of the process, for example, the key informant farmers. The Budget Officer and Assessor were seen as particularly useful in terms of identifying sources for funding requirements not only for the actual cost of conduct of the V&A but also in carrying out the prioritized climate change adaptation options in the end.

Concerned Government Agency

It is recognized that the V&A assessment is not among the traditional menu procedures carried by local government units and even government agencies. As such there is an important role for the mandated agencies to perform. The tasks at hand include:

1. Technical guidance in terms of the overall methodology, instruments to be employed and analytical framework to be followed;
2. Provision of official data (particularly weather and natural hazards), geo-referenced maps and other relevant statistics (e.g., agriculture production) ;
3. Support in the actual conduct of activities in the communities; participation in the workshops, mapping exercises and write shop for the preparation of the V&A Assessment Reports.

Focal persons from concerned agencies can form into the Technical Working Group (TWG).

Support Service Providers

They can come from the academe like the provision of mentorship and training and guiding of the write-up of the reports. They may also come from the non-government sector (NGOs) and business development service providers such as the provision of other facilitation, documentation and packaging support for the resulting documents.

Local Stakeholders and Community-Based Organizations

As already mentioned, the V&A assessment apart from a scientific and data-based assessment it is also a community-based and participatory process. Relevant community-based organizations (CBOs) and their representatives need to be identified at the outset and brought into the process.

The CBOs are excellent providers of information including the characteristics of the area, exposure to natural and climatic hazards and their impacts on people, property and production. Their involvement, however, is not limited only to being providers of data but also in fact as facilitators for community level activities such as mapping exercise, walkthroughs and others. They should also be involved in the identification and prioritization of climate change adaptation options.

Box 4: The Service Support Providers

In the conduct of the V&A under the CCAP, the University of the Philippines Los Baños (UPLB) V&A Assessment Team for Agricultural Sector was engaged to provide mentoring support for the members TWG and MFTs. Support for copy-editing and packaging of the V&A reports was provided by Sustainable Cooperation for Equitable Enterprise Development Inc., (SUCCEED). Knowledge management and process documentation support of all V&A activities were provided by the Caraga Learning Service Provider's Network (LSPN).

1.4. What are the resources needed in the V&A Assessment?

With the growing recognition of the need to integrate climate change as a consideration for local planning, project/programme development, V&A assessment will increasingly be conducted throughout the country. The V&A assessment will need to be done even in places despite with very limited resources and budget. Nevertheless, certain minimum resources are needed to conduct it:

- **Dedicated leader and trained multi-disciplinary team.** A dedicated team leader, aggressive and competent in the field of climate change, environment and/or sustainable development would be a crucial factor.

- **Technical guidelines, agreed with competent authority.** This would refer to the various stages of the V&A assessment including scoping, data collection, consolidation, mapping, scenario analysis and others.

- **Key Data Sets:** climate with 30 year historical data from weather stations/weather infrastructure within acceptable radius, data pertaining to extreme events and other related hazards. Downscaled climate scenarios [10 years and 30 years].

- **Key Data Sets: General Profile and Production.** The key secondary data sets needed in the V&A assessment are municipal socio-economic profiles, agricultural-crop data and production yield and losses per year. The key primary data included average farm size per tenurial arrangement, causes and reaction to production losses.In the case of Agusan del Norte for example, historical production, yield loss data for rice, corn, coconut and banana production. In addition, information on other income sources, health, social protection, access to productive and financial resources. Moreover information on adaptation strategies will be employed.

- **Thematic Maps:** Pre-printed geo-referenced base maps for use in the mapping of the vulnerable areas, using a municipal scale (40"width-either landscape or portrait). Personnel trained in the use of Geographic Information System (GIS) are needed to produce the thematic maps. These maps will be overlayed to form a vulnerability map.

- **Administrative Resources:** For day to day running of the V&A process, including provision for team travel and daily subsistence, workshop venues and support supplies and equipment, There also is the need for communication facilities

- **Institutional Arrangements:** The support of policy-makers, from the Provincial Governor and Municipal Mayors are key facilitating factors for the successful conduct of the V&A process. Arrangements should include for formal procedure for consultation with decision-makers and other stakeholders, the authority to obtain the needed information, and importantly for following-through of the prioritized

Figure 3: Thematic Map of Jabonga

adaptation options either by integration into the local plans or with separate projects or programmes.

- Among the resources needed, not least are **money** and **time**. With regard to time, the V&A assessment do not require much even considering the need for training of personnel. As long as institutional arrangements for acquisition of data are established up front, a V&A Assessment can be completed in around 8-10 weeks. It can however extend to much longer if training and mentoring could not be synchronized and downscaling of climate scenarios will still have to be undertaken [in a period of 3-6 months].

  With regards to money, the V&A do not cost more than any data collection and planning procedure being used currently by LGUs. In fact, by utilizing data from partner agencies and employing Key informant interviews and/or FGDs at community level, it may cost less. Nevertheless, whatever amount spent on the V&A is money well spent as it represents better understanding of the risks faced, preparedness and possibility of averting these risks by employing alternatives and thus less damaging consequences for the communities.

Box 5: The Institutional Arrangements

In the CCA Project, the ILO entered a Memorandum of Understanding (MOU) with DTI, DOLE, Province of Agusan del Norte as well as the municipalities of Buenavista, Las Nieves, Jabonga and R.T.Romualdez.

This ensured smooth facilitation and mobilization of municipal stakeholders during the conduct of V&A activities, the creation of the MFTs, and the sharing of costs entailed in the undertaking.

Additionally, the ILO entered into special agreements with the support providers which provided mentorship, training, and other assistance to the MFTs.

2

The Vulnerability and Adaptation (V&A) Assessment Process: Key Steps

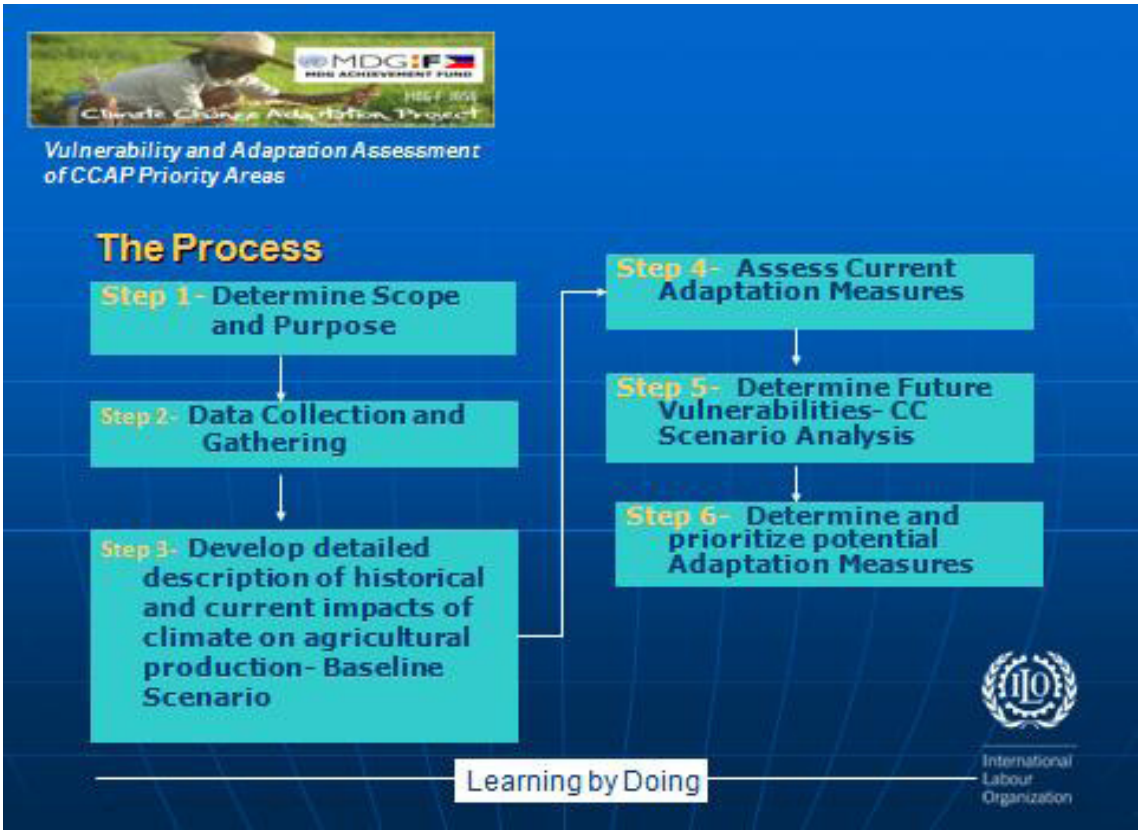
2. The Vulnerability and Adaptation Assessment Process: The Key Steps

The V&A assessment involves six (6) key steps starting with the determination of scope and purpose to the determination and prioritization of potential adaptation measures. (Please see figure below).

As per the CCAP experience, the whole process of the V&A assessment, independent of the time needed to produce the 'downscaled climate scenarios' [explained later in this section], may require two to three months. This include time to ensure the needed participation and collaboration of relevant groups in each of the steps, not just that of the officials of the concerned local government units (LGUs), the direct members of the local assessment team, the technical experts from the academe but most importantly the local stakeholders /representatives from the communities in which the assessment is being conducted.

Before setting its foot on the ground for varying activities, a V&A Assessment action plan of activities shall be drafted (by the MFTs). The plan will include the pertinent V&A activities and the time frame that it will be accomplished, and include, among others; presentation of action plan to LCE and SB, data gathering/collection, reporting and critiquing, workshop (drafting of V&A report), presentation of draft V&A to LCE and SB, and write shop and finalization of V&A report. (Shown in Table 1 is the V&A Assessment Action Plan, drafted during the V&A Training last 12-16 April, 2010. Grand Villa, Bay Laguna).

Figure 4: The V&A Process



2.1. How is Scope and Purpose Established?

This first step covers the conduct of a baseline survey and establishing of MOUs with concern LGUs of identified priority areas.

At the onset it is critical to determine the scope of the V&A, considering varying degree of vulnerabilities of specific communities including impact to major agricultural crops, and availability of resources for allocation to the conduct of activities. Hence, a baseline survey of the whole area (province or municipality) shall be done which will result in the identification and selection of areas (e.g. communities) and the number of major crops to be given focus.

"The baseline study aims to achieve the following objectives: to identify and map farming communities in Agusan del Norte according to crop/sector and by municipality and to identify the players in the major farming value chains in relation to their respective crops in these farming communities; to establish and validate the ecological profile of the province and these farming communities to include social, economic, environmental, political and peace and order condition; to identify the general environmental conditions and climate risk exposure including but not limited to extreme events or disasters along with coping strategies employed; to identify GO, LGU, NGO/PO and/or collaborative initiatives, projects and programmes relating to agri-business as well as climate or disaster risk reduction and enhanced coping mechanisms; to identify support institutions pertaining to training, markets and technology; to identify financial institutions, structures and schemes including existing informal financing schemes; to identify existing insurance schemes and other risk transfer mechanisms;

Figure 5: Step 1 of the V&A Process

to be able to assess the knowledge and skills as well as training needs of farmers, especially women farmers, in existing and/or alternative lines of work and/or business; and to be able to draw up conclusions and recommendations on priority communities, areas and/or sectors taking into consideration the interplay of the above factors as well as on priority training needs vis-à-vis thrust for economic diversification", as stated in the Baseline Study of Agusan del Norte Farming Communities (2009).

After finalizing the scope and purpose of the V&A assessment, the MOUs with LGUs (and the CCAP) shall be signed to formalize the commitments of the main stakeholders of the activity that is expected to translate in the deployment of personnel (e.g. MFTs) and allocation of other needed resources.

Table 1: V&A Assessment Action Plan

Activities	Schedule															
	Month 1				Month 2				Month 3				Month 4			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1. Presentation of Action plan to LCE & SB																
2. Data Gathering/ Collection																
3. Validation of Data and Analysis																
4. Reporting and Critiquing of Assessment																
5. Workshop: Drafting of V & A Report																
6. Presentation of draft V & A to LCE & SB																
7. Writeshop & Finalization of V & A Report																

2.2. What and How are Data Collected?

This step refers to the actual gathering and consolidation of primary and secondary data. Capacitating of MFTs and other project personnel is one important related activity and requisite for the success of the main undertaking of this stage.

MFTs and other project personnel shall be equipped with the basic knowledge on the task of conducting a V&A assessment to become effective. In this regard, technical experts (e.g. from academe) shall be tapped for such purpose of providing knowledge and insights on Climate Risk Assessment (CRA), V&A as well as M&E methodology on climate change during training and workshops. The same work shop activity can also result to the formulation of work plan on data inventory and collection, and initial climate change strategies/options assessment.
Employed technical experts can be invited to do ocular visit in the V&A assessment covered areas to monitor actual conduct of activities, review on available data and V&A work plan, and provide guidance on the conduct and the next steps.

The needed V&A data, its requirements, possible sources and the concern stakeholders/agencies responsible in gathering the data shall be determined.

In addition, formulation of working tables for the primary and secondary data could help facilitate data collection process e.g. in Excel Tables 97-2003 version. (Please see Annex A).

Figure 6: Step 2 of the V&A Process Part One

2.2.1. Secondary Data

The needed relevant data shall be collected from varying data sources (See Table 2), and inventory listing for bibliography will be prepared. The relevant information shall be culled out from various sources and encoded in the summary tables, with an agreed standard format (e.g. several secondary data that are likely available with the LGUs are on the biophysical characteristics, demographics, municipal socio-economic profiles, institutional profiles, agricultural crop-data, agricultural live-stock data and, production yield and losses per year. These secondary data can be culled out from the Municipal Comprehensive Land Use Plans (CLUPs), municipal Socio-Economic Profile (SEP), municipal results of the Community Based Monitoring System (CBMS, 2007), Baseline Study of Agusan del Norte Farming Communities (2009) and records from the Municipal Agriculture Office (MAO), Municipal Planning and Development Office (MPDO) and Municipal Social Welfare and Development Office (MSWDO), and other pertinent documents.

Other demographic data can also be obtained from the National Statistic's Office (NSO), DA, DTI, DENR, etc.

The thematic maps i.e. base map, location map, land use, soil, elevation, etc. shall be configured from its sources to suit the requirements of the specific municipality and for the purpose of the V&A assessment.

Figure 7: Step 2 of the V&A Process Part Two

Downscaling[1] of data from the Philippine Atmospheric Geophysical Astronomical Services Administration (PAGASA) in terms of climate type, rainfall pattern, mean and maximum temperature, and humidity at the province level are of critical importance. Most often, data from PAGASA at the municipal level are not available. Though, the provincial data can serve as reliable reference."

The climate data figures downscaled from PAGASA are shown at the right while the figure illustrating the tracks of tropical cyclones which crossed the Province of Agusan del Norte from 1949-2009, is shown in below.

2.2.2. Primary Data- Focus Group Discussions and Key Informant Interviews

The primary data collection are mainly done through FGDs. Information usually not present in the secondary data of the LGUs, are the causes of and reaction to production losses, and the history and effect of past natural and climate change hazards. Table 2 shows the required data needs and its sources. The purposes of the conduct of FGDs are two-pronged, namely; to validate secondary data, and collect primary data. Below are some critical factors for substantive, participatory and successful FGDs for the V&A assessment.

Figure 8: FGDs in the CCAP Areas

- Selection of Key Informants (KIs). KIs shall be selected on the following considerations: **gender** (women should be represented), **people's organization** (e.g. farmers/crop based organizations, fishermen's, women's, etc.), **tenurial arrangements** (should not be exclusive to farm owners but also include tenants and those who are in lease arrangements), and **geography** (all barangays or clusters should be represented). Ideally, only 15 to 20 KIs should be pooled for the FGDs. The Master list from the Municipal Agriculture Office (MAO) and the listing provided in the *Baseline Study of Agusan del Norte Farming Communities* (2009) can be used for the pooling of the KIs.
- The members of the MFTs shall take the lead and organize the whole conduct of the FGD. Important tasks shall be divided among themselves such as facilitators, documenters and encoders.
- Materials (and equipments) for the FGDs shall be prepared beforehand i.e. Manila Papers, Metacards, Sticker Papers, Masking Tapes and Scotch Tapes, Map Pins/Push Pins, scissors, Base Maps, and Highlighters. Also important are laptop computers, recorders and LCD projectors.
- Some basic procedure for the conduct of FGDs will involve the following:

(a) The MFT (Facilitator) to introduce the team, and the participants, and explain the objectives. The process and flow shall also be clarified;

[1]*Downscaling is the general name for a procedure to take information known at large scales to make predictions at local scales. It is a method for obtaining high-resolution climate or climate change information from relatively coarse-resolution global climate models (GCMs). Source: Development of Climate Change Scenarios, PAGASA*

(b) Information to be collected and validated will be posted and clarified (using Manila Papers prepared ahead of time);

(c) Working tables and other pertinent information shall be projected, using Laptop computers and LCD projectors;

(d) Responses of KIs shall be written, preferably in meta cards so that it can be easily moved or transferred to appropriate locations if needed; and,

(e) Data validation and collection shall be done in the plenary.

2.2.3. V&A Mapping

The mapping exercises is an one important activity during the FGDs. It could be a venue to map out or validate, among others, (a) main crops and settlement areas, (b) climatic and natural hazards, (c) water bodies, etc.

Mapping would be done using "pre-printed base maps" indicating road networks, water bodies, settlements and agricultural areas. Scale of printed maps will be at Municipal scale (40"width- either landscape or portrait). Two pre-printed maps shall be made available. One for actual mapping exercises the other for reference and must be maintained clean.

KIs/discussants will be asked to point areas in the map using as markers or reference points the existing road networks, water bodies (especially in the case of flooding), settlements or agriculture areas.

Descriptive notes for the areas indicated by points, lines and polygons were written at the back of the map.

The indicative maps can serve as an overlay of various thematic maps to create the vulnerability map. The said maps can be produced using the software ArcGIS. Preferably, maps are to be geo-referenced using UTM ZONE 51N.

Figure 9: V&A Mapping in the CCAP Areas

2.3. How to Develop a Detailed Description on Impacts of Climate on Agricultural Production- Baseline Scenario?

This step will illustrate the current state of the municipality taking into account its basic characteristics, and the current hazards and observed climate change impacts. Both of which shall comprise the baseline scenario.

Area characterization of specific political unit (e.g. municipality) will mainly cover the following aspects; a) biophysical characterization - topography and climate, b) socio-economic profile - agricultural production systems and other livelihood activities, and c) institutional profile – infrastructure, support services i.e. credit, trade and marketing.

On the agricultural production systems and other livelihood activities, key considerations are the major and secondary crops planted, hectarage (i.e. irrigated and rain fed areas) and production volume, technologies, presence or absence of irrigation, and current livelihood sources.

The current hazards and observed climate change impacts will delve on the subject of: a) sources and types of hazards- floods, droughts, cyclones; b) Place and time of occurrence; and c) extent and degree of impacts – damage to crops, damage to livestocks, damage to property, loss of life, damage to infrastructure, and damage to fishery (if applicable).

Figure 10: Steps 3-6 of the V&A Process

On the key analysis on current hazards and observed, the methods of impact assessment will include the following:

- Historical data/records (Recall methods);
- Models (e.g. Results of CERES[2] -Rice/Corn Models);
- Rules of thumb/Threshold values (DA Methods)

Past and current hazards of different types shall be tracked down, and gauge level of vulnerability taking into consideration the extent of areas to be affected, number of people affected, potential damages to lives (direct and indirectly affected) and properties, livelihood impacts, and production systems (i.e. crops/livestock, volume, areas, etc.). Evaluation of overall impact can be rated as Low (< 30%), Moderate (31-59%), and High (>60%).

The hazard maps can be over-laid with the other thematic maps (i.e. crops, population/ settlement, infrastructure, etc.) resulting to the so-called vulnerability map that shall illustrate the impact in specific locations from different types and sources of hazards.

2.4. How to Assess Current Adaptation Measures?

This section covers the aspects on current adaptation strategies, other adaptation strategies, and needs and requirement of adaptation strategies.

The assessment of current adaptation measures included key analysis in the identification and assessment of past adaptation strategies. It shall probe how communities, the LGUs and the farmers themselves adapted to a particular hazard (e.g. flooding, drought, etc.) in a particular period. (See below Table 3).

Table 2: Past Adaptation by Affected People and Places

Past Adaptation by Affected People and Places Communities	Year			Year		
	Hazard 1	Hazard 2	Hazard 3	Hazard 1	Hazard 2	Hazard 3
LGUs						
Farmers						

[2]*CERES (Crop Environment Resource Synthesis) model is a crop specific model simulating crop growth and development (Ritchie, 1985). It requires three types of input information about climate, soil and crop and treats quite accurately of processes considered to be the most influential in determining yields, such as onthogenesis, morphogenesis, growth, senescence, biomass accumulation and carbon partitioning.*

Included in the current adaptation strategies are the existing plans and measures as practiced or contained in their development and investment plans such as early warning devices, re-forestation, dredging of canals, crop and animal insurance, etc.

The sufficiency and constraints, needs and requirements) of each adaptation strategy employed shall also be analyzed. For example, if there are 500 families affected in flooding and the sufficiency level was only 40% (or 200 families) were provided with immediate relief goods (as one of the adaptation strategy), the constraints shall be pointed out why the remaining 60% (or 300 families) were not able to avail. (See Table 4 below).

2.5. How to Determine Future Vulnerabilities - Climate Change Scenario Analysis?

Projecting future vulnerabilities will serve as the basis for planning towards the enhancement of adaptation capacity of the municipality. It shall be determined through a climate change scenario analysis. The scenario analysis framework is more than agricultural productivity, it also concerns the following:

- availability, accessibility and sustainability of nutritious food;
- health and nutrition;
- climate change at certain period; and,
- other scenario components.
- Climate scenario: Increasing temperature & decreasing rainfall
- Science and Technology development: current, with or without advances in S&T;
- Adaptation capacity: current or increasing capacity;
- Population growth: current; average growth rate; with or without a reproductive health program;
- Budget of LGUs, increasing or decreasing;
- Land use – with or without changes in land use patterns (conversions).

Table 3: Assessment of Past adaptation Strategies

Past Adaptation by Affected People and Places	Sufficiency	Constraints
Hazard 1 Strategy 1		
Hazard 1 Strategy 2		
Hazard 2 Strategy 1		
Hazard 2 Strategy 2		

Time frame is important in climate change scenario analysis. Two periods will be projected, such as, the near future (e.g. Year 2020) and far future (e.g. Year 2050). In the said periods, specific projection of climate shall be determined from the data provided by PAGASA. Subsequently, estimation of impact shall be done considering some assumptions from experts including the 8-14% loss to crop in every 1*C increase in temperature.

Scenario components are some critical variables that have bearing in mitigating or increasing impact of hazards to production, lives and properties. Listed below are five key components in building the scenario analysis: (Please see table 5 below).

The vulnerability of the municipality shall be gauged taking into account the impact of climate change on the following:

- Potential damage (s) or adverse impacts to lives and properties
- Extent of areas to be affected
- Number of people affected
- Livelihood impacts
- Others

Moreover, vulnerability rating shall be done, to be described as:

- Low, if impact resulted to less than 30% loss;
- Moderate, if impact resulted to 31-59% loss; and,
- High, if impact resulted to more than 60% loss

The guidelines in proceeding with the scenario analysis will involve, as follows:

1. Define at least 3-4 possible scenarios for two periods (2020 & 2050) for your municipality considering the different components, i.e. climate + S&T + Population growth + Adaptation Capacity + Budget of LGU+ Land use).
2. Assess qualitatively the vulnerability of the identified critical areas in the municipality for the projected periods (2020 & 2050); and,
3. Evaluation of Vulnerability rating.

Table 4: Climate Scenario: PAGASA Downscaled Scenario for Agusan del Norte 2020/2050

	Climate Change Scenarios		
SCENARIO COMPONENTS	**Baseline Scenario**	**CC Scenario 1**	**CC Scenario 2**
	Current Science & Technology (S&T)	With Advances in S&T	No Advances in S&T
	Current population growth	Decreasing population growth (with Repro Health Program)	Increasing population growth (without Repro Health Program)
	Current adaptation capacity	Increasing adaptation capacity (with intensive Capacity Development)	Current adaptation capacity
	Current budget of LGUs	Increasing LGU Budget (Investments on CC and Environment)	Decreasing LGU Budget for CC
	Without Land Conversion/ Change in Land Use	Without Land Conversion/ Change in Land Use	With Land Conversion/ Change in Land Use

2.6. How to Determine and Prioritize Potential Adaptation Measures?

The last key step in the V&A Assessment process is the determination and prioritization of adaptation strategies (identified in step 5, scenario analysis). For each of the defined scenario, the possible adaptation strategies that may be used to eliminate or minimize the adverse impacts of the climate-related hazards will be listed. The long list of identified strategies, however, will be screened and evaluated to cull out the priorities based on defined criteria or indicators of effectiveness such as; cost, contribution to poverty reduction, increase income, contribution to employment, size of beneficiary group, absence of adverse impacts on other sectors/groups, environmental soundness, ease of implementation, socio-cultural acceptability, immediate impact/response to urgent needs, and potential for up-scaling. (Please see Table 6).

Each adaptation strategy will be subjected for ranking in each criterion. The assigned weight of ranking totaled to 100%. The adaptation strategies were then ranked according to the assigned weights.

The results of the ranking of the adaptation strategies shall be categorized into physical/ infrastructure, biological, technological, economic and political/ institutional. Moreover, the critical factors that would ensure implementation of said adaptation strategies shall be pointed out. (Please See Table 7).

Table 5: Prioritization Criteria of CCA Options (LGU agreed criteria and rating system)

Criteria/Indicators of Effectiveness	Assigned Weights (%)
1. **Cost Effectiveness** *(the higher the positive return from the given inputs/costs, the more cost-effective)*	
2. **Contribution to Poverty Reduction** *(potential of the adaptation practice to reduce poverty)*	
3. **Increase Income** *(potential of the adaptation practice to increase income)*	
4. **Contribution to Employment** *(potential of the adaptation practice to provide employment)*	
5. **Size of beneficiary group** *(more positive impacts to greater number of people, the more efficient the adaptation strategies)*	
6. **Absence of adverse impacts on other sectors/group** *(less negative impacts to other group/sectors, the more effective the CCA strategy)*	
7. **Environmental Soundness** *(the more environmental friendly the practice, the more effective)*	
8. **Ease of Implementation** *(the strategy is easily employed, absence of barriers for implantation)*	
9. **Socio-cultural Acceptability** *(the more acceptable the CCA practice to greater number of stakeholders, the more effective)*	
10. **Immediate impact/response to urgent needs** *(the more immediate positive impacts of adaptation practice the more effective)*	
11. **Potential for Up-scaling (the greater the potential for wider application, the more effective)**	
TOTAL	**100**


V& A WRITESHOP:
FINALIZATION OF V&A REPORTS
OF THE CCAP PRIORITY AREAS
1.2 Socio-economic Profile
1.2.1 Demographics: Population Size, Density, Urban-Rural Distribution
1.2.1.1 Population and Number of Households (settlement patterns, location)
1.2.1.2 Projected Population Changes
xxxx Insert population Map
xxxx Table 1: profile/c0 working tables
1.2.2 Income and Poverty incidence
1.2.2.1 Income level
1.2.2.2 Housing, water and sanitation
1.2.2.3 Health and nutrition
1.2.2.4 Education

3

The V & A Write Shop and Post - Write shop Activities

3. V&A Report Formulation and Follow-Through Activities

Several subsequent activities after the actual conduct of the V&A assessment involve the writing of the V&A report, presentation of the report to other stakeholders and prospective donors, and identification of the next steps and follow through activities.

3.1. V&A Writeshop

This activity aims to consolidate and organize the collected information into a logical manner, arrived at key analysis and recommendations for climate change adaptation. Members of the MFT will be gathered in a venue, preferably distant from area of origin to focus on the activity, in a write shop session.

The report outline covers four main parts namely; the baseline scenario (area characterization), assessment of the current adaptation measures, scenario analysis (of future vulnerabilities), and determination and prioritization of adaptation measures. Actual writing of the V&A reports shall commence after the development of a report outline (Please See Annex 2). Thereafter, critiquing and revisions of draft write-ups will proceed in a continuing process until the final copy is done.

Figure 11: V&A Writeshops under the CCAP

The write shop guidelines are the following:

- A facilitator shall lead the whole write shop process (e.g. Anchor persons for the CCAP, service providers);
- Documenters and/or writer shall also be assigned (from the MFTs);
- Big groups can be divided into sub-group/s and assigned a sub-topic;
- Narrative reports (output) of write shop topics will be submitted (electronic and printed copies) at the end of a specific activity for review and critiquing;

Other tips are; (a) taking a hold of the old reports for review; (b) identifying the gaps in each item; (c) culling out and preparing all the data/ facts/ information to be presented; (d) discussing the message/thought to conveyed; and (e) actual writing/construction/revision of a sentences/ paragraphs of the report.

Finalization, copy editing and packaging of the report shall follow.

Table 6: Future Adaptation Category

Future Adaptation Category	Strategy			Critical Factor		
	Hazard 1	Hazard 2	Hazard 3	Hazard 1	Hazard 2	Hazard 3
Physical/Infra						
Biological						
Technological						
Economic						
Political/Institutional						

3.2. Presentation and Validation of V&A Reports

Towards the conclusion of the V&A assessment process, the drafted municipal V&A reports can be exhibited in a Provincial Presentation and Forum inviting concerned stakeholders i.e. Provincial and municipal LGUs, line agencies (DA, DTI, etc.), NGOs (local and international), PAGASA, POs/ Cooperatives, financial institutions, and other development players and stakeholders. Comments and suggestions from the forum shall be solicited and reflected in the final V&A report.

3.3. What to Do Next?

The project implementers (through the TWG) shall prioritize the forwarded adaptation options, whose process of evaluation shall be guided on two principles, namely; (1) it must contribute to the development of the culture of prevention and resilience to climate change and natural hazards, and (2) it must be directed to the most vulnerable and most in need. Prioritization criteria include the following; social acceptability, access to technology, environmental soundness and sustainability, increase in income, increase in employment, size of beneficiary group and immediate results. (Please see table 8 below)

Lastly, on the basis of the prioritized adaptation options the project implementer shall respond to it whether to: (a) directly pursue; (b) indirectly pursue (or to be led by another institution); and, (c) to be referred to another institution.

Table 8: TWG Prioritization Criteria of CC Adaptation Options

Over-all Criteria	Rating (%)
1.) Social Acceptability	10
- No/minimal adverse impacts on other sectors	
- not contrary to local cultural practices/ norms/ beliefs/ causes	
2.) Access to Technology	10
- available technology and expertise	
- easily transferrable (KS - Knowledge Skills)	
3.) Environmental soundness/sustainability	20
- enhancement (i.e. soil/water management)	
- Not destructive to the natural environment	
4.) Increase in Income	20
- Potential to provide income its equivalent at least at minimum wage (for the individual) or at poverty threshold (for the family)	
5.) Increase in Employment	10
- New jobs created	
6.) Size of Beneficiary Group	20
- Coverage of at least 33% of the community will benefit	
- Potential for Up-scaling	
7.) Immediate Results	10
- Quick Wins	
TOTAL	100%

REFERENCES

ILO: Baseline Study of Agusan del Norte Farming Communities in Agusan del Norte (2009, unpublished).

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Ritchie, J.T. and Otter, S., (1985). Description and performance of CERES Wheat:A user-oriented wheat yield model. Willis, W.O. (ed.). ARS Wheat Yield Project. ARS-38: 159-175. Retrieved 10 January 2011 from http://ressources.ciheam.org/om/pdf/b36/05002177.pdf

ANNEX A

Summary Tables for V&A Data Consolidation

Annex A 1: Profile (2007)
V&A Data: Municipality of _____

Name of Bgy (1)	Pop'n Total (2)	Rural (3)			Urban (4)			Land Area (has.) (5)		Population Density (#/ha) (6)		Age Structure (NSO Categories) (7)	Employment* (8)	Ave. Income (9)	Poverty Incidence** (10)	HDIs and MDGs*** (11)
		Total (3.1)	Male (3.2)	Female (3.3)	Total (4.1)	Male (4.2)	Female (4.3)	Rural (5.1)	Urban (5.2)	Rural (6.1)	Urban (6.2)					
E.g. Pob. A																
Pob. B																
Pob. C																
Pob. D																

*/**/*** *Add as many columns as necessary and as available from data source*
Example: Employment: Columns (8.1) wage workers, (8.2) Govt Employees, (8.3) Small business (8.4) Farm labour, (8.5) farmer and so on

Notes on Data Sources: Refer to Column Number

(2) Population Total [Agreed: NSO]
(3) Population Total Rural Area[Agreed: NSO]
(4) Population Total Urban Area[Agreed: NSO]
(5)Land Area (has) [Agreed: NSO]
(6) Population Density (#has) [Agreed: NSO]
(7) Age Structure/Distribution [Agreed: NSO, Alternative: PPDO]
(8) Employment, [Agreed Source: NSO]
(9) Average Income [Agreed Source: NSO Alternative: CBMS]
(10) Poverty Incidence [Agreed Source:CBMS- Barangay Wide]
(11) Human Development Index [HDIs] and Millenium Development Goals [MDGs] [Agreed Source : DILG]

Additional Note: Check Baseline Study Data

Annex A 2: Agriculture –Crop Data
V&A Data: Municipality of _____

Name of Brgy. (1)	Major Crop(s) (2) and Other Crops	Area planted to Major Crop(s) and Other Crop(s) (3)	Average Yield (per ha/ per crop) (4)	Farming Practices (5)		Farming System (6)			No. of HH engaged in Production of Major Crops and its Size of Farm Area by Tenure							
				Low Input/ Extensive (5.1)	High Input/ Intensive (5.2)	Mono-Crop (6.1)	Inter-Crop (6.2)	Crop-Rotation (6.3)	Owned (7.1)		Tenant (7.2)		Lease (7.3)		Others (7.4)	
									# of HH (7.1.1)	Ave. Farm Size per HH (7.1.2)	# of HH (7.2.1)	Ave. Farm Size per HH (7.2.2)	# of HH (7.3.1)	Ave. Farm Size per HH (7.3.2)	# of HH (7.4.1)	Ave. Farm Size per HH (7.4.2)
E.g. Pob. A	E.g.. Crop 1															
	Crop 2															
	Crop 3															
E.g. Pob. B	E.g.. Crop 1															
	Crop 2															
	Crop 3															
E.g. Pob. C	E.g.. Crop 1															
	Crop 2															
	Crop 3															

Notes:
(4.1)* Major crops are the first crops pre-selected by the LGUs during the Baseline Study

Annex A 3: Agriculture- Livestock Data

V&A Data: Municipality of _____

Name of Brgy. (1)	Major Livestock (2)	No. of Heads (3)	Livestock Practices (4)		No. HH engaged in Livestock Production by tenure (5)			
			Commercial (4.1)	Backyard (4.1)	Owned (5.1)	Tenant (5.2)	Lease (5.3)	Others (5.4)
E.g. Pob. A	Livestock 1							
	Livestock 2							
	Livestock 3							
E.g. Pob. B	Livestock 1							
	Livestock 2							
	Livestock 3							
E.g. Pob. C	Livestock 1							
	Livestock 2							
	Livestock 3							

Annex A 4: Production Losses per Year

V&A Data: Municipality of _____ Crop:_____

Brgy. Name	**Average Yield Per Barangay per Year**									
	2000 (year 1)	**2001 (year 2)**	**2002 (year 3)**	**2003 (year 4)**	**2004 (year 5)**	**2005 (year 6)**	**2006 (year 7)**	**2007 (year 8)**	**2008 (year 9)**	**2009 (year 10)**
Eg. Pob. A										
Pob. B										
Pob. C										
Pob. D										

Annex A 5: Production Losses, Causes , Action

V&A Data: Municipality of _____ Crop:_____

Bgy Name (1)	Production trend per year (2)		Causes (3)	Action (4)		
	Year (2.1)	Prod. Yield Analysis (positive, static, negative) (2.2)		House-hold (4.1)	Commu-nity (4.2)	LGU (4.3)
E.g. Poblacion A	2000-01					
	2001-02					
	2002-03					
	2003-04					
	2004-05					
	2005-06					
	2006-07					
	2007-08					
	2008-09					
	2009-10					
	2000-01					
Poblacion B	2000-01					
	2001-02					
	2002-03					
	2003-04					
	2004-05					
	2005-06					
	2006-07					
	2007-08					
	2008-09					
	2009-10					

Annex A 6: History and Effect of Past Hazards

V&A Data: Municipality of _____ Crop:_____

Hazard (1)	Occurrence (year) (2)	Impacts (3)	Exposed group/ commodity (4)	Where are these? (5)	Baseline data per Barangay (6)	Extent of Damage/ Yield loss per Barangay (7)	Analysis/ evaluation of impacts (8)
1. Increasing rainfall (occurrence or extent or volume)		1. Damage to crops			(Area planted)	(No. of hectares damaged, Yield loss etc)	(High. Moderate, low)
		2. Damage to livestock			(No. of heads)	(No. of heads affected)	(High. Moderate, low)
		3. Damage to property			(Types of houses)	(No. of people died)	(High. Moderate, low)
		4. Loss of lives			(Population distribution age structure)	(No of building. Damaged)	(High. Moderate, low)
		5. Damage to infrastructure					
2. Flooding							
3. Increase in temperature (drought)							
4. Crop infestation							

5. Erosion							
6. Earth-quake							
7. Other hazards*							

** Add as many rows as necessary and as available from data source*

Notes on Columns:
(4) Specific commodity affected (i.e. rice for crops, dairy for livestock)
(5) Location of Affected Areas (Purok,Sitio, Barangay)
(6) Total no. of hectares planted to crops/devoted to livestock, fisheries, locations,etc
(7) Total no. of affected hectares planted to crops/devoted to livestock, fisheries, locations,etc
(8)Analysis /Evaluation of Impacts:
Low Affected : Less than 30 % Loss
Moderately Affected : 31-59% Loss
Highly Affected: More than 60% Loss

Annex A7: V&A Data Needs and Sources

DATA NEEDED	SOURCE/S OF DATA
Biophysical Characterization	
-Location and Topography**	CLUP, MPDO
-Climate ,Rainfall and Cyclone Patterns***	to be downscaled from PAGASA
Socio-Economic Profiles	
-Demographics**	NSO 2007, CBMS 2007
-Income and Poverty Incidence**`	CBMS 2007, MSWDO
-Agricultural Production System**	MAO
-Causes of and reaction to Production Losses *	To be probed from FGDs
-Commerce and Trade**	Baseline Study
Institutional profiles	
-Infrastructure**	CLUP, SEP
-Support Services**	CLUP, SEP
-Credit and Financing**	CLUP, SEP
History of Exposure and Effect of past Natural and Climate Change hazards*	To be probed from FGDs
Geo-referenced Maps	
-Soil Map	PPDO
-Elevation map	DA 13
-Land use maps	PPDO
-Slope map	PPDO/ DA 13
-Erosion map	PPDO/ DA 13
-Hazard maps	PPDO/ DA 13
-Land Use Areas	PPDO
-Settlement	PPDO
-Road Network	PPDO
-Water bodies	PPDO
-Agricultural Area Map	PPDO/DA 13/ LGU

** Primary data to be collected from Focus Group Discussions*
*** Secondary data to be collected from the agreed sources*
*** *New data to be downscaled from PAGASA*

ANNEX B

V&A Report Outline

V&A REPORT OUTLINE , ILO CCAP

Cover page
Table of Contents
Acronyms
List of figures
List of tables
Acknowledgements
Foreword/Messages
Executive Summary
Introduction

1. AREA CHARACTERIZATION

1.1 Biophysical Characterization

1.1.1 Location and Topography

- Location
  (Ref/insert-Location map)
- Land area and land use patterns e.g. agricultural, forestry and watershed, A&D lands, residential, commercial, industrial, etc.
  (Ref/insert - land use map)
- Geology e.g. land forms, rock formations, soil
- Slope
  (Ref/insert- Slope map)
- Elevation
  (Ref/insert - Topo/ Elevation Map)
- Drainage, river systems, and bodies of water (i. e. coastal areas, lakes)
  (Ref/insert- Drainage/River Systems/ Irrigation/ Surface Water Maps)

1.1.2 Climate and Rainfall Patterns

- Average rainfall data
  e.g. Daily mean, maximum and minimum, etc.
- Temperature Change e.g. daily relative humidity, daily solar radiation daily wind speed and direction
- Cyclonicity
  e.g. return period (probability of occurrence in a year)
- Typhoons (observed)
  (Ref/insert: Climate map, baseline climate data)

1.2 Socio-economic Profile

1.2.1 Demographics: Population Size, Density, Urban-Rural Distribution

- Population and Number of Households (settlement patterns, location)
- Projected Population Changes
  (Ref/Insert: population Map)
  (Ref/Table 1: Profile, c/0 working tables)

1.2.2 Income and Poverty incidence
- Income level
- Housing, water and sanitation
- Health and nutrition
- Education

1.2.3 Agricultural Production System
- Crop Production System
  (Ref/Table 2: Agriculture Crop, c/o working table)
- Livestock, Poultry Production
  (Ref/Table 2.1: Agriculture- Livestock, c/o working tables)
  (Ref/Table 3.1: Production loses, causes and actions, c/o working tables)

1.2.4 Fisheries Production Data (if applicable)

1.2.5 Commerce and Trade
e.g. Players involve, volume of trade, crops involve, # commercial establishments, product geographic flow, etc. (can be culled out from baseline study or FVCA)

1.2.6 Livelihood
e.g. Other livelihood activities; no of HHs involved/brgy, etc. labor, carpentry/masonry, processing, micro enterprise, vending, buy and sell, OFWs, etc.

1.3. Institutional Profile

1.3.1 Infrastructure
- Other agriculture facilities e.g. mills, warehouses, etc.
- Transportation
- Communication
- Power
- Water Supply/ Irrigation system
- Building/Shelter

(Ref/insert-Infrastructure map)

1.3.2 Support Services (e.g. credit and trade)
- Trading and Marketing
  e. g. Market linkage, trade fairs, technology/technical assistance, etc.)
- Credit and Financing
  e. g. What are these? interest rates, amount of portfolio, terms, insurance systems, etc.

2. CURRENT HAZARDS AND OBSERVED CLIMATE CHANGE IMPACTS

2.1 Sources and Types

2.1.1 Floods

2.1.2 Droughts

2.1.3 Others: Cyclones
(Ref/insert- Hazard maps)

2.2 Place and Time of Occurrence
2.3 Impacts (Extent/Degree)
2.3.1 Damage to Crops
e.g. Insert vulnerability map – crop map with overlay of hazards
2.3.2 Damage to Livestock
2.3.3 Damage to Property
2.3.4 Loss of Life
e.g. Insert Population map w/ overlay of hazards
2.3.5 Damage to Infrastructure
• (E.g. Un-passable road system and its effects to the livelihood/ household economy)
2.3.6 Damage to fishery products (if applicable)
(Refer to annex Table 4: History and Effect of Past Hazards / working tables)

3. ADAPTATION STRATEGIES

3.1 Current Adaptation Strategies
(insert table 3.1: Past adaptation by affected people and places)
(Categorize strategy according to a) physical/infra, b) biological, c) technological, d)
economic, e) political/institutional)
3.2 Other Adaptation Strategies
3.3 Needs/ Requirements (Gaps) of the strategies
(insert table 3.3: Assessment of past adaptation strategies – sufficiency and constraints)

4. SCENARIO ANALYSIS*

4.1 Discussion of Scenario Components
4.2 Vulnerability Rating
(low = less that 30% loss, moderate = 31-59% loss, high= more than 60% loss) based on above's discussion of scenario analysis culled from the table (matrix)
4.3 Adaptation to Climate Change and other Scenarios
(Shall include the recommendations)
(Insert table 4.3: Future adaptation strategies by category)

5. CONCLUSIONS

5.1 Current hazards
5.2 Scenarios of Vulnerabilities
5.3 Adaptation strategies and Gaps
5.4 Recommendations

Bibliography
Annexes (i.e. maps, tables, figures)
*Please refer to separate guide on scenario analysis

ANNEX C

Ranking of Adaptation Strategies

Annex C 1: Details of the climate change adaptation practice
*** Please write the choices (a,b, c, d, e or f) for some of the categories while provide your answers to the description of the adaptation practice.**

Climate Change Adaptation Practice	**Location** A. Household Level B. Barangay/ Community Level C. Municipal level D. Provincial level (Indicate the specific name of Barangay or municipality where practiced)	**Description** (Answer the ff: 1. What is being done? 2. Materials Used? 3. How is it being done? 4. Why is it being done?)	**Origin of Practice**		**Climate Drivers** A. Floods B. Drought C. Typhoon D. Landslide E. Seasonality (e.g. Late or early onset of rainy season or prolonged rains) F. Others (Please Specify)	**Impacts** A. Increased income B. Generated employment C. Reduced poverty D. Environmental E. Others (Please Specify)	**Extent of Use** (percentage of use in a certain area) A. Low – 1- 33% B. Moderate – 34-66% C. High – 67-100%
			Locally Initiated A. Adopted B. Modified	Externally Introduced A. Adopted B. Modified			
1.							
2.							
3.							
4.							
5.							
6.							
7.							

Annex C 2: Criteria/Indicators and the corresponding weights in percentage

CRITERIA/INDICATORS OF EFFECTIVENESS	ASSIGNED WEIGHTS (%)
1. ***Cost Effectiveness*** (the higher the positive return from the given inputs/costs, the more cost-effective)	
2. ***Contribution to Poverty Reduction*** (potential of the adaptation practice to reduce poverty)	
3. ***Increase Income*** (potential of the adaptation practice to increase income)	
4. ***Contribution to Employment*** (potential of the adaptation practice to provide employment)	
5. Size of beneficiary group (more positive impacts to greater number of people, the more efficient the adaptation strategies)	
6. ***Absence of adverse impacts on other sectors/ group*** (less negative impacts to other group/sectors, the more effective the CCA strategy)	
7. ***Environmental Soundness*** (the more environmental friendly the practice, the more effective)	
8. ***Ease of Implementation*** (the strategy is easily employed, absence of barriers for implantation)	
9. ***Socio-cultural Acceptability*** (the more acceptable the CCA practice to greater number of stakeholders, the more effective)	
10. ***Immediate impact/response to urgent needs*** (the more immediate positive impacts of adaptation practice the more effective)	
11. ***Potential for Up-scaling*** (the greater the potential for wider application, the more effective)	
TOTAL	**100%**

Annex C 3: Scoring of the adaptation practice based on the weighted percentage given for each criterion/ indicator

Climate Change Adaptation Practice	Criteria/Indicators of Effectivene											
	Cost Effectiveness	Contribution to Poverty Reduction	Increase Income	Contribution to Employment	Size of beneficiary group	Absence of adverse impacts on other sectors/ groups	Environmental Soundness	Ease of Implementation	Socio-Cultural Acceptability	Immediate Impact	Potential for Up-scaling	Total Score
1												
2												
3												
4												
5												
6												
7												

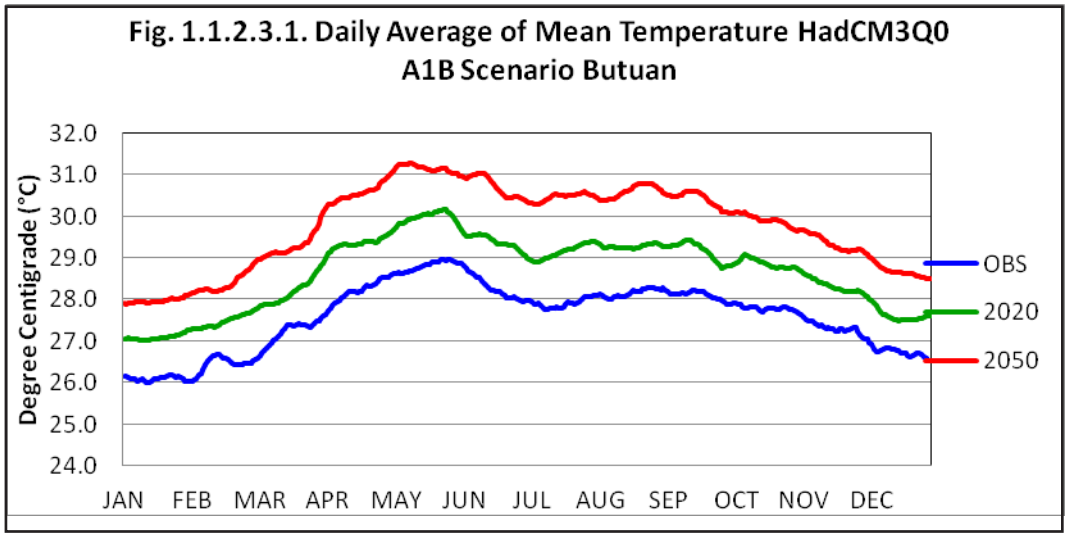
Annex C 4: Ranking of adaptation practices based on their weighted score

Ranking
1.
2.
3.
4.
5.
6.
7.

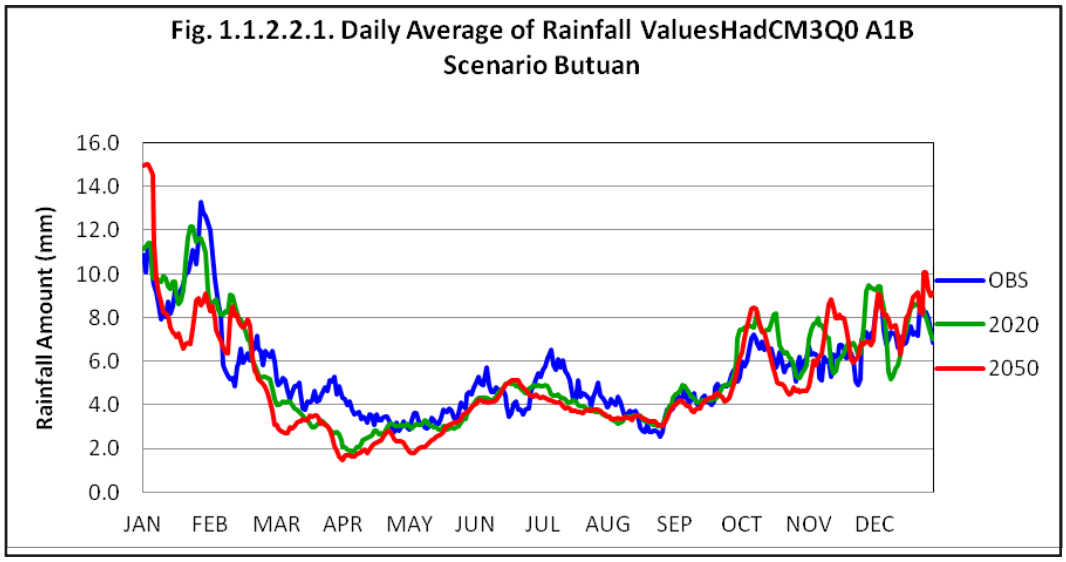
ANNEX D

PAGASA-Generated Climatic Data for Agusan del Norte

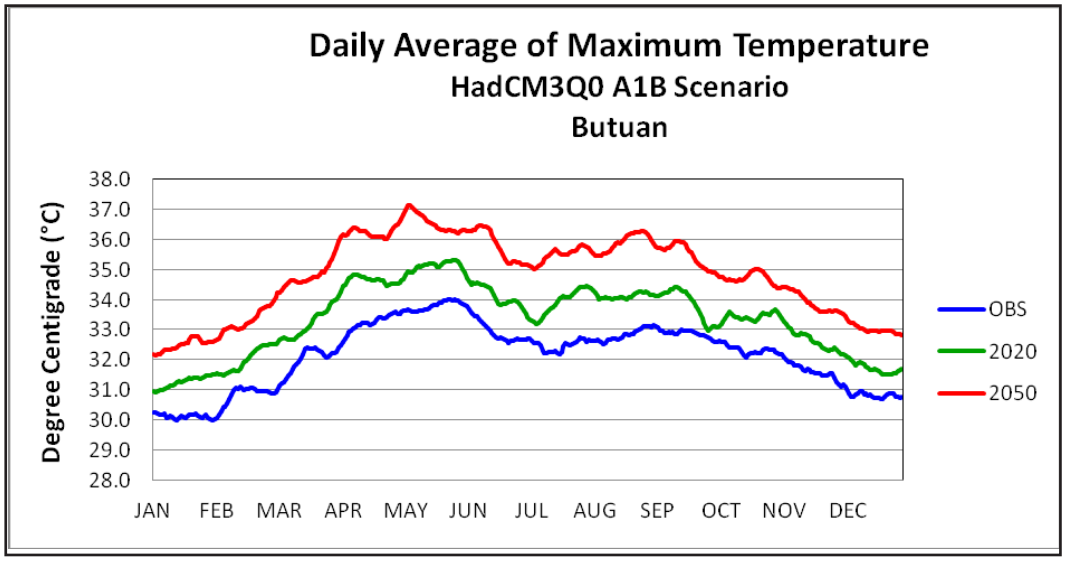
Annex D 1:. Daily Average of Mean Temperature, Agusan del Norte, PAGASA



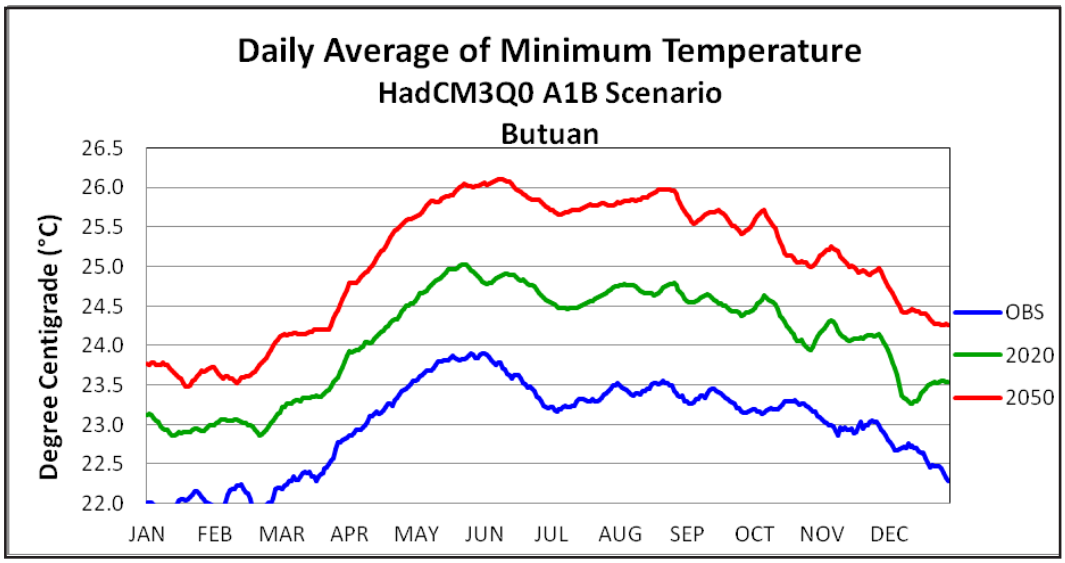
Annex D 2: Daily Average of Rainfall Values, Agusan del Norte, PAGASA



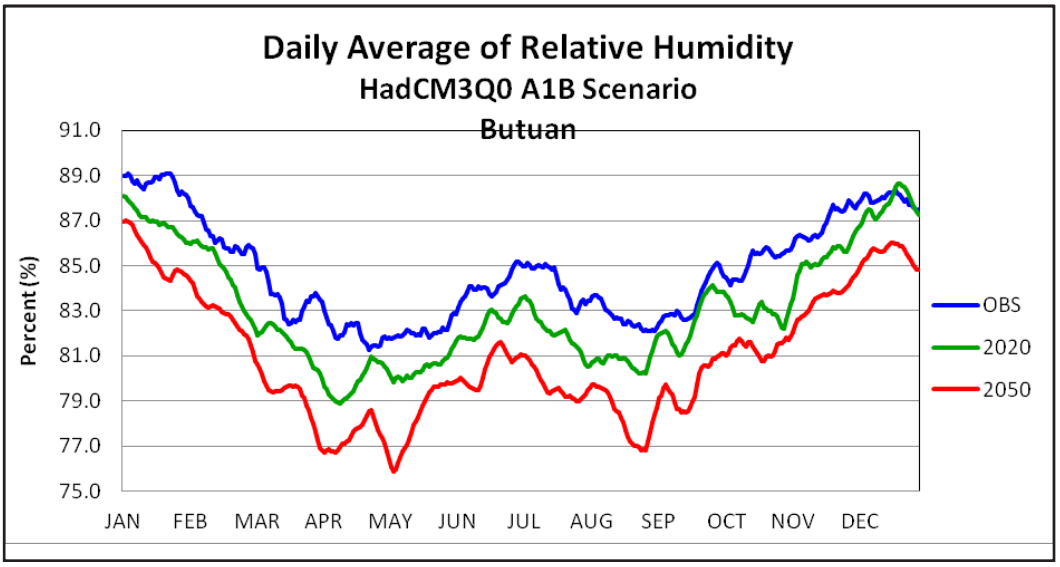
Annex D 3: Daily Average of Maximum Temperature, Agusan del Norte, PAGASA



Annex D 4: Daily Average of Minimum Temperature, Agusan del Norte, PAGASA



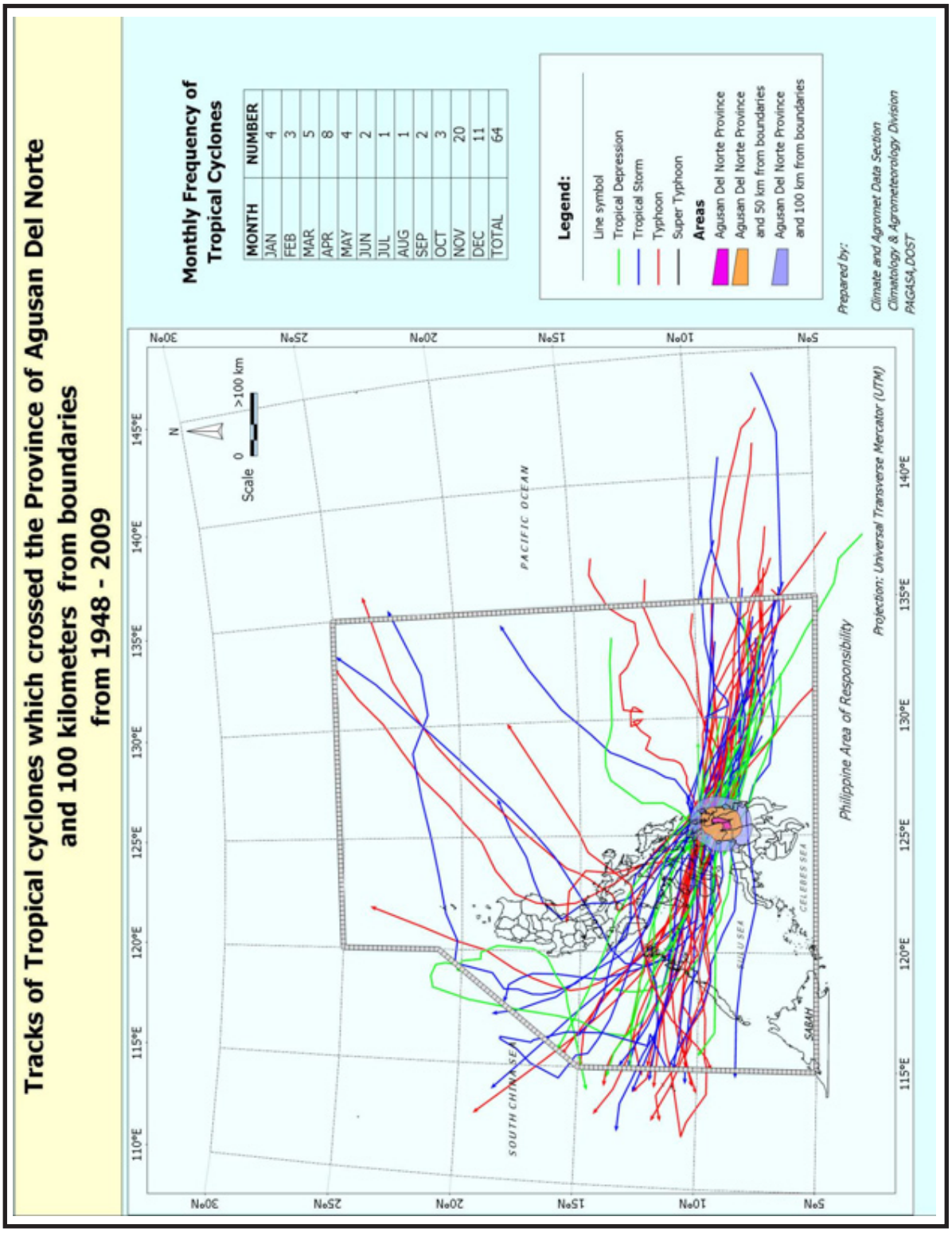
Annex D 5: Daily Average of Relative Humidity, Agusan del Norte, PAGASA



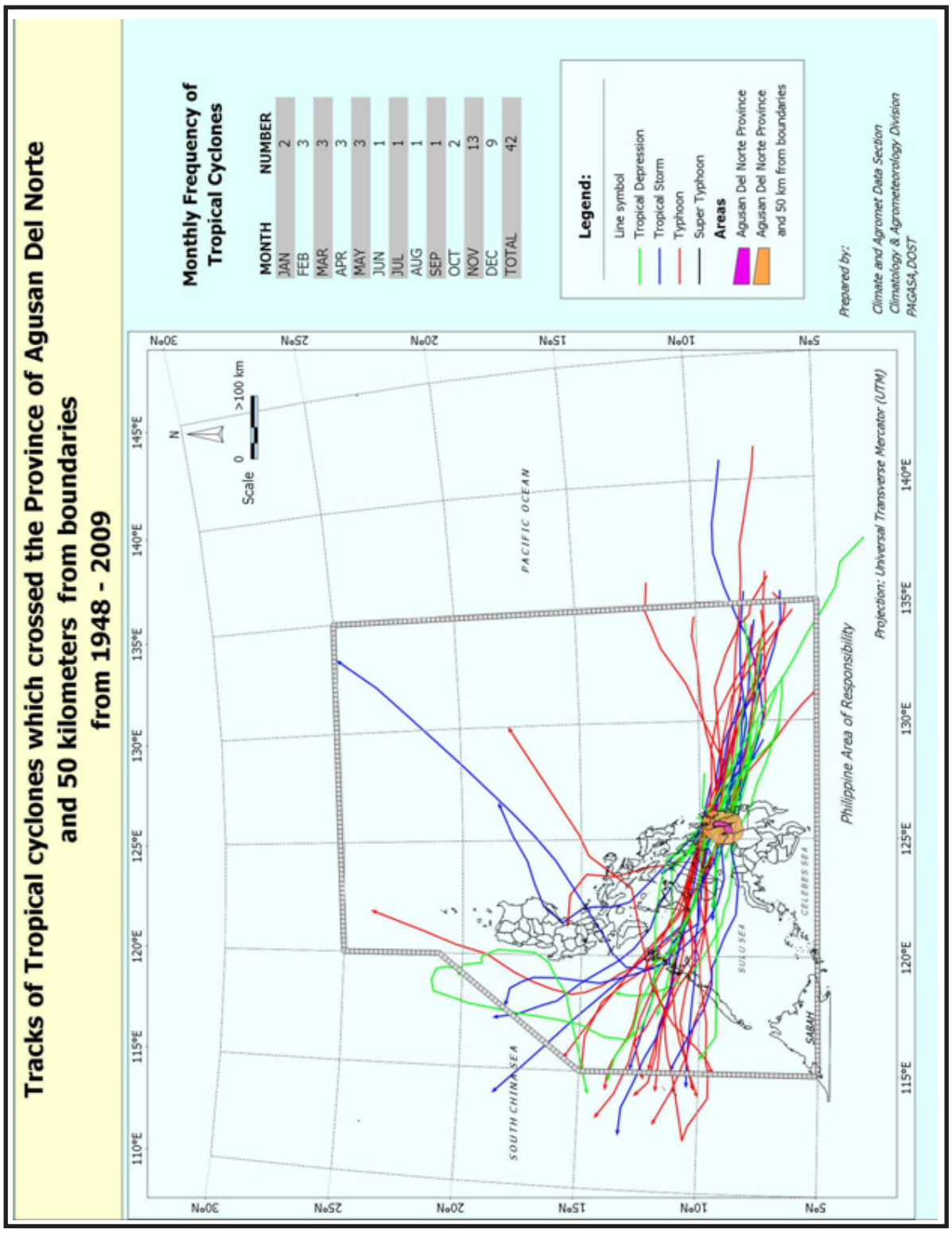
ANNEX E

PAGASA-Generated Tropical Cyclone Tracks Crossing Agusan Del Norte

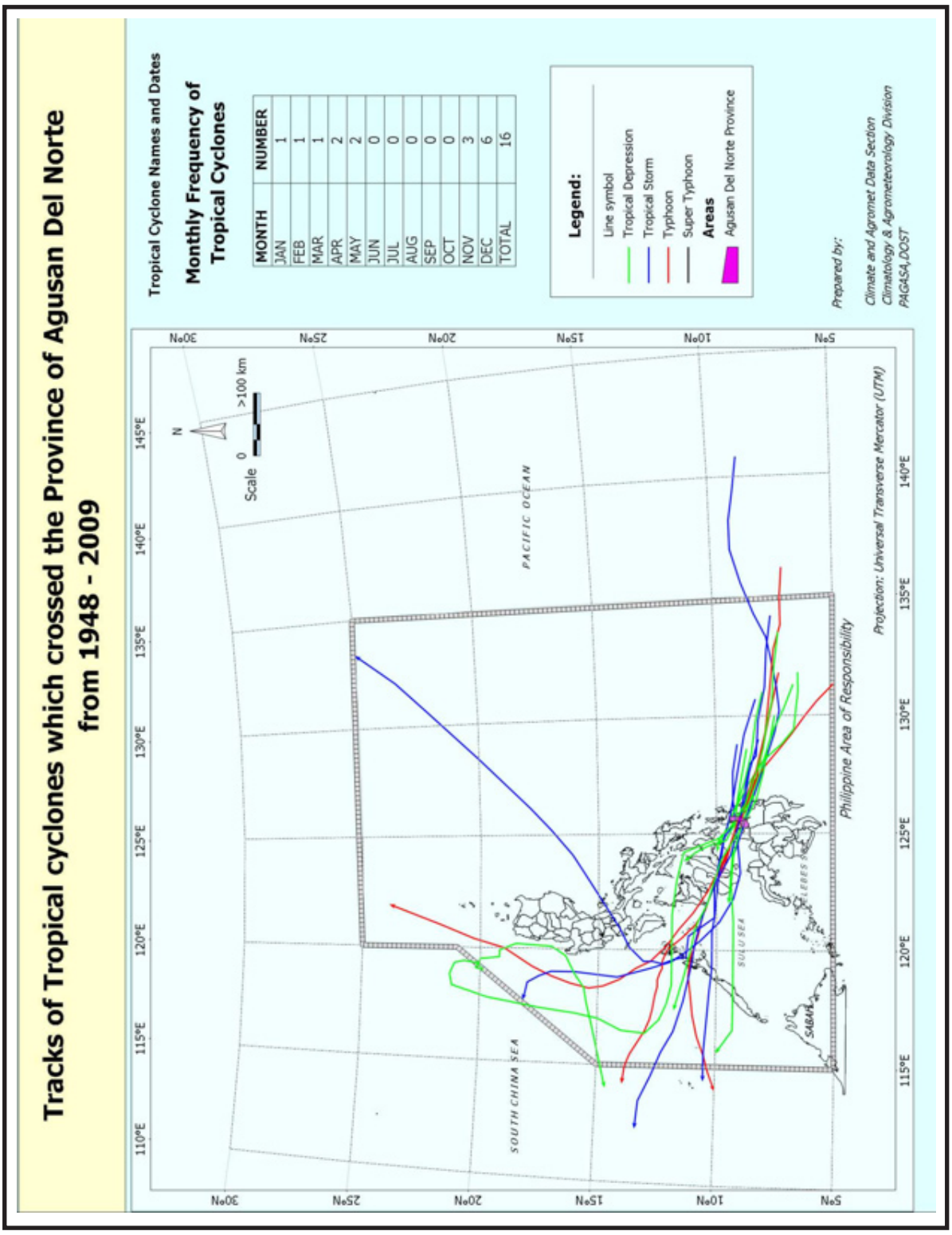
Annex E 1: 100 Kilometers from Boundaries



Annex E 2: 50 Kilometers from Boundaries



Annex E 3: Tracks of Tropical Cyclones which crossed ADN



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