STRENGTHENING CLIMATE CHANGE ADAPTATION AND DISASTER RISK REDUCTION INTEGRATION IN LOCAL DEVELOPMENT PLANNING IN THE PHILIPPINES: THE CASE OF KIDAPAWAN CITY, COTABATO

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ABSTRACT

Kidapawan City in the province of Cotabato, Philippines continues to face droughts, flooding, and rainfall-induced landslides. These hazards present the compounding risks from climate change which require both technical solutions and effective local governance for adaptation. By underscoring the need to strengthen climate change adaptation (CCA) and disaster risk reduction (DRR) integration within local development planning, this study analyzed the rationale for and level of CCA and DRR integration in Kidapawan City. It determined the current challenges and possible strategies that can be implemented to effectively integrate CCA and DRR. Primary data were collected through semi-structured interviews among key personnel from the City Government of Kidapawan and also involved the review of four key plans against six enabling conditions of integration: (1) Institutional and Technical Capacity; (2) Plans and Policy Alignment; (3) Risk Assessment; (4) Coordination Mechanisms; (5) Financing; and (6) Monitoring and Evaluation Framework.

The study found that there is inconsistent CCA and DRR integration due to asynchronous planning cycles, inadequate institutional coordination, fragmented funding sources, and M&E framework that focuses mainly on outputs instead of outcomes or impacts. In addition, the permanent structure or focal unit dedicated to climate change remains lacking while disaster risk management has an established institutional framework (through the City Disaster Risk Reduction and Management Council). Lastly, recommendations were provided to strengthen CCA and DRR integration at the local level to effectively reduce vulnerabilities and enhance adaptive capacities.

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Padayon!

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATIONS

AIP	Annual Investment Plan
AO	Administrative Order
AWS	Automatic Weather Stations
CAO	City Agriculturist Office
CCA	Climate Change Adaptation
CCET	Climate Change Expenditure Tagging
CCC	Climate Change Commission
CDP	Comprehensive Development Plan
CDRA	Climate and Disaster Risk Assessment
CDRRMC	City Disaster Risk Reduction and Management Council
CDRRMO	City Disaster Risk Reduction and Management Office
CLUP	Comprehensive Land Use Plan
CENRO	City Environment and Natural Resources Office
CPDO	City Planning and Development Office
CSOs	Civil Society Organizations
CSWDO	City Social Welfare and Development Office
DENR	Department of Environment and Natural Resources
DEPDev	Department of Economy, Planning, and Development
DHSUD	Department of Human Settlements and Urban Development
DILG	Department of the Interior and Local Government
DRR	Disaster Risk Reduction
DRRM	Disaster Risk Reduction and Management
EMB	Environmental Management Bureau
GEF	Global Environment Facility
GCF	Green Climate Fund

GHG	Greenhouse Gas
IACC	Inter-Agency Committee on Climate Change
IPs	Indigenous Peoples
IPCC	Intergovernmental Panel on Climate Change
KI	Key Informant
LCCAP	Local Climate Change Action Plan
LDF	Local Development Fund
LDIP	Local Development Investment Program
LDRRMF	Local Disaster Risk Reduction and Management Fund
LDRRMP	Local Disaster Risk Reduction and Management Plan
LGU	Local Government Unit
MGB	Mines and Geoscience Bureau
M&E	Monitoring and Evaluation
MOOE	Maintenance and Other Operating Expenses
NDCC	National Disaster Coordinating Council
NDRRMC	National Disaster Risk Reduction and Management Council
NGOs	Non-Government Organizations
NTA	National Tax Allotment
OCD	Office of Civil Defense
PhilVOLCS	Philippine Institute of Volcanology and Seismology
PAGASA	Philippine Atmospheric, Geophysical and Astronomical Services Administration
PSA	Philippine Statistics Authority
PSF	People's Survival Fund
PTFCC	Presidential Task Force on Climate Change
RA	Republic Act
TWG	Technical Working Group
UNDRR	United Nations Disaster Risk Reduction

UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
WMO	World Meteorological Organization

1. INTRODUCTION

The Philippines has a complex geographical landscape, making it highly vulnerable to climate-related disasters such as typhoons, floods, and droughts. According to the 2024 World Risk Index, it ranked first in terms of disaster risk from extreme natural events and climate impacts out of 193 countries (Bündnis Entwicklung Hilft and – Institute for International Law of Peace and Armed Conflict 2024). An average of 20 typhoons enters the country annually, nine of which make landfall (Cinco et al. 2016). The country's exposure and vulnerability to climate-related disasters are further compounded by its high poverty rate, inadequate infrastructure, informal settlements, especially along the coastlines and urban areas, and relatively low resilience (Porio 2011; Porio 2014; Baker 2012; World Bank and Asian Development Bank 2021; Balica, Wright, and van der Meulen 2012). This highlights the significance for well-coordinated and integrated responses, especially at the local level given that local governments are at the frontline when it comes to responding to climate-related disasters.

One of the cities in the Philippines that is also severely affected by climate-disasters is Kidapawan City in Cotabato province. It continues to face severe droughts intensified by the El Niño phenomenon and thus damaging agricultural output and local community income (Gomez 2013). In fact, in 2015-2016, the province of Cotabato declared a state of calamity due to extreme drought (UN ESCAP 2017; Tandog and Tandog 2023). Furthermore, the city faces increased risks of flooding and landslides because of its location near Mount Apo, the tallest mountain in the Philippines, and multiple river systems during heavy rainfall events (Gomez 2013; City Government of Kidapawan 2021a). These climate-related disasters highlight the compounding risks experienced by Kidapawan City at both ends of the spectrum and both resulting to significant socioeconomic impacts.

Against this backdrop, the integration of climate change adaptation (CCA) and disaster risk reduction (DRR) is critical in enhancing resilience and adaptive capacities in the Philippines. While DRR generally focuses on reducing vulnerability through disaster prevention, preparedness, and mitigation measures (UNDRR 2016), CCA takes a more extensive, long-term approach that responds to climatic effects with an emphasis on adjustments to current systems and processes (IPCC 2014).

On both international and national levels, the integration of CCA and DRR has gained growing interest as essential for avoiding duplication, maximizing resource efficiency, preventing maladaptation, and enhancing integrated risk assessments (Mercer 2010; Flood et al. 2022; Wen et al. 2023). In the Philippines, however, despite having instituted these frameworks through important legislative measures—the Climate Change Act of 2009 and the Disaster Risk Reduction and Management Act of 2010—implementation of CCA and DRR integration is lacking, largely because of "poor execution of existing policies, unclear delegation of tasks, and individualized implementation of harmonized CCA and DRR plans and projects" (Gabriel et al. 2015, 7).

Furthermore, much of the existing literature and research focus on CCA and DRR integration and mainstreaming on national policy and institutional level with little attention to the local level. This gap is critical since it is the local governments which implement and play critical role in disaster preparedness and building climate resilience. Thus, this research examined the challenges faced by local governments in integrating CCA and DRR into their local development plans with Kidapawan City, Cotabato, Philippines as a case study. It determined the rationale for and level of integration, determine challenges and gaps, and provide actionable suggestions. By focusing on context-specific insights, this study aims to contribute to

strengthening CCA and DRR integration at the local level and potentially serving as a framework for similar local governments across the Philippines and beyond.

1.1 Research aims and objectives

This research aims to analyze how CCA and DRR integration in local development planning can be strengthened to enhance the resilience of local communities amidst the exacerbating impacts of climate-related hazards. Specifically, it would address the following questions in the context of Kidapawan City, Cotabato, Philippines:

1. What is the rationale for and level of CCA and DRR integration within the local development planning processes?

2. What are the challenges and gaps hindering CCA and DRR integration within the local development planning process?

3. What specific strategies can be proposed to strengthen CCA-DRR integration in the local development framework?

By examining its core development plans and navigating through the discussions with key officials from the City Government of Kidapawan City, this research tries to understand the experience of the said locality with mainstreaming and integrating CCA and DRR in their local development plans.

1.2 Research outline

This research consists of six chapters as follows.

Chapter one introduces the subject matter and explains the rationale and research goals. It provides an overview of CCA and DRR within local development planning in the Philippines along with national and local perspectives.

Chapter two focuses on the review of literature and studies. It examines fundamental concepts, together with theoretical frameworks and policy developments, in relation to CCA and DRR. It likewise provides the historical separation between these fields, the current trends in terms of integration and the difficulties in further mainstreaming CCA and DRR, and the Philippine policy framework. Consequently, the chapter laid the synthesis and gaps further moving to the discussion of the theoretical and conceptual frameworks that served as guide in the course of the study.

Chapter three is on research design which explains data collection methods and analysis procedures. This chapter also explains why Kidapawan City was chosen as the study site and the limitations of the study.

Furthermore, **Chapter four** presents the results derived from the analysis of Kidapawan City's local development plans and interview responses. The research results are divided into three key sections namely, (i) assessment of the rationale and level of CCA and DRR integration; (ii) challenges and gaps in CCA and DRR integration; and (iii) strategies for further strengthening CCA and DRR integration in local development planning.

Chapter five, meanwhile, provides a detailed analysis of the results building on the three key sections mentioned in chapter four.

Lastly, conclusion and recommendations of the study are found in **Chapter six**.

2. LITERATURE REVIEW

The chapter reviews relevant literature and research findings related to the integration of CCA and DRR into local development planning. The chapter explains basic concepts and global and national policy frameworks while describing the developing connection between CCA and DRR since the Sendai Framework for Disaster Risk Reduction and the Paris Agreement became effective in 2015. The chapter reviews institutional frameworks and technical and financial systems affecting local governments while discussing successful approaches and persistent difficulties in the Philippine setting. The assessment of Kidapawan City's CCA and DRR integration in its CLUP, CDP, LCCAP and LDRRMP uses this review as its analytical framework.

2.1 Understanding climate change adaptation and disaster risk reduction

2.1.1 Defining CCA and DRR

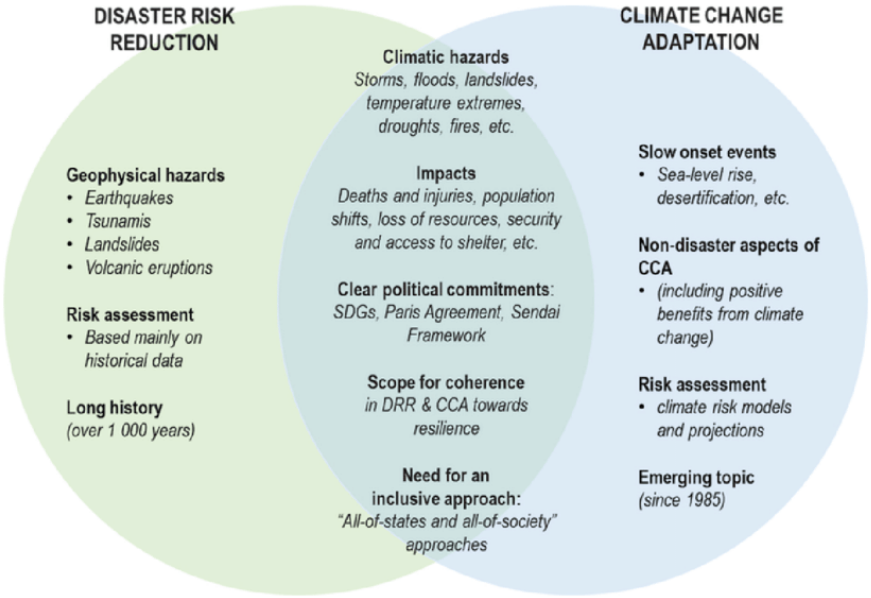
CCA has been defined by the Intergovernmental Panel on Climate Change (IPCC) as the "process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities. In some natural systems, human intervention may facilitate adjustment to expected climate and its effects" (IPCC 2014, 5). Henceforth, it entails a forward-looking and proactive approach to enhance a system's resilience from climate hazards. These hazards include slow onset events such as sea level rise, ocean acidification, and temperature shifts and extreme weather events such as more intense typhoons, rainfall, heat, flooding, among others (Least Developed Countries Expert Group 2012).

Under Article 7 of the Paris Agreement, the emphasis is on ensuring adaptation response as a global goal, thereby enhancing climate resilience and contributing to sustainable development.

It calls on countries to strengthen cooperation on adaptation planning and implementation, inter alia, through the formulation and implementation of National Adaptation Plans (NAPs).

On the one hand, the United Nations Disaster Risk Reduction (UNDRR) framework, formerly UN International Strategy for Disaster Reduction (UNISDR), refers to disaster risk reduction (DRR) as "preventing new and reducing existing disaster risk and managing residual risk, all of which contribute to strengthening resilience and therefore to the achievement of sustainable development" (UNDRR 2016, 16). DRR uses a comprehensive and multi-hazard approach that includes both climatic and non-climatic hazards (e.g. earthquakes, typhoons, floods, volcanic eruptions) and human-induced hazards (e.g. technological accidents, armed conflict).

The Sendai Framework for Disaster Risk Reduction 2015–2030 serves as the primary DRR policy framework at the global level which was adopted during the Third UN World Conference in Sendai in Japan in 2015 (UNDRR 2015).



Source: OECD 2020, 23

Figure 1. Overview of CCA and DRR differences and interlinkages

Figure 1 shows an overview of the differences and interlinkages between CCA and DRR (OECD 2020). It aligns with the earlier discussion on what DRR and CCA cover where the former focuses on both climatic and non-climatic hazards. On the other hand, CCA includes climatic hazards alone and includes both sudden and slow-onset events. Meanwhile, it also presents the common denominators and where the integration lies. This includes climatic hazards consequently resulting to impacts, such as losses and damages in lives and infrastructure. Nonetheless, a more detailed explanation of their differences and interlinkages follows.

2.1.2 Differences and interlinkages between CCA and DRR

Historically, CCA and DRR have been treated in isolation because of the differences in their conceptual origins, institutional frameworks and operational approaches. Table 1 shows the insights from Thomalla et al. (2006) and Venton and La Trobe (2008) of the differences and signs of convergence between these two concepts – frequently cited in earlier studies relating to CCA and DRR integration (e.g. Mercer 2010; Gero et al., 2010, and Florano 2015).

However, while the study provided useful distinctions between the two fields, it is argued that some of these differences have been blurred in light of the developments in linking CCA and DRR. For instance, the rising number of severe hydrometeorological disasters including typhoons, floods, and droughts has become a common priority for both CCA and DRR agendas. This is because climate attribution science has established stronger connections between climate change and extreme weather events (IPCC 2021; Otto et al. 2024).

Furthermore, the adoption of the Sendai Framework for Disaster Risk Reduction (2015–2030), the Paris Agreement (2015), and the United Nations Sustainable Development Goals (SDGs) – specifically with Goals 11 (Sustainable Cities) and 13 (Climate Action) call for development planning to integrate climate and disaster risk governance (UNDRR 2015; UNFCCC 2015; UN

2015). The frameworks support policy coherence alongside inclusive resilience-building and systems-based risk management approaches. According to Bueb et al. (2021), there is a need for "triple alignment" strategy between adaptation, disaster risk reduction, and the SDGs. This approach stresses the need for policy coherence and systems thinking to ensure that resilience strategies contribute to sustainable, inclusive, and transformative development pathways. The field of CCA likewise now includes practical community-level interventions in addition to theoretical and long-term planning while DRR adopts forward-looking climate-informed strategies according to Flood et al. (2022) and Wen et al. (2023).

Table 1 demonstrates how these fields have developed and merged since 2015 in comparison with the pre-2015 views or studies. These points underline that the post-2015 integration between CCA and DRR demonstrates a rising trend toward unified and forward-thinking strategies that tackle present dangers alongside future exposure.

Table 1. Convergence and differences between CCA and DRR pre-and post-2015 views

Category	Differences [1] [2]		Convergence (earlier/ pre-2015 view) [2]	Convergence (post-2015 perspective) [3] [4] [5] [6] [7] [8]
	CCA	***DRR***		
Scope (Hazard)	Climate-related hazards	All hazard types	n/a	Hydrometeorological hazards are key convergence points given developments on combined risk assessments and early warning/ multi-hazard early warning systems
Origins of Knowledge	Climate science	Emergency response; Humanitarian response	Climate adaptation now draws expertise from DRR, engineering, health, etc.	Increasing mainstreaming of cross-sectoral expertise (e.g., CCA and DRR professionals increasingly work together across shared institutional platforms)
Basis of risks	Future-oriented	Structural safety based on past hazards	DRR increasingly becoming forward-looking	Incorporation of both historical trends and climate projections
Focus of interventions	Physical exposure	Vulnerability reduction	n/a	Both fields now aim to reduce systemic vulnerability, addressing root causes and exposure simultaneously.
Tools and approaches	Full range of tools	Limited tools under development	Recognition that adaptation tools are needed	A wide range of shared and hybrid tools (e.g., Vulnerability Risk Assessment, GIS-based risk mapping, multi-hazard early warning systems) are being mainstreamed to be used in both fields.
Policy orientation	Incremental development	New/emerging agenda	n/a	Countries which are signatories to international agreements (i.e., Sendai Framework and Paris Agreement) have embedded / currently embedding CCA and DRR in national development and

				resilience strategies, linked through SDG frameworks.
Funding	Ad hoc	Sizeable and growing	DRR now accessing climate adaptation finance	Blended and co-financed mechanisms (e.g., Green Climate Fund, Global Environmental Facility, national DRR funds) support integrated actions.

[1] Thomalla et al. 2006

[2] Venton and La Trobe 2008

[3] UNDRR 2021

[4] IPCC 2022

[5] Bueb et al. 2020

[6] World Meteorological Organization 2022

[7] Flood et al. 2022

[8] Wen et al. 2023.

2.2 The need for CCA and DRR integration and key challenges

It has been established that CCA and DRR both aim to reduce vulnerability and enhance adaptive capacity (Birkmann and von Teichman 2010; Mercer 2010; Venton and La Trobe 2008) – with CCA focusing mainly on climatic hazards and DRR focusing more broadly on climatic and non-climatic hazards. Vulnerability is the susceptibility of a system to harm from exposure associated with environmental and social changes and from the absence of capacity to adapt (Adger et al. 2006). The ability to reduce vulnerability is a critical factor for building resilience because systems need to absorb disturbances while reorganizing to maintain functionality without collapsing (Folke 2006).

There is a growing recognition of the need for CCA and DRR integration both at the international and national levels (UNDRR 2021). Moreover, there are a number of existing studies which argue that the integration of CCA and DRR operational and technical elements creates a strong framework for managing climate risks (Banwell et al. 2018; Birkmann and von Teichman 2010; IPCC 2018; and Mastrandrea et al. 2010). The operational integration of efforts would optimize efficiency by minimizing human and technical and financial resource consumption in duplicated institutional structures and implementation activities (Schipper and Pelling 2006; Thomalla et al. 2006). Meanwhile, technical integration would allow experts to share their knowledge and tools and lessons that would boost risk reduction efficiency and effectiveness (Birkmann and von Teichman 2010).

Preventing maladaptation is also highlighted as one of the potential benefits of CCA and DRR integration. For one, Paterson and Guida (2022) posit that long-term socio-technological solutions that enhance urban planning and increase health care system access and sustainable investment plans and co-design/participatory societal planning can help CCA and DRR agendas achieve better cohesion between pre- and post-extreme-event impacts.

2.3 The Philippine policy landscape on climate change and disaster risk reduction

The Philippines stands as one of the world's most vulnerable nations to climate-related disasters and climate change impacts because of its geographical location, archipelagic nature, and socio-economic conditions (Bündnis Entwicklung Hilft and IFHV 2024). Nonetheless, the country has established a comprehensive policy framework, at the national level, that addresses both CCA and DRR. It is also one of the early advocates of CCA and DRR and developed its climate and disaster policies through global frameworks which have undergone significant changes during the past two decades.

2.3.1 Evolution of the climate change policy framework in the Philippines

The establishment of the Inter-Agency Committee on Climate Change (IACCC) in 1991 is considered as the Philippines' first institutional action as regard climate change (Administrative Order No. 220 1991). This was prompted by the “mounting evidence” of climate change in the early 1990s and a result of the recommendation by the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP) during the Tenth Congress in 1987 for an “intergovernmental mechanism” to research all issues related to climate change during its Tenth Congress held in 1987 (AO No. 220 1991).

The primary tasks of the IACC were to formulate policies and response strategies thereof to address climate change and monitor local climate change and its impact on socioeconomic development of local communities (AO No. 220 1991). This was chaired by the Department of Environment and Natural Resources (DENR). Consequently, the Philippines became a signatory to the United Nations Framework Convention on Climate Change (UNFCCC) in 1992 and ratified the subsequent Kyoto Protocol in 2003 (UNFCCC n.d.).

In the mid-2000s, the government saw the need to elevate its institutional approach as climate change gained international attention. As such, in 2007, a Presidential Task Force on Climate Change (PTFCC) was established through Administrative Order No. 171. The PTFCC did not replace the IACC but instead the former enhanced national climate governance through political leadership and coordination while the latter shifted to technical support functions (Administrative Order No. 171 2007).

In 2009, the Climate Change Act (Republic Act 9729) was adopted which established the Climate Change Commission (CCC). The CCC replaced both the PTFCC and IACCC and serves as the "sole policy-making body of the government which shall be tasked to coordinate, monitor and evaluate the programs and action plans of the government relating to climate change" (Section 4, RA 9729 2009). It is also considered as equal to any national government agencies and is given an annual budget.

Aside from this, the CCC is mandated to develop the framework guidelines on both climate change adaptation and mitigation. It also formulated the National Framework Strategy on Climate Change (NFSCC) and the National Climate Change Action Plan (NCCAP) to direct adaptation and mitigation efforts across various sectors (CCC 2011).

The NCCAP identifies seven thematic areas as its main priorities namely, (i) food security; (ii) water sufficiency; (iii) ecological and environmental stability; (iv) human security; (v) climate-smart industries and services; (vi) sustainable energy; and (vii) knowledge and capacity development (CCC 2011).

The Philippines adopted the Paris Agreement at COP21 in 2015 before ratifying it in 2017 to strengthen its international climate commitments. Moreover, it submitted its Intended Nationally Determined Contribution (NDC) in 2015 and then followed by an updated NDC in April 2021, with an ambitious goal of 75% greenhouse gas emissions reductions from 2010

baseline. The country further reinforced its commitments through the submission of its first National Adaptation Plan (NAP) in 2023, based on the seven thematic areas of the NCCAP. The NAP establishes a strategic framework to identify climate adaptation measures which enables national development planning to integrate them systematically while promoting sectoral proactive actions to reduce vulnerability and build long term climate resilience (CCC 2023).

2.3.2 Evolution of the disaster risk reduction policy framework in the Philippines

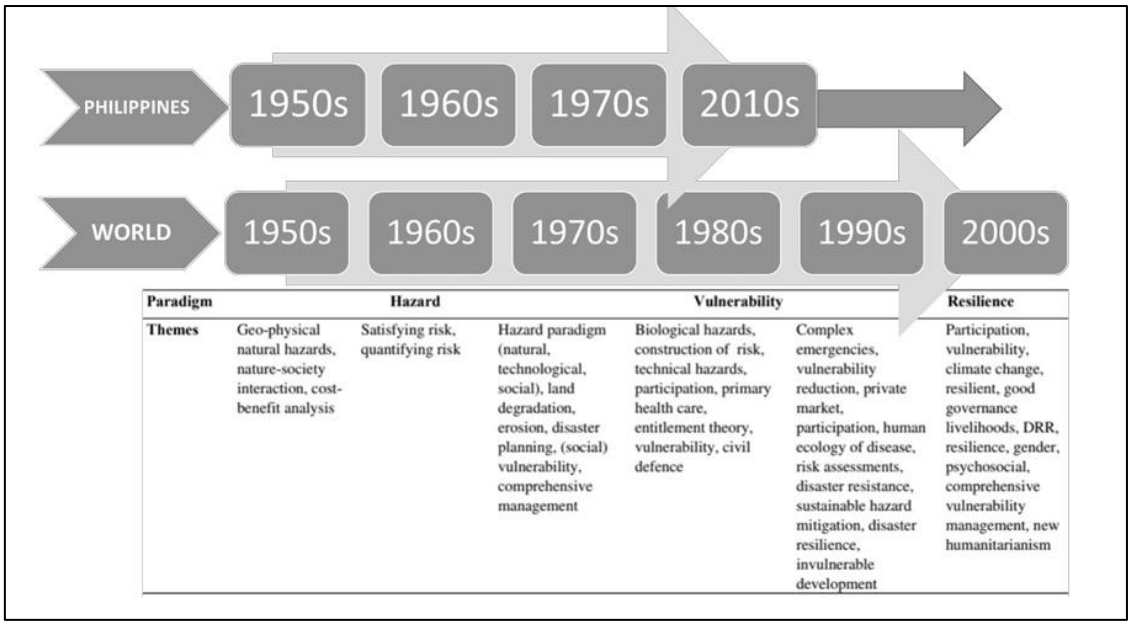
In terms of disaster risk reduction, the country had civil defense councils established during the Commonwealth (1930s) and Japanese occupation (1940s) periods (Gabriel et al. 2021). In 1978, a Presidential Decree (PD 1566) was issued to solidify the country's disaster preparedness and response initiatives but approaches during this period were limited to rescue and relief distribution during and immediately after disasters (Office of Civil Defense and National Disaster Risk Reduction and Management Council 2009). PD 1566 also established the National Disaster Coordinating Council (NDCC) as the top policy-making body for disaster-related matters to achieve effective multi-sectoral oversight and establish disaster control institutions in the country.

In the same manner, the Philippines has also been active in global disaster risk reduction initiatives through its membership in the United Nations Office for Disaster Risk Reduction (UNDRR), formerly UN International Strategy for Disaster Reduction (UNISDR). It became one of the first countries to join the global disaster risk management community after it endorsed the Hyogo Framework for Action (HFA) 2005–2015 during the World Conference on Disaster Reduction in Kobe Japan in 2005. From here on, the Philippines started moving its disaster management approach from disaster response to disaster risk reduction under the HFA framework.

Meanwhile, in 2010, a key legislation on disaster risk reduction and management was enacted. The Philippine Disaster Risk Reduction and Management Act (Republic Act 10121) established the National Disaster Risk Reduction and Management Council (NDRRMC) tasked to oversee government agency coordination with local governments and stakeholders and replaced the former NDCC. The council has published a National Disaster Risk Reduction and Management Plan focusing on four essential areas: (i) prevention and mitigation; (ii) preparedness; (iii) response; and (iv) rehabilitation and recovery. The law likewise mandates that multi-hazard risk assessment and early warning systems be incorporated.

The HFA was succeeded by the Sendai Framework 2015-2030 which aims to sustain global disaster risk reduction cooperation through recognition of complex risk dimensions and global and national platforms.

Figure 2 below shows how disaster risk reduction management (DRRM) has evolved in the Philippines' starting from hazard-based paradigms from 1950s to 1970s followed by vulnerability-focused paradigms from 1980s to 1990s and resilience models from 2000 onwards (Domingo 2017). The focus shifted from basic natural hazard response to an advanced method that includes reducing vulnerabilities, involving private markets, and conducting risk assessments, incorporating climate change, among others. Domingo (2017) further highlighted that it was only in the late 2000s that the country adopted landmark climate change and DRRM laws after missing the global transformation wave. Nonetheless, the general agreement exists that DRRM institutional building is undergoing rapid changes at an accelerating pace.



Paradigm	Hazard		Vulnerability			Resilience
Themes	Geo-physical natural hazards, nature-society interaction, cost-benefit analysis	Satisfying risk, quantifying risk	Hazard paradigm (natural, technological, social), land degradation, erosion, disaster planning, (social) vulnerability, comprehensive management	Biological hazards, construction of risk, technical hazards, participation, primary health care, entitlement theory, vulnerability, civil defence	Complex emergencies, vulnerability reduction, private market, participation, human ecology of disease, risk assessments, disaster resistance, sustainable hazard mitigation, disaster resilience, invulnerable development	Participation, vulnerability, climate change, resilient, good governance livelihoods, DRR, resilience, gender, psychosocial, comprehensive vulnerability management, new humanitarianism

Source: Domingo 2017, 14

Figure 2. Disaster risk reduction and management paradigm shift over the past decades

2.4 Localizing climate change and disaster risk reduction in the Philippines

The Philippine government requires local government units (LGUs) to develop a number of local plans to steer governance, investment programming, service-delivery, and resilience-building. The number of required plans ranges between 17 to 22 and depends on their income class and urban/rural status. These plans include core plans like Comprehensive Land Use Plan (CLUP) and Comprehensive Development Plan (CDP) and sectoral and thematic plans such Local Climate Change Action Plan (LCCAP), Local Disaster Risk Reduction and Management Plan (LDRRMP), Gender and Development Plan, Solid Waste Management Plan, Local Nutrition Plan, among others (Department of Interior and Local Government 2021).

The LCCAP and LDRRMP are two essential plans for resilience-building as they stem from Republic Act 9729 (Climate Change Act of 2009) and Republic Act 10121 (DRRM Act of 2010). The Climate Change Act directs local government units (LGUs) to formulate and

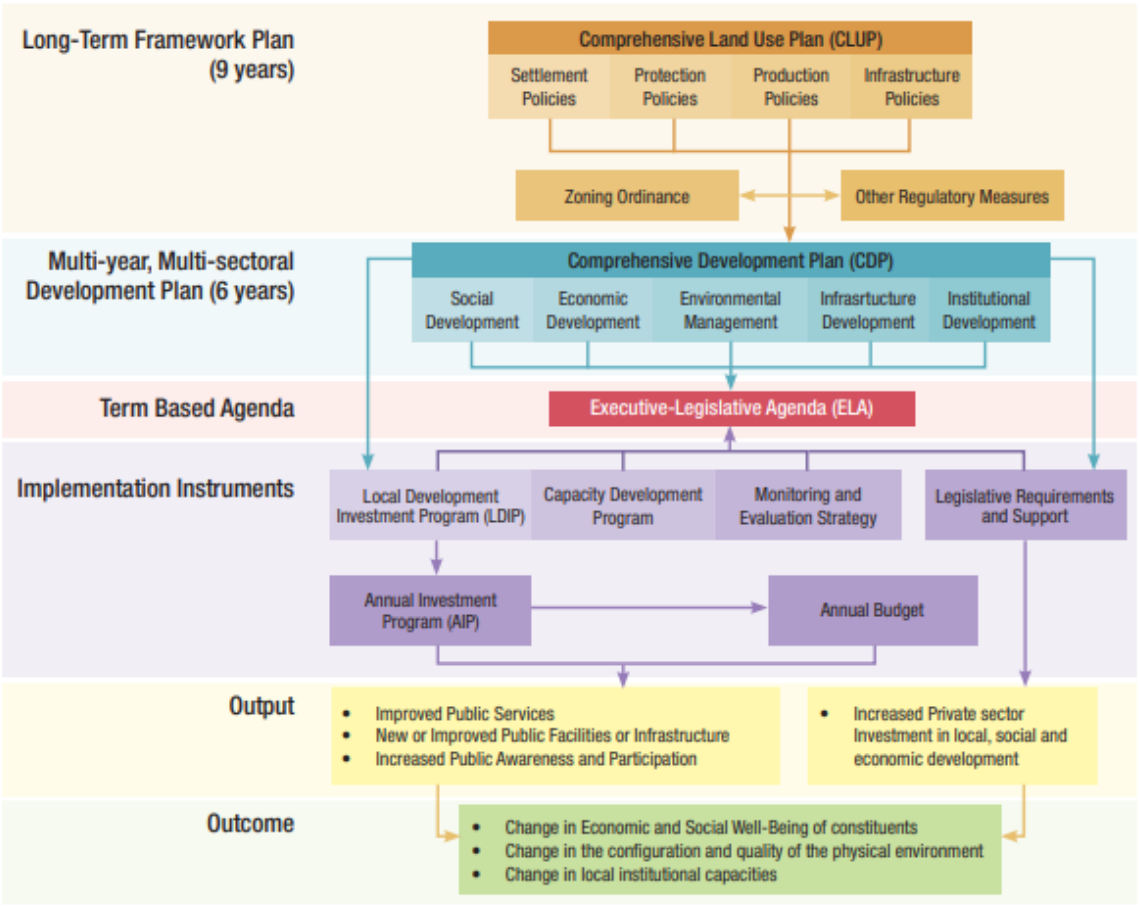
implement their Local Climate Change Action Plan (LCCAP) while the PDRRM Act mandates LGUs to create and operationalize their Local Disaster Risk Reduction and Management Plan.

Both of these legislations recognize the interlinkages of CCA and DRR, to wit:

i. Section 2 of the CC Act of 2009: "Further recognizing that climate change and disaster risk reduction are closely interrelated and effective disaster risk reduction will enhance climate change adaptive capacity, the State shall integrate disaster risk reduction into climate change programs and initiatives."

ii. Section 6 (n) of the DRRM Act of 2010: "In coordination with the Climate Change Commission, formulate and implement a framework for climate change adaptation and disaster risk reduction and management from which all policies, programs and projects shall be based. . ."

The LCCAP and LDRRMP exist as separate plans, but ideally, they should be integrated into the core development planning instruments, specifically CLUP and CDP, to treat climate and disaster risks in isolation. The CLUP functions as a 9-to-15-year spatial plan which directs land use and zoning choices. On the one hand, CDP functions as a six-year socio-economic development plan that includes investment priorities by sectors. These two plans serve as the fundamental elements for risk-informed and development-oriented local governance (Florano 2015).



Source: Department of Interior and Local Government 2016, 3

Figure 3. Hierarchy of local development plans in the Philippines

The hierarchy of local development plans shown in Figure 3 illustrates how CLUP and CDP exist within multiple planning and implementation instruments at the local level.

In order to support the integration, the Department of Human Settlements and Urban Development (formerly Housing and Land Use Regulatory Board) and the Climate Change Commission (CCC) released a guideline in 2015 to incorporate Climate and Disaster Risk Assessment (CDRA). The CDRA serves as the analytical basis for determining hazard exposure together with vulnerability and risk sensitivity. It is also considered a mandatory requirement prior creating the CLUPs and provides input for developing LCCAPs and LDRRMPs. The technical complexity of CDRA ensures that local plans become evidence-based and responsive to local risk contexts.

The plans can be operationalized through the authority of LGUs to use their Local Disaster Risk Reduction and Management Fund (LDRRMF) and Local Development Fund (LDF). These financing mechanisms allow LGUs to execute projects that integrate CCA and DRR into infrastructure development, land use planning, public service delivery, and community-based initiatives.

2.5 Key challenges in CCA and DRR integration

CCA and DRR integration is not without challenges as some would argue that it oversimplifies the complexities associated with integrating different assessment methods, stakeholders, and timescales (Paterson and Guida 2022). While the Sendai Framework, Paris Agreement, and Sustainable Development Goals have led to major conceptual alignment between CCA and DRR (Dazé, Terton, and Maass 2018) operational and practical barriers still prevent their integration at the national, subnational, and local levels. The international recognition and policy-level alignment of these convergences does not easily translate into effective integrated actions on the ground. Several studies and literature have looked into the challenges and barriers in CCA and DRR integration, mostly focusing on the country-, regional-, and project-level case studies. The following section provides a discussion on the key identified challenges and barriers to effective CCA and DRR integration, namely, (i) spatial and temporal gaps; (ii) knowledge mismatches; and (iii) institutional and technical capacities (Figure 4).

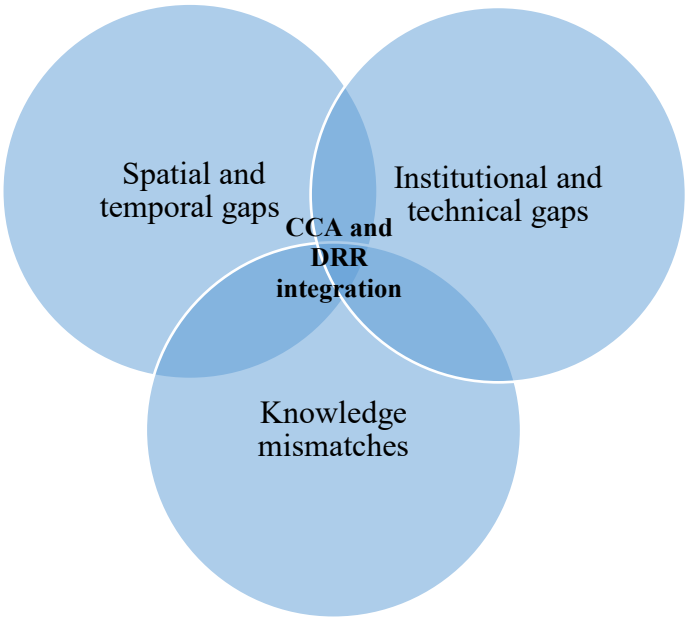


Figure 4. Key challenges in CCA and DRR integration

2.5.1 Spatial and temporal gaps

One of the key challenges for a successful CCA and DRR integration is their inherent spatial and temporal differences. Historically, DRR efforts concentrated at the local level whereas CCA research has been viewed from a global perspective (Schipper and Pelling 2006; Paterson and Guida 2022). While there has been an increased recognition of climate change impacts at the local level, Birkman von Teichmann (2010) argued that there remains a gap between globalized climate projections vis a vis local DRR needs. Despite increasing downscaled or a more context-specific climate model, the limitation stems from the fact that applying these modern technologies can be resource intensive at the local level (Doswald 2015).

However, downscaling climate projections is a challenge because it requires the incorporation of various risk variables that affect each specific area (Birkman von Teichmann 2010; Natoli 2019). As such several elements determine risk variability which includes different vulnerability levels alongside local economic factors and access to and quality of available data (Paterson and Guida 2022; Bueb et al. 2021). This is also the reason why CCA and DRR

integration needs to be context-specific, and as such, there is no standardized, one-size fits all methodology.

Temporal gaps between CCA and DRR integration create additional challenges. The traditional approach of DRR emphasizes immediate post-disaster interventions through short-term actions and response activities. The typical pattern of DRR resource allocation and political support emerges after disasters through event-specific reactions and recovery operations (Paterson and Guida, 2022). On one hand, the nature of CCA requires extended period planning to anticipate climate risks, hence, extending its timeline multiple decades ahead (Christiansen 2018; Bueb et al. 2021; Flood et al. 2022).

Nonetheless, the adoption of the Sendai Framework serves as basis in the changing landscape of DRR where time-based planning through short-term, mid-term, and long-term approaches. However, it is in the actual implementation where CCA and DRR integration continues to face difficulties (UNDRR 202O). For instance, resource allocation and institutional challenges at the national and subnational levels are persistent challenges. These operational challenges are embedded in the remaining discussions of the key challenges.

2.5.2 Knowledge mismatches

Another barrier that persists is the knowledge gaps across data availability and methodological understanding as well as scientist-policymaker-practitioner communication (UNDRR 2020; Paterson and Guida 2022). This knowledge gap prevents coherent risk governance as it limits effective implementation of integrated CCA and DRR strategies and complicates the assessment of vulnerabilities and adaptive capacities. For instance, there are still insufficient precise local climate impact projections together with rare seasonal weather forecast availability and insufficient historical data and trends about extreme weather occurrences (IPCC 2022; Flood et al. 2022).

Data scarcity also frequently stems from high cost, poor methodological approaches, and insufficient capabilities to predict social development at the sub-national and local levels. These knowledge gaps then result to making vulnerability assessments, risk analyses, and adaptation planning less accurate and useful. Aside from this, translating complex climate models and scientific projections to materials that can be understood better by local stakeholders (especially local policy and decision-makers) remains a persisting challenge (Birkmann et al. 2009; Schipper 2009).

Furthermore, the integration of indigenous and traditional knowledge systems stands is also a critical factor for addressing knowledge gaps in CCA and DRR integration. The local cultural practices and historical experiences and natural environment interactions of indigenous communities produce context-specific knowledge about environmental changes and vulnerabilities and community-level adaptive capacities (Hiwasaki et al. 2014; IPCC 2022). Mainstream climate adaptation and disaster risk planning processes often fail to adequately incorporate indigenous knowledge despite its established value (Hiwasaki et al. 2014; UNDRR 2020). The limited use of indigenous knowledge both diminishes local intervention effectiveness and prevents the validation of scientific models through experiential evidence from local communities. The combination of scientific and indigenous knowledge through inclusive decision-making processes and strengthened dialogue between indigenous communities and scientific institutions would create more effective adaptation and resilience-building measures that respect local cultures (IPCC 2022; Flood et al. 2022).

2.5.3 Institutional and technical capacities

CCA and DRR integration continues to face institutional and technical challenges. . In most cases, the two sectors are still managed by separate government entities where respective activities are often embedded in different administrative entities and are therefore linked to

diverse and separate normative frameworks and funding sources (Natoli 2019). Hence, creating silos in terms of operationalization of climate and disaster efforts. For instance, environmental ministries and meteorological services are more commonly responsible for climate change issues, while the management of disasters and related risk is more often put under the responsibilities of civil defense/protection agencies, ministry of defense/army, ministry of interior or infrastructure development (Birkmann and von Teichmann 2010; Natoli 2019).

Aside from this, vertical setbacks are also possible, i.e. when sectoral responsibilities are shared by national, regional, and local administrations (Siders 2016). This fragmentation, together with limited funding directly aimed at supporting CCA and DRR integration, often results from a lack of political commitment and motivation; especially at the higher levels of authority, where both the attention on economic growth and on immediate humanitarian aid, can prevail and affect the way in which relevant norms and policies are designed, political objectives are framed and implementing programs are financed (Natoli 2019).

2.6 Theoretical framework

This study is anchored in Environmental Policy Integration (EPI) and Institutional Theory to analyze factors that either support or obstruct the integration of CCA and DRR into the local development planning in the of local governments, utilizing Kidapawan City, Cotabato, Philippines as a case study. These frameworks are adapted to study how climate and disaster risk integration are mainstreamed into traditionally sectoral and fragmented governance systems.

EPI involves embedding environmental elements directly within sectoral policy structures instead of implementing them as additional components (Persson 2004). It stands as a fundamental principle for sustainable development because it promotes policy consistency between different sectors and government levels. The concept of EPI enables researchers to

study how climate and disaster risk factors integrate into land use planning and investment programming and local governance systems (Figure 5).

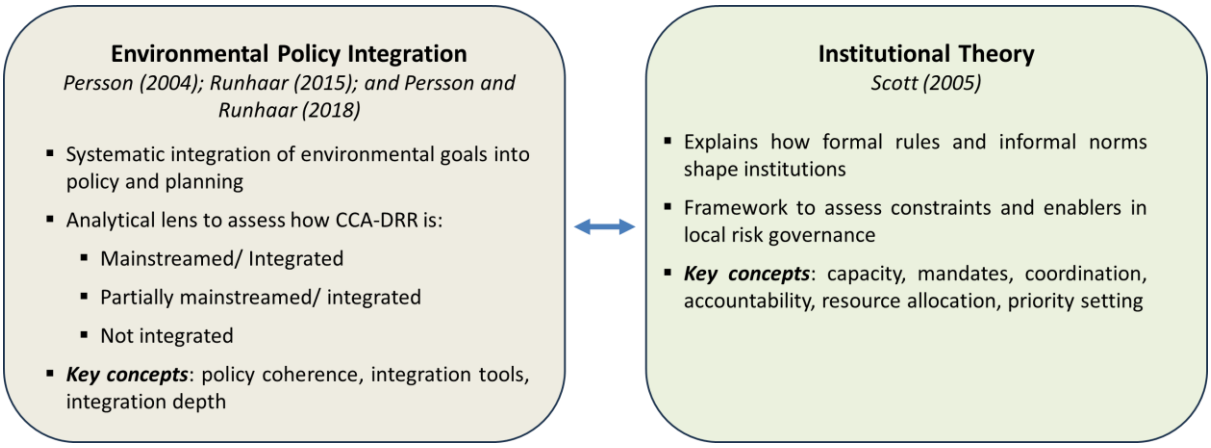


Figure 5. Theoretical framework of the study

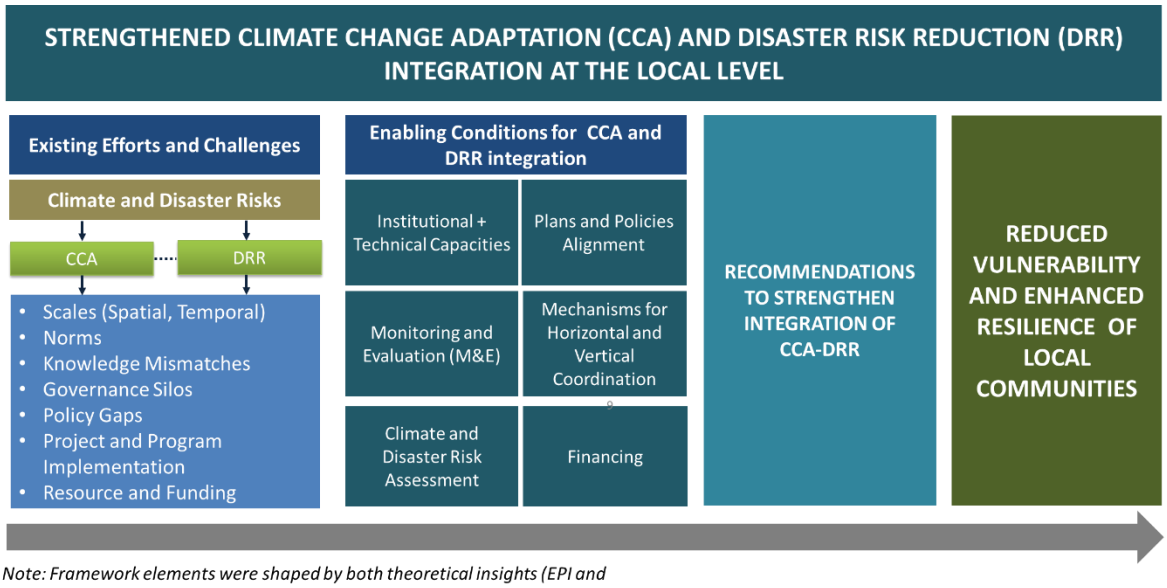
According to Persson and Runhaar (2018), EPI includes two dimensions: (1) substantive integration which ensures environmental goals appear in policy objectives; and (2) procedural integration which focuses on the tools and institutional arrangements for successful implementation. In the context of this study, substantive integration is reflected on how CCA and DRR objectives and strategies are integrated the local development plans (CLUP, CDP, LCCAP, and LDRRMP). Meanwhile, procedural integration is observed in the planning processes and institutional arrangements used by Kidapawan City. This may include conduct of risk assessments, formulation of technical working groups, and inter-agency coordination mechanisms that support the operationalization of climate and disaster risk considerations. This distinction helps to determine whether CCA and DRR integration is operationalized / practices or merely reflected on paper.

Moreover, EPI serves as a complementary framework to institutional theory to explain why organizations struggle with integration despite the presence of legal frameworks and guidelines from a higher level, in this case the national government. Scott (2005) explained that institutions

contain three structural elements: (1) regulative; (2) normative; and (3) cultural-cognitive which direct organizational behavior and decision-making processes. The established structures determine how officials interpret policies and distribute roles and resources that determines how integration practices unfold across government institutions.

From the institutional theory side, Scott's (2005) three-part framework is employed to examine how the Philippine local planning institutions handle the integration of CCA and DRR. The study focuses on policies and mandates institutionalized by Kidapawan City (regulative), practices of local officials in development planning (normative), and shared cognitive frameworks contributing to the overall execution of their responsibilities (cultural-cognitive). Through the combination of EPI and institutional theory this study evaluates both the existence of integration mechanisms and the institutional environment where these mechanisms function. The analysis of CCA and DRR integration in local plans depends on EPI for policy and technical coherence assessment but institutional theory investigates the social political forces and organizational factors that affect implementation results.

2.7 Conceptual framework



Note: Framework elements were shaped by both theoretical insights (EPI and Institutional Theory) and key themes identified from the literature review.

Figure 6. Conceptual Framework

The conceptual framework in Figure 6 demonstrates how improved connections between CCA and DRR enable reduced vulnerability and increased resilience for local communities. The framework bases its analysis on EPI and Institutional Theory alongside empirical findings from the literature review. The leftmost column presents the current initiatives and obstacles which local governments face while handling climate and disaster risks. Both CCA and DRR respond to common risks but function independently because of their different spatial and temporal scales as well as their distinct norms, knowledge systems, governance structures, and policy requirements. Hence, the lack of connection between these systems results in fragmented programs, policy inconsistencies, and limited funding. As such, the EPI framework emphasizes that integration needs to go beyond surface-level alignment and be embedded in all aspects of local development planning.

The middle section of the framework presents six essential factors that enable operational integration. It requires local governments to build stronger institutional and technical capacities while unifying policies and plans and developing better financial systems for integrated

resilience programs. According to institutional theory, successful integration needs horizontal and vertical coordination mechanisms which include strong inter-agency collaboration and national mandate alignment with local planning practices. Furthermore, the evidence base for planning and strategy adjustments relies on robust climate and disaster risk assessments and Monitoring and Evaluation (M&E) processes. The combination of these enabling conditions allows the development of specific recommendations to enhance CCA and DRR integration. Lastly, the framework demonstrates how institutions and context-specific approaches lead to better long-term resilience outcomes for vulnerable communities through improved risk governance.

2.8 Synthesis and gaps

Existing literature and studies confirm that CCA and DRR share their common denominators in terms of reducing vulnerability and improving resilience in the context of increasing climate-related hazards. The divergence, as noted in earlier research, stems from CCA and DRR being treated as two independent fields due to their distinct historical development, spatial and temporal gaps, and differences in institutional roles. Nonetheless, post-2015 research strengthened the need for integration and identified clearer convergence areas as a result of international frameworks, including the Sendai Framework for Disaster Risk Reduction, the Paris Agreement, and the Sustainable Development Goals emphasizing the need for integrated policies between these two domains. In this regard, developing countries, such as the Philippines, demonstrate a particular need for convergence because climate risks merge with disaster vulnerabilities in all sectors across different spatial scales.

Environmental Policy Integration (EPI) theory and Institutional Theory provide essential insights about integration goals and institutional barriers. EPI helps analyze the extent to which CCA and DRR objectives become integrated into planning tools, but institutional theory

demonstrates how organizational structures and norms, and fragmented responsibilities continue to block integration. Research findings reveal multiple enduring obstacles such as misaligned spatial and temporal CCA and DRR plans, insufficient data and knowledge, poor coordination at all levels, and inadequate usage of planning instruments such as the Climate and Disaster Risk Assessment (CDRA). While key Philippine legislations require core plans including LCCAP, LDRRMP, CLUP and CDP, local implementation practices show inconsistencies and weak institutional capabilities together with difficulties in executing integration within the current bureaucratic systems.

Research has grown extensively but multiple knowledge gaps still persist. Most studies focus on national and international policy documents rather than technical processes and planning instruments and governance structures. Local innovations, along with context-specific adaptations and community knowledge systems, also receive insufficient attention as they play a crucial role in closing the gap between policy and practice.

This study aims to address these current knowledge gaps, by exploring how local governments in the Philippines approach CCA–DRR integration into their local planning processes albeit focusing on a specific case study – that is Kidapawan City. This research focuses on how planning instruments function at present and how local actors understand and apply integration and what institutional elements affect these processes. From the practical point of view, this research aims to provide insights that could help strengthen CCA and DRR integration at the local level.

3. METHODOLOGY

This chapter discusses research design, including research instruments, analytical tools, locale of the study, and limitations. The research used qualitative approaches, including a systematic review of the planning documents of the City Government of Kidapawan in Cotabato, Philippines and semi-structured interviews of key officials from the city government. This approach was deemed appropriate as it will allow a better and more detailed understanding of how the City Government understands climate change and disaster risks and how they translate these into their local development plans under CCA and DRR mandates. According to Nassaji (2015), the use of qualitative methods provides a more in-depth understanding of specific topics, situations, or meanings through direct participant experiences which then addresses the *why*. Merriam et al. (2019) also states that qualitative research operates from the standpoint that human comprehension often emerges from social contexts.

3.1 Data collection

3.1.1 Systematic review and analysis of official planning documents

The research used systematic content analysis of local development plans to understand and analyze the current extent of climate change adaptation (CCA) and disaster risk reduction (DRR) integration. Particularly, it looked into the following planning documents of the City of Kidapawan, Cotabato, Philippines:

a. Comprehensive Land Use Plan (CLUP)
b. Comprehensive Development Plan (CDP)
c. Local Climate Change Action Plan (LCCAP)
d. Local Disaster Risk Reduction and Management Plan (LDRRMP)

The CLUP and CDP serve as the two major development plans of any local government unit in the Philippines, hence, it is only critical that these two plans be part of the analysis. At the same time, it is important to include AIP, as it outlines the specific programs and projects underscored in the CDP, on an annual basis, along with its corresponding allocated budget. Sectoral plans such as the LCCAP, LDRRMP, FMP, and ADP are also essential as these plans are directly related to climate change and disaster risk reduction.

The assessment of these documents used a framework that extracted six dimensions discussed in the Conceptual Framework (see Chapter 2.7): (1) Institutional and Technical Capacity; (2) Plans and Policies Alignment; (3) Risk Assessments; (4) Financing; (5) Coordination Mechanisms; and (6) Monitoring and Evaluation. The researcher evaluated each document to determine if it contained contents related to these dimensions and how well the content was developed.

3.1.2 Semi-structured interviews

The research team conducted semi-structured interviews with the following key informants in Kidapawan City. To maintain their anonymity, this research used key informant (KI) numbers as codes. Table 2 shows the list of the key informants and their functional role in the City Government of Kidapawan.

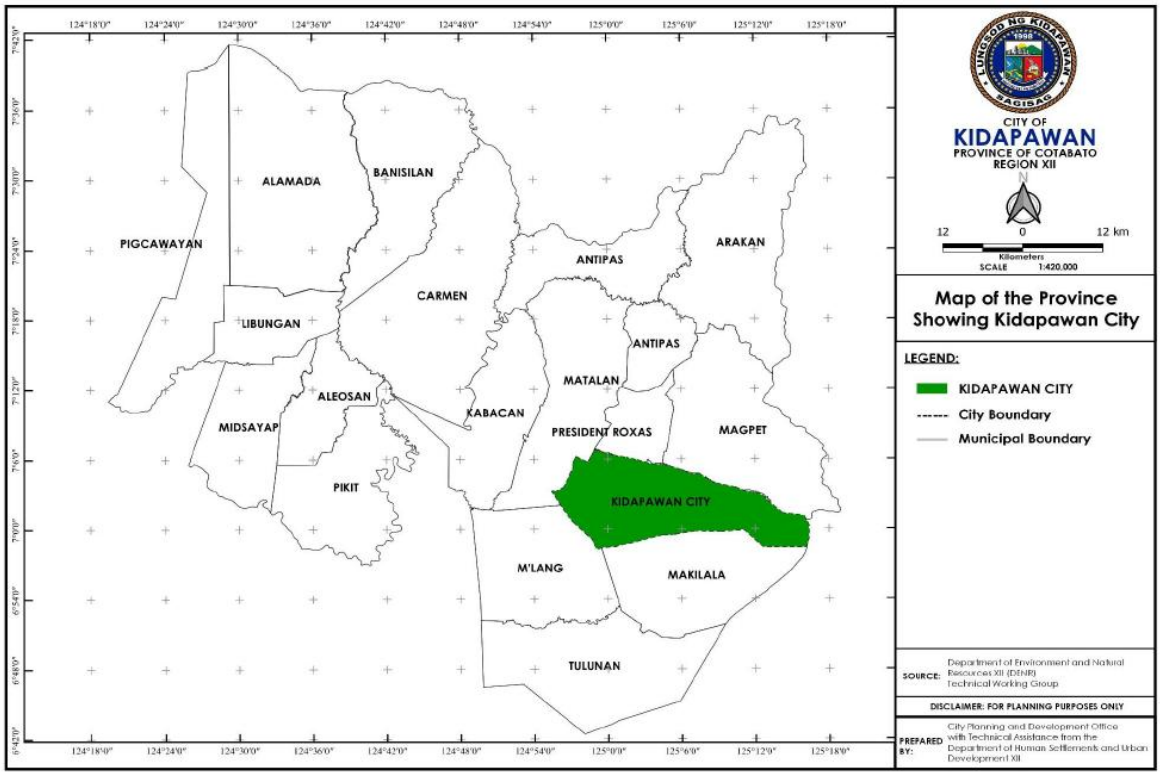
Table 2. List of key informants

Key informant (KI) No.	Functional role/ sector
1	Planning and Development
2	Agriculture
3	Disaster Risk Reduction and Management
4	Budget
5	Social Welfare and Development
6	Environment and Natural Resources
7	City Administration

Each interview lasted about 45 minutes to 1.5 hours and questions revolved around the planning processes, their understanding of climate change and disaster risk reduction integration, and what are the current challenges they experience as regards integration. In the same manner, the interview questions followed the same six dimensions – (1) Institutional and Technical Capacity; (2) Plans and Policies Alignment; (3) Risk Assessments; (4) Financing; (5) Coordination Mechanisms; and (6) Monitoring and Evaluation – to ensure consistent findings (also see Appendix A for the Interview Guide).

Furthermore, the researcher formally asked, through a letter of request (Appendix B) sent by email, for consent prior to the interviews with the city government officials. These interviews were then transcribed into verbatim text for thematic coding and analysis.

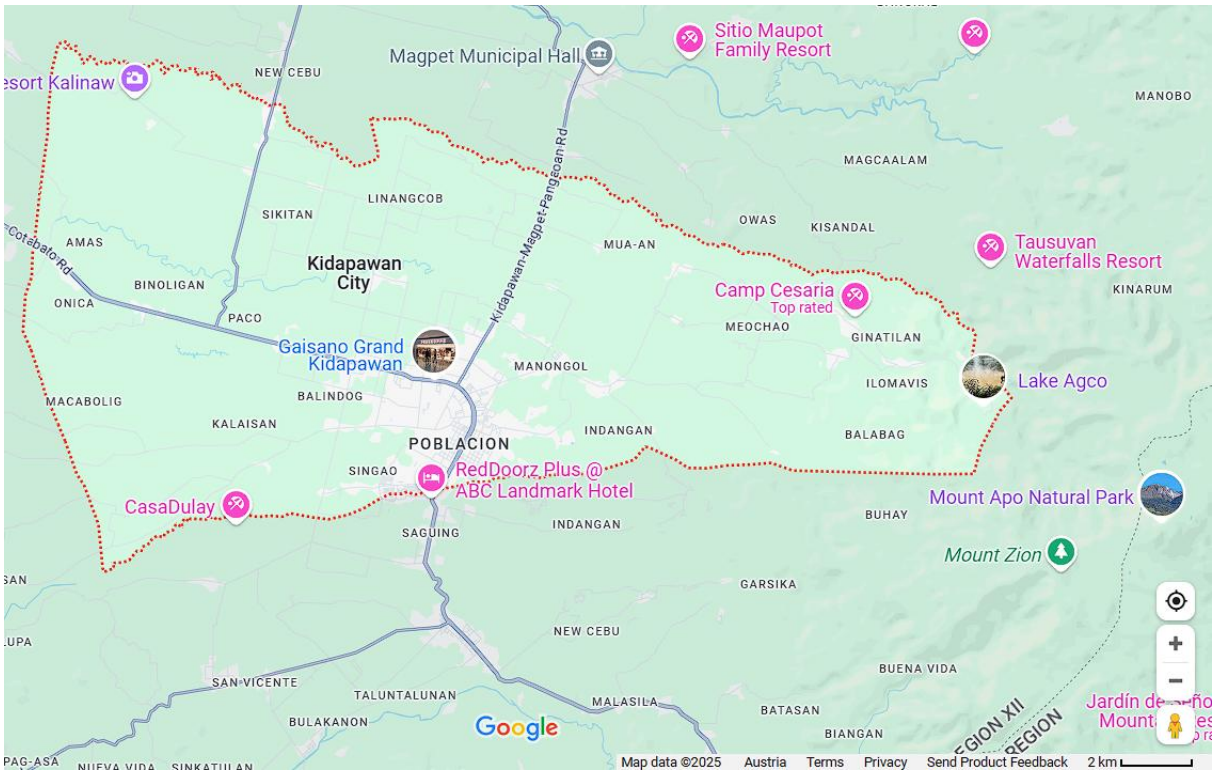
3.2 Locale of the study



Source: City Government of Kidapawan 2021, 51

Figure 7. Map of the Province of Cotabato showing Kidapawan City

The study's locale is in Kidapawan City, the capital of Cotabato Province within Region XII in the Philippines. It is a component city, meaning it is still overseen by the Provincial Government of Cotabato. It currently has a total of 40 barangays (villages) under its jurisdiction and has a population of 160,791 (City Government of Kidapawan 2020; Philippine Statistics Authority 2020). The city functions as a strategic center for agriculture and trade in Central Mindanao (City Government of Kidapawan 2020). Its main agricultural commodities include palay, corn, high value crops like banana, rubber, coconut and fruit trees (City Government of Kidapawan 2020).



Source: Google Maps 2025

Figure 8. Map of Kidapawan City

In addition, the city is situated at the base of Mount Apo, the Philippines tallest mountain. Hence, the city also serves as a primary gateway to Mount Apo through its well-known Kidapawan Trail (City Government of Kidapawan 2020). Since certain portions of the city fall

under Mount Apo Natural Park, it demonstrates the city's ecological value and environmental protection needs.

The city faces climate-induced hazards such as flooding, drought, and rainfall-induced landslides because of its location, elevation, and terrain (City Government of Kidapawan 2021c). Thus, the combination of risk exposures, alongside the city's socio-economic conditions and environmental value, makes Kidapawan an essential case for studying CCA and DRR integration in local development planning.

3.3 Data analysis

The research used thematic analysis to analyze both documentary and interview data. Firstly, the researcher transcribed the recorded audio interviews and familiarized herself with the data, coupled with the notes taken during the actual interviews. This was then followed by open coding of specific text segments based on the six dimensions: (1) Institutional and Technical Capacity; (2) Plans and Policies Alignment; (3) Risk Assessments; (4) Financing; (5) Coordination Mechanisms; and (6) Monitoring and Evaluation – identified in this study's conceptual framework.

Consequently, these codes were organized into themes which included challenges, enabling conditions, and strategies for CCA and DRR integration. These themes were further analyzed and interpreted by relating them to both the research objectives and conceptual framework.

3.4 Limitations

This study is limited in several ways. For one, this research only involves a single local government unit (Kidapawan City) in the Philippines, hence, may not be generalizable to other contexts or experiences of other LGUs. Another limitation is that the data gathering process was conducted during the local election period and hence, the researcher did not have a chance

to interview the local chief executive. Likewise, although efforts were made to include diverse stakeholders, specifically representatives from the national government (i.e., Climate Change Commission and the National Disaster Risk Reduction and Management Council), the researcher was unable to reach them due to limited availability and scheduling constraints. The researcher relied on policy documents, plans, press releases, and other materials from their official websites in order to address data limitations where possible.

4. RESULTS

This Chapter presents the results of the study and is divided into four sections. It will first provide an overview of the profile of Kidapawan City and then proceed to the presentation of the results per objective. The first objective of this study is to assess the rationale for and level of climate change adaptation (CCA) and disaster risk reduction (DRR) integration in the local development planning of Kidapawan City. This was analyzed based on the six enabling conditions or criteria discussed in the conceptual framework, namely:

a. *Institutional and Technical Capacity* - this criterion evaluates the existence of organizational structures together with designated roles for CCA-DRR implementation, technical personnel capabilities, and system tools or equipment that support planning and execution.

b. *Plans and Policies Alignment* - this criterion assesses the presence of climate- and disaster-responsive content in local plans and their alignment with national policies (i.e., Climate Change Act of 2009 and Disaster Risk Reduction and Management Act of 2010).

c. *Risk Assessments* - this criterion assesses whether risk assessment tools and output, specifically from the Climate and Disaster Risk Assessment mandated by the Department of Human Settlements and Urban Development (DHSUD), are consistently applied in their plans.

d. *Financing* - this criterion evaluates the presence of DRR and CCA budget allocations as well as access to external financing and financial tracking systems.

e. *Coordination Mechanisms* - this criterion assesses whether vertical coordination operates between national and regional and local government levels and horizontal coordination functions between departments and sectors and local institutions.

f. *Monitoring and Evaluation Mechanisms* - this criterion examines the presence of M&E frameworks, together with climate- and disaster-related indicators, responsibilities, and reporting mechanisms for outcome assessment and future planning purposes.

A cross-plan comparative analysis is further presented as a summary of the first objective. This is followed by the results of the second objective – that is to determine the challenges and gaps faced by Kidapawan City in fully integrating CCA and DRR into their development planning. Lastly, the third objective focuses on possible strategies to address the challenges and gaps and further integration of CCA and DRR into the local development planning of the city.

4.1 Profile of Kidapawan City

Kidapawan City is the capital of Cotabato Province in Mindanao region in the Philippines. The city spans 34,007.20 hectares of land and is divided into 40 barangays while operating as the commercial and trading center for six surrounding municipalities (City Government of Kidapawan 2020). The city stands at the base of Mt. Apo, the tallest mountain in the Philippines, and serves as a key regional development center through its agro-industrial activities which support trade and tourism and public service operations (City Government of Kidapawan 2020).

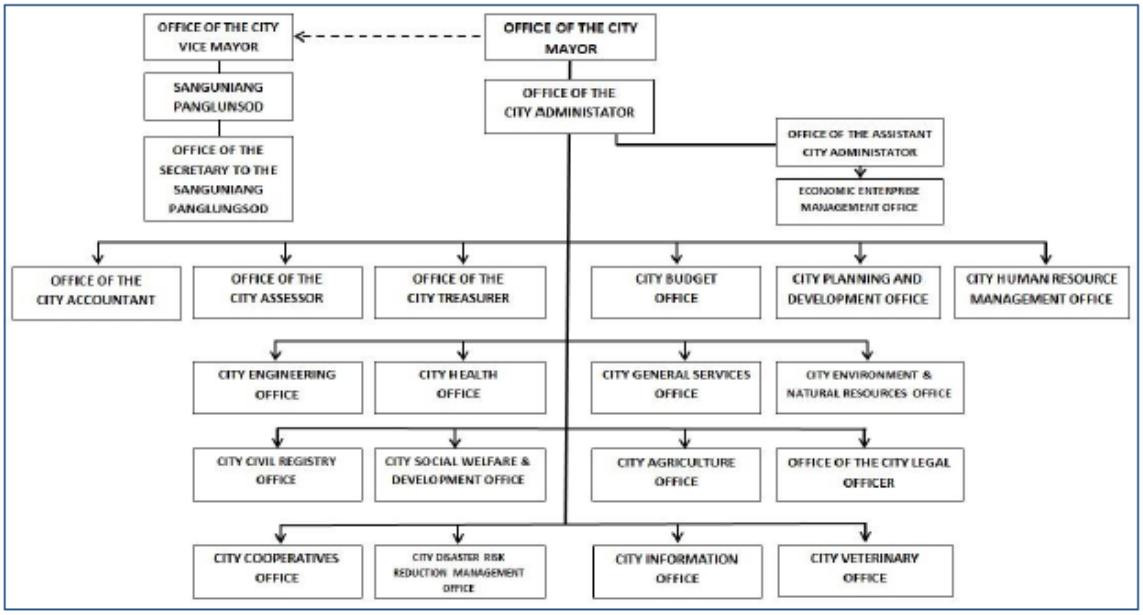
The economy of the city operates through multiple sectors including agriculture together with commerce and services and developing the tourism industry (City Government of Kidapawan 2020). The city contains agricultural zones that produce rubber and coconut and corn and rice crops, and it has forestlands and protected areas within the Mt. Apo Natural Park (City Government of Kidapawan 2020).

Moreover, the city's geographical composition, featuring both flatlands and mountainous regions, fosters an environment susceptible to diverse natural disasters. The geohazard assessments and Climate and Disaster Risk Assessment (CDRA) identify drought, flooding, rainfall induced landslide, earthquake-induced landslide, and ground rupture as the most susceptible hazards affecting the city (City Government of Kidapawan 2021b). Hence, this makes it more necessary to integrate CCA and DRR into its development plans and governance mechanisms as a result of environmental pressures and socio-economic vulnerabilities.

4.2 Assessment of the rationale for and level of CCA and DRR integration within the local development planning process of Kidapawan City, Cotabato

4.2.1 Institutional and Technical Capacity

Institutional capacity refers to the presence of formal structures, mandates, and resources that enable local governments to plan for and respond to climate-related and disaster risks (United Nations Development Programme 2010). In the case of Kidapawan City, institutional arrangements CCA and DRR are reflected in the city's organizational structure (see Figure 8). The structure follows the Local Government Code of 1991 (Republic Act 7160), requiring national government functions to be transferred to local governments. Section 17 of the said law specifies that devolved functions include essential services and facilities, including healthcare, social welfare, environmental management, agricultural support, infrastructure development, education, and housing.



Source: City Government of Kidapawan 2020, 95

Figure 9. Organizational Structure of the City Government of Kidapawan

The dual governance system of Kidapawan City divides power between an executive branch and a legislative branch to maintain both the separation of powers and internal accountability. The City Mayor heads the executive branch which receives support from major offices that include the following (Table 3):

Table 3. Key offices and service/ sectoral offices supporting the executive branch (City Mayor) in the City Government of Kidapawan

Key offices	Service and sectoral offices
1. City Planning and Development Office (CPDO)	1. City Health Office (CHO)
2. City Budget Office	2. City Social Welfare and Development Office (CSWDO)
3. Office of the Assessor	3. City Engineer's Office (CEO)
4. Office of the City Accountant	4. City Agriculturist Office (CAO)
5. Accounting and Assessor's Office	5. City Environment and Natural Resources Office (CENRO)
6. Human Resource Office	6. City Disaster Risk Reduction and Management Office (CDRRMO)

Meanwhile, the *Sangguniang Panlungsod* (City Council) serves as the legislative branch that includes the Vice Mayor and ten elected councilors and ex-officio members [*Liga ng mga Barangay* (League of Barangays), *Sangguniang Kabataan* (Youth Council) Federation, and Indigenous People Mandatory Representation] to create policies and ordinances and monitor committee work and barangay clusters (City Government of Kidapawan 2020).

The CPDO is a key entity supporting the Local Chief Executive in creating integrated economic, social, physical, and other sectoral development plans and policies (City Government of Kidapawan 2020). According to key informant (KI) 1, there are Technical Working Groups (TWGs) created for each plan to achieve stakeholder involvement in planning activities.

The main difference between institutional arrangements emerges from the requirement of having a specific DRRM office in LGUs as stated in Republic Act No. 10121 (DRRM Act of 2010). On one hand, the Climate Change Act of 2009 (RA 9729) requires Local Climate Change Action Plans (LCCAPs) but does not specify the need for a separate climate change office. Henceforth, climate-related responsibilities in Kidapawan (and other LGUs in the Philippines) are spread across existing offices, that include the CPDO, CENRO, and CDRRMO.

Moreover, this study contextualizes technical capacity specifically pertaining to the capacities of the City Government of Kidapawan in relation to planning and developing climate change adaptation and disaster risk reduction strategies and coupling the synergies between the two in an effective and efficient manner. When asked about whether they think the City Government of Kidapawan has the technical capacities needed in the areas of climate change adaptation and disaster risk reduction, there were varying responses received.

For one, KI 1 mentioned that the city planning staff received training on Climate and Disaster Risk Assessment (CDRA) along with Geographic Information Systems (GIS) and other

climate-based tools from national agencies like the Department of Interior and Local Government (DILG) and Department of Human Settlements and Urban Development (DHSUD). The training programs have provided staff members with risk-informed techniques needed for creating the Comprehensive Land Use Plan (CLUP), Comprehensive Development Plan (CDP), and Annual Investment Programs (AIPs).

For KI 2, she explained that their staffing shortages and equipment constraints prevent them from performing ideal crop damage assessments and climate-smart programs (e.g., Climate Smart Field School implementation). The CAO is the office responsible in managing assessment activities through the support of farmer leaders who reside in barangays.

Meanwhile for the CENRO, KI 6 said that their office supports climate integration through forest land use and protected area management. However, they collaborate with other offices within the city government and also national government agencies in terms of access tools and data especially for greenhouse gas inventories and climate tagging. For one, it is the planning office that takes the lead in conducting CDRA and LCCAP while CENRO adds technical contributions through their membership in the TWG that was created for specific plans.

In addition, the CDRRMO functions as the primary office in setting the direction, development, implementation, and coordination of disaster risk management programs. The CDRRMO works with CPDO to co-finance the implementation of CDRA while providing essential disaster-related data inputs. It also serves as the main entity responsible for updating its Local Disaster Risk Reduction and Management Plan (LDRRMP).

From this, synergies are reflected in the shared dependency on risk assessments and data and joint planning activities fostering collaboration among the different offices within the City Government of Kidapawan. While they all have distinct responsibilities, two key offices play key roles in the effective CCA and DRR integration. One is the CPDO which leads to overall

local development planning and has the technical capacities, specifically in conducting CDRA. Another is the CDRRMO as it is responsible in co-financing the CCA and DRR programs and activities, and gatekeeper of disaster risks-related data. However, there are also trade-offs that can be observed as a result of varying level of technical capacities and priorities of each office.

4.2.2 Plans and Policy Alignment

> *"All the plans go through our office. [We are] always planning, doing plans. There's no end to it… We have to see to it that we marry all of our plans." – KI 1*

The criterion on plans and policy assesses the presence of climate- and disaster-responsive content in local plans and their alignment with national policies (i.e., Climate Change Act of 2009 and Disaster Risk Reduction and Management Act of 2010). As discussed in Chapter 2, every local government unit in the Philippines is required to develop quite a number of plans (also see Figure 3 mentioned in Chapter 2) and guidelines in developing these plans are provided by different national government agencies.

For the purpose of this study, four plans were reviewed which serve as primary instruments for development and resilience planning: (1) Comprehensive Land Use Plan (CLUP); (2) Comprehensive Development Plan (CDP); (3) Local Climate Change Action Plan (LCCAP); and (4) Local Disaster Risk Reduction and Management Plan (LDRRMP). Both the CLUP and CDP are considered as major plans and are mandated by law, specifically the Local Government Code of 1991. Meanwhile, the LCCAP and LDRRMP are considered "derivative" plans based on the CDP.

a. Comprehensive Land Use Plan (CLUP) 2021-2030

The CLUP includes spatial risk considerations through hazard susceptibility maps and land use regulations that follow national frameworks. The Kidapawan City Comprehensive Land Use Plan (CLUP) for 2021-2030 is composed of three volumes: the Land Use Plan, the Integrated

Zoning Ordinance, and Sectoral Studies (Figure 10). This plan integrates findings from the Climate and Disaster Risk Assessment (CDRA), including hazard maps for flooding, landslides, and fault line risks.

Source: City Government of Kidapawan 2021b

Figure 10. Front pages of the three volumes of Kidapawan City's CLUP 2021-2030

The first volume outlines the city's spatial vision through a long-term land use strategy determining suitable areas for residential development alongside commercial areas and agricultural land and institutional facilities and protected zones. The document utilizes CDRA data to prevent any development activities from dangerous zones while creating resilient urban areas. The first volume also uses hazard assessments that include flood and landslide and fault-line maps (Appendices C and D, respectively) to identify environmentally sensitive zones and low-impact development areas

The second volume establishes legal and regulatory mechanisms that enforce spatial policies defined in the Land Use Plan. The document establishes base zones and overlay zones including flood overlay and landslide overlay and fault line overlay, while implementing development controls and building and land use regulations that match climate and hazard risks. The document converts land use policies into enforceable provisions to establish risk-informed land use management as an institutional practice.

Finally, the third volume contains comprehensive baseline evaluations together with sectoral examinations of environment, population, economy, infrastructure, and governance. The sectoral profiles use climate and disaster risk information to support planning decisions by providing context about each development domain. The environmental sector study demonstrates how climate variability causes forest degradation and water resource stress while the infrastructure sector study evaluates flood and earthquake vulnerabilities.

b. Comprehensive Development Plan (CDP) 2020-2025

The updated Comprehensive Development Plan (CDP) of the City Government of Kidapawan functions as a 6-year plan that contains essential programs and projects and activities that serve as primary inputs for investment programming and subsequent budgeting and project implementation to achieve City growth and development.

The plan is divided into five (5) development sectors: Social, Economic, Environmental Management, Infrastructure, and the Institutional Development Sector. Local government units (LGUs) obtain their Local Development Investment Program (LDIP) from the CDP. The LDIP functions as a three-year investment scheduling document for budgeting purposes. The Annual Investment Program (AIP) converts the LDIP into a yearly program that selects budgeted projects from the annual budget.

The City Planning and Development Office (CPDO) leads the development of the CDP. According to the CPDO, the CDP integrates climate change adaptation (CCA) and disaster risk reduction (DRR) by implementing risk screening measures across sectors and by making project outputs from the Climate and Disaster Risk Assessment (CDRA) applicable. All plans that enter the CPDO undergo review by this office which guides planning activities through national mandates from the Department of Interior and Local Government (DILG), Department

of Economy, Planning, and Development (DEPDev), Department of Human Settlements and Urban Development (DHSUD), and the Climate Change Commission (CCC).

c. Local Climate Change Action Plan (LCCAP) 2016-2025

The LCCAP serves as the main planning tool for Kidapawan City to address climate risks by implementing adaptation and mitigation measures. The document establishes priority initiatives that include reforestation efforts, water conservation practices, climate-resilient agricultural strategies, renewable energy development, and public education programs, which align with the National Climate Change Action Plan (NCCAP) guidelines issued by the CCC.

The LCCAP operates under CPDO leadership while receiving support from the City Environment and Natural Resources Office (CENRO), City Disaster Risk Reduction and Management Office (CDRRMO), and the City Agriculturist Office (CAO). Currently, the city's LCCAP is for 2016 to 2025 and needs revision. KI 1 recognized that the LCCAP was created before the updated CDRA, hence creating limitations in matching hazard and exposure data with current spatial and sectoral planning frameworks.

KI 6, as a member of the LCCAP technical working group, also mentioned that the requirement now for the LCCAP is to also integrate greenhouse gas inventories aside from environmental priorities and tagging of climate-related programs. She added:

> *"Previously, when we prepared LCCAP, greenhouse gas [inventory] was not included... The CCC issued guidelines [previously], so now we make sure the output or data of each office is incorporated." — KI 6*

d. Local Disaster Risk Reduction and Management Plan (LDRRMP) 2021-2023

The LDRRMP serves as Kidapawan City's operational guide for managing disaster risks through four thematic areas: prevention and mitigation, preparedness, response, and rehabilitation and recovery. The plan follows Republic Act No. 10121 (Disaster Risk Reduction

and Management Act of 2010) and matches the National Disaster Risk Reduction and Management Framework.

The plan contains specific preparedness strategies for hazards, together with contingency plans and risk communication systems, and community and barangay-level DRRM unit capacity development programs. It also incorporates a complete program and financial requirements, receiving funding from the Local DRRM Fund that uses 5% of the city's annual budget.

KI 3 emphasized during the interview that their office leads risk profiling activities and community readiness efforts, and emergency response operations.

> *"My office is among those who are catalyzing important mechanisms to change people's perspectives on readiness and resilience… Of course, that has to be reflected in plans—like the Local Climate Change Action Plan, the Disaster Risk Reduction and Management Plan, and some other things."— KI 3*

He further stated that the CDRA is led by the City Planning and Development Office (CPDO) but the CDRRMO provides financial support and essential disaster-related data for the completion of risk assessment. The periodic review and improvement of the LDRRMP becomes possible through this collaborative effort which reflects changing risk environments.

In addition, the LDRRMP provides guidance for emergency coordination by specifying how city departments and barangays should work together. For one, KI 5 explained that the DRRM framework proved essential during the 2019 Mindanao earthquake and for handling the extended displacement of Indigenous Peoples (IPs) and other vulnerable groups.

> *"Our office was tasked by our City Mayor to coordinate humanitarian assistance and manage evacuation sites. But at that time, our social protection team wasn't yet organized—it showed us the gaps we need to fill."— KI 5*

Overall, the four plans discussed incorporate CCA and DRR in varying levels depending on each of the plan's purpose or objectives and alignment with national guidelines. This differences or varying levels of CCA and DRR integration in the CLUP, CDP, LCCAP, and

LDRRMP also reflect how the Kidapawan City approaches their planning processes and how they continue to evolve amidst mandatory guidelines from the national government.

4.2.3 Risk Assessment

Risk assessment is the systematic evaluation of hazards alongside exposure and vulnerability, and adaptation or response capabilities of populations and systems, or sectors to climate and disaster risks defines risk assessment (UN Habitat Philippines 2023). The Climate and Disaster Risk Assessment (CDRA) is a key component for developing the CLUP 2022–2030. The CDRA used a process-based approach to identify hazards while developing exposure databases and assessing vulnerability and impact scores, and adaptive capacities. CDRA is mandated by the resolution issued by DHSUD and CCC in 2017.

In the case of Kidapawan City, their CDRA for 2021-2030 utilized official data obtained from the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA), Philippine Institute of Volcanology and Seismology (PhilVOLCS), and Mines and Geoscience Bureau (MGB) climate projections and national hazard maps. The CDRA assessed five exposure units: (i) population areas; (ii) urban use areas; (iii) natural resource-based production zones; (iv) critical point facilities; and (v) lifeline utilities. Consequently, the assessment evaluated these areas against four main hazards particularly, flooding, rain-induced landslides, ground rupture and liquefaction, and drought.

Kidapawan City currently has 40 barangays (villages) under its jurisdiction and based on its CDRA:

a. All barangays are susceptible to flooding

b. 36 barangays are susceptible to rain-induced landslides

c. 29 barangays are susceptible to drought

d. 3 barangays are susceptible to earthquake-induced landslide

e. 3 barangays are susceptible to ground rupture

(Also see Appendix E for the list of barangays)

CDRA outputs served two purposes by identifying crucial decision areas and integrating into zoning and land use designation and development restriction planning to establish a risk-based framework for long-term spatial strategy development.

CDRA operated under the CPDO leadership but maintained a collaborative approach. The CENRO, together with City Agriculture and CSWDO, participated in identifying sector-specific vulnerabilities. The Agriculture Office recognized drought risk as a regular threat to high-value crops, and the CDRA confirmed the requirement for climate-resilient agricultural planning:

> *"The El Niño phenomenon severely affects our farmers. The CDRA helped in identifying these risks more concretely, and we used that to push for crop damage assessments and climate-smart programs." — KI 2*

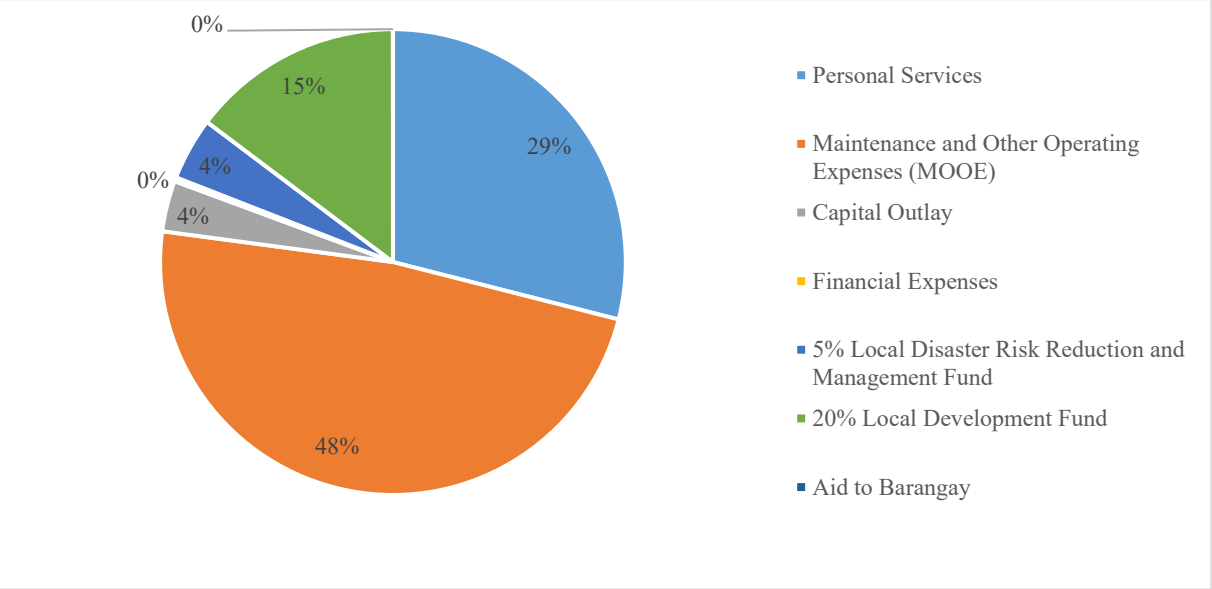
CDRA outputs have achieved several accomplishments, however, some ongoing challenges exist in converting these outputs into risk-informed programs that apply to all sectoral plans. Multiple offices likewise indicated that they received CDRA consultation, but they still need additional training to understand and use technical risk data for their programming needs.

In sum, the CDRA functions as the main instrument which directs local planning to incorporate risk elements. By design, CDRA – as the first step of the planning process – is where the initial integration of CCA and DRR comes in through its analysis of hazard exposure and sensitivity and adaptive capacity across different sectors. The CDRA has directed Kidapawan City's spatial planning process while determining essential areas for development. The assessment creates common risk evidence base but its impact on planning documents is still limited or inconsistent.

4.2.4 Financing

This criterion describes the process of financial resource allocation and management which supports CCA and DRR implementation in local development planning. The budgetary allocations for CCA and DRR exist throughout multiple planning instruments in Kidapawan City, but the financial integration level differ.

For the fiscal year 2024, Kidapawan City had a total budget of Php 1.576 billion (USD 27 million) (City Government of Kidapawan 2024a).



Source: City Government of Kidapawan 2024a, 57

Figure 11. Fund utilization of the City Government of Kidapawan for fiscal year 2024

Figure 11 shows the distribution of this budget. General Funds include Personal Services (29%), MOOE (48%), and Capital Outlay (4%). These funds are for salaries and wages, administrative and overhead expenses, and construction of various road networks, improvements to the city's sanitary landfill, and the procurement of vehicles for the Traffic Management Enforcement Unit and the Philippine National Police (PNP), among others. Financial expenses (0.3%) are those allocated for interest payments and bank charges (City Government of Kidapawan 2024a).

In addition, the 20% Local Development Fund (LDF) represents a required portion local governments must allocate from their National Tax Allotment (NTA) resources. The LGU uses this fund to support development projects which match the priorities established in their Comprehensive Development Plan (CDP). For fiscal year 2024, Kidapawan City's LDF is Php232 million. While it is reflected to be only 15% of the total budget, this is because the LDF is calculated based solely on the NTA. Lastly, Aid to Barangay is support to each barangay to augment their operational needs (City Government of Kidapawan 2024a).

More specifically, as shown from the table above, the city has a dedicated funding for DRR, through 5% Local DRRM Fund (LDRRMF). The Disaster Risk Reduction and Management Act of 2010 mandated the institutionalization of the said fund to support activities that fall under the four pillars of the National DRRM Framework: (1) disaster preparedness; (2) disaster prevention; (3) disaster mitigation; and (4) disaster response and recovery. According to KI 3, the basis of computing the budget for the LDRRMF is "5% of the national tax allocation plus the local income excluding the income from the local economic enterprises like the market, terminals, hotels."

Hence, the LDRRMP stipulates fund allocations for early warning systems. evacuation planning, infrastructure retrofitting, and capacity-building activities, among others. KI 3 further stated that these resources serve as essential funding for operational readiness and community-based DRRM initiatives.

The Local Climate Change Action Plan (LCCAP) contains estimated costs for priority adaptation and mitigation programs such as climate-resilient agriculture, water resource management, forest rehabilitation, and renewable energy initiatives. The funding sources for LCCAP come from a mix the city government's annual budget, specifically from the LDRRM

Fund, Local Development Fund (LDF), Gender and Development Fund, and General Appropriations Fund (City Government of Kidapawan 2024b).

KI 6 also noted that they have used some funds from revenues earned from the geothermal power plant operating in their jurisdiction and likewise previously tried to access national funding sources like the People's Survival Fund (PSF) but were unsuccessful.

> *"[I]f we think that it needs to be implemented within the year, we source out other funds. We look for other funds. Like, for example, if our regular fund can't do it, we look for or request from the disaster fund. Like the LDRRM Fund. If it is still not enough, we request from the LDF..." — KI 6*

Meanwhile, KI 7 mentioned that limited funding, especially for climate change-related activities is one of the gaps faced by local governments. He cited the need for a dedicated "climate resilience funds", easier access to national funding (e.g., PSF), and other climate finance initiatives.

While most CCA and DRR activities are tagged under the LDRRMF, there are limitations under which other CCA-related activities can be funded by LDRRMF. This is especially true for initiatives that require ecosystem-based solutions or those that require long-term implementation. Hence, the City Government of Kidapawan taps or pools other sources of funding.

4.2.5 Coordination Mechanisms

The established structures and processes serve as coordination mechanisms to enable planning, stakeholder collaboration, and information sharing for CCA and DRR. The City of Kidapawan implements CCA and DRR coordination through its main offices namely:

i. City Planning and Development Office (CPDO)
ii. City Disaster Risk Reduction and Management Office (CDRRMO)
iii. City Environment and Natural Resources Office (CENRO) and

iv. City Agriculturist Office (CAO).

The different departments maintain separate responsibilities that support each other during the development and execution of climate- and risk-based policies and programs.

Specifically, in terms of managing disaster risks, there is a City Disaster Risk Reduction and Management Council (CDRRMC) which serves as the central coordinating body for local activities under the leadership of the City Mayor. The council brings together representatives from the different offices of the city government, barangay officials, and representatives from specific national government agencies, including the Department of Interior and Local Government (DILG), Department of Environment and Natural Resources (DENR), Department of Health, and civil society organizations to set policy directions and achieve coordinated DRRM thematic area actions. It is also responsible for deliberating the LDRRMP to ensure that all members agree with the proposed allocation of budget. Under Republic Act 10121 (Disaster Risk Reduction and Management Act), all LGU's are obliged to allocate 5% of their local annual budget for DRR. The CDRRMC operates under RA 10121 to conduct regular meetings for supervising city preparedness and response and recovery activities. In the case of Kidapawan City, the CDRRMC meets quarterly.

Insights from the interview with KI 3 indicate that coordination has become better, but it depends mainly on the department head's own commitment or push instead of standardized procedures.

> *"It's based on working relationships. There's trust. If we need to work with CENRO or Agriculture, we just talk. But formal protocols are not always there."— KI 3*

KI 1 emphasized that during plan formulation, especially of the CLUP, CDP, LCCAP, and LDRRMP, technical working groups (TWGs) are created for each:

> *"Every plan has a TWG composed of representatives from different offices… That's how we coordinate the LCCAP, CDP, CLUP, and the rest. It's technical, but we make sure the departments talk to each other." — KI 1*

Hence, the interface between CCA and DRR is via the overlapping memberships in the CDRRMC and TWGs created for the plans. For one, the Head of the CDRRMO is also a member of the TWG for the CLUP, CDP, LCCAP, and LDRRMP. Such interlinkages in membership in the different working groups help facilitate that alignment in plans and policies and in CCA and DRR is present.

Meanwhile, the offices maintain vertical coordination through their work with national government agencies especially when performing the Climate and Disaster Risk Assessment (CDRA) and CLUP formulation. The agencies supply technical training together with hazard maps and policy guidance enabling local offices to implement national standards in their specific context.

As underscored during the interview with the CENRO, each office often collaborates vertically through their "corresponding" entity at the national level (Table 4):

Table 4. Coordination of Kidapawan City Government Offices vis-a-vis national government entities

City Government Office	**"Corresponding" National government**
Planning and Development Office	• Department of Development (formerly National Economic and Development Authority) • Department of Interior and Local Government • Department of Human Settlements and Urban Development • Climate Change Commission

Environment and Natural Resources	• Department of Environment and Natural Resources and its Bureaus namely:
	  o Mines and Geosciences Bureau
	  o Protected Areas and Management Bureau
	  o Forest Management Bureau

Disaster Risk Reduction and Management Office	• Office of Civil Defense • National Disaster Risk Reduction and Management Council • Climate Change Commission • DENR-Mines and Geosciences Bureau • Department of Science and Technology (DOST) - Philippine Institute Volcanology and Seismology (PhilVOLCS) • DOST - Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA)
Agriculture Office	• Department of Agriculture • DOST - PAGASA

Furthermore, multiple offices stated that their coordination efforts mainly function as reactive responses or project-specific initiatives. For instance, the CENRO noted:

> *"We work with Planning, especially when there's a planning activity or data submission needed. But outside of those, regular coordination is limited unless there's a project."— KI 6*

The city demonstrates the same pattern when it coordinates vertically with national government agencies and the provincial government. KI 1 and KI 6 shared that the Provincial Government of Cotabato holds regular meetings with local governments under its jurisdiction to discuss specific sectoral issues. The City Government of Kidapawan sends representatives from relevant offices or departments based on the meeting agenda to participate in these meetings.

At the barangay (village) level, there is also some coordination, but its implementation remains inconsistent. For instance, while barangay officials participate in planning consultations and DRRM orientations, they have limited participation in terms of involvement for implementation or monitoring due to resource limitations and different capacities.

In terms of other external stakeholders, such as the civil society organizations (CSOs) and non-government organizations (NGOs), and Indigenous Peoples (IPs), KI 1mentioned that they are

represented in Local Development Council meetings. These are meetings which convene all relevant stakeholders whenever a certain resolution or ordinance will be passed and decided. Moreover, KI 5 also mentioned that the Manobo tribe (the IP community in Kidapawan City) is represented by their tribal leaders. However, what was not further discussed during the interview was the level of participation that these external stakeholders can make during these Local Development Council meetings (i.e., whether their voices or opinions are really taken into consideration).

4.2.6 Monitoring and Evaluation (M&E) Framework

Monitoring and Evaluation are crucial parts of any plans, projects, and activities to ensure whether intended goals and objectives are achieved and identify areas that need adjustments (Price-Kelly et al. 2015). Monitoring involves the systematic and regular collection of data to assess the plan's advancement and its achievement of set objectives (Nguyen et al. 2022, 18). On one hand, evaluation is the process of determining which specific activities reached their intended goals and assesses if alternative measurement methods could have achieved better results or increased efficiency (Least Developed Countries Expert Group as cited by Nguyen et al., 2022, 19). In the context of this study, M&E, as a criterion, evaluates whether mechanisms exist for periodic review of plans, programs, and actions related to climate and disaster risk management.

In Kidapawan City, M&E elements are included across various plans, however, the degree of institutionalization and integration of climate- and disaster-specific indicators varies. For the Comprehensive Development Plan (CDP), it has a M&E Strategy section which defines standardized procedures for tracking results including climate-responsive and DRR-related projects. The City Planning and Development Office (CPDO) stated they created an M&E template as an internal tool to facilitate regular plan assessment against actual achievements

while demonstrating their commitment to performance tracking even though national tools were not mandatory (see Appendix F).

> *"Outcomes are tracked via indicators in the LCCAP, LDRRMP, and the Annual Investment Program. We use performance monitoring tools and conduct annual plan reviews." — KI 1*

The LCCAP contains provisions for scheduled assessments of adaptation strategies together with coordination activities with national agencies including the Climate Change Commission (CCC). The LCCAP promotes monitoring activities but its indicators along with targets and reporting periods remain under development according to interview results.

> *"Previously, the LCCAP didn't include GHG inventories or adaptation tracking. But with CCC guidelines now, we're working to ensure updated data and outputs are integrated moving forward." — KI 6*

The CPDO maintains primary responsibility for M&E functions with assistance from line offices, including the CDRRMO, CENRO, City Agriculturist Office, City Social Welfare and Development, and Budget Office. The city conducts climate- and disaster-specific M&E activities through occasional coordination for compliance instead of integrating them into a unified city-wide results framework.

However, upon closer look at their M&E template, what is evident is that indicators used by the City Government is output-based rather than outcome or impact-based. Likewise, their template includes the reporting of the actual amount utilized vis-à-vis planned budget as this will serve as basis for allocation in the next budget cycle. For example, indicators used include number of trainings conducted, equipment delivered, trees planted, etc. This approach can still be strengthened if the City Government of Kidapawan envision to better understand whether its programs, activities, and projects are effective and that actual resilience outcomes, especially in enhancing resilience and reducing vulnerabilities from of climate-disaster risks.

4.2.7 Cross-Plan Comparative Analysis

The assessment of individual plans across six enabling criteria, namely: Institutional and Technical Capacity, Plans and Policy Alignment, Risk Assessment, Coordination Mechanisms, Financing, and Monitoring and Evaluation. This set of criteria serves as the basis for this section to evaluate CCA and DRR integration in the four core local development plans of Kidapawan City: CLUP, CDP, LCCAP, and LDRRMP. The following matrix shows the degree of CCA and DRR element presence or absence and partial integration under each criterion to identify planning instrument alignment and fragmentation in the city's key documents. It used color coding (green, yellow, and red) to determine the level of CCA and DRR integration in each plan vis-à-vis the six enabling dimensions or criteria. Green demonstrates that the element of sub-criterion is explicitly stated or that it fully developed and implemented. Yellow denotes that the element or sub-criterion exists, however, is underdeveloped or is inconsistently applied, Lastly, red represents that the sub-criterion is not present, not mentioned, nor implemented at all.

Table 5. Cross-plan comparison vis-a-vis CCA and DRR integration criteria

Criteria	**Comprehensive Land Use Plan**	**Comprehensive Development Plan**	**Local Climate Change Action Plan**	**Local Disaster Risk Reduction and Management Plan**
a.	***Institutional and Technical Capacities***			
Designated office/ implementers				
Technical staff/ support				
b.	***Plans and Policies Alignment***			
Reference to national mandates (i.e. Climate Change Act and Disaster				

Risk Reduction and Management Act)				
Inclusion of CCA/DRR objectives and strategies				
c.	***Risk assessment integration***			
Use of Climate and Disaster Risk Assessment (CDRA) output				
Hazard-sensitive programming/ zoning				
d.	***Financing***			
Dedicated funding stream				
e.	***Coordination mechanisms***			
Horizontal coordination mechanisms (within Kidapawan City Government's offices)				
Vertical coordination (national agencies, provincial government, barangays, CSOs/NGOs, IPs)				
f.	***Monitoring and Evaluation***			
M&E indicators defined to CCA/DRR				
Defined reporting roles				

Legend:

	Present/ Clearly defined	*The element is explicitly stated, fully developed, and implemented.*
	Partial/ Limited	*The element exists but is underdeveloped, inconsistently applied*
	Lacking/ Absent	*The element is not mentioned, not developed, or not implemented at all.*

Table 5 above shows a cross-plan comparison of CCA and DRR integration across six key dimensions. All four plans mention CCA and DRR to some extent, but none of them fully

address all six criteria. The CLUP is strong on spatial risk integration and policy alignment but lacks clear monitoring and financing mechanisms. The CDP reflects resilience goals in sectoral plans but has limited institutional mechanisms for evaluation and tagging. The LCCAP presents a climate-focused agenda but is undermined by outdated risk data and unclear implementation support. Finally, the LDRRMP, benefiting from a legal mandate and funding stream, shows the most institutionalized and operationalized integration—but with less focus on long-term adaptation or multi-sectoral coordination.

4.3 Challenges and gaps in CCA and DRR integration and corresponding strategies to address them

In the context of local development planning, CCA and DRR integration requires that climate-related risks are systematically embedded in the local plans, including the Comprehensive Land Use Plan (CLUP), Comprehensive Development Plan (CDP), Local Climate Change Action Plan (LCCAP), and Local Disaster Risk Reduction and Management Plan (LDRRMP). In Kidapawan City, however, full integration of CCA and DRR in local development planning of Kidapawan City faces multiple obstacles because of limitations within the overall planning processes. These include institutional, technical, financial, and policy challenges consequently affecting their effectiveness, coherence, and long-term orientation. The specific barriers and strategies to address discussed in this section are categorized based on the responses of the research participants and own analysis of the researcher. Table 6 below shows the summary of the challenges identified and the corresponding strategies to address them.

Table 6. Identified challenges and gaps and corresponding strategies to address them

Challenge/ gap identified in CCA and DRR integration	Strategy to address this challenge/gap
a. Varying update cycles	a. Enhancing technical working group coordination across all plans

b. Technical and resource capacity constraints	b. Strengthening technical capacities through local innovation and interagency support
c. Data availability and management constraints	c. Improving access to risk data and internal data management system
d. Translating national guidelines into the local context	d. Aligning to national guidelines and translating them into local ordinances and institutional policies

4.3.1 Varying update cycles

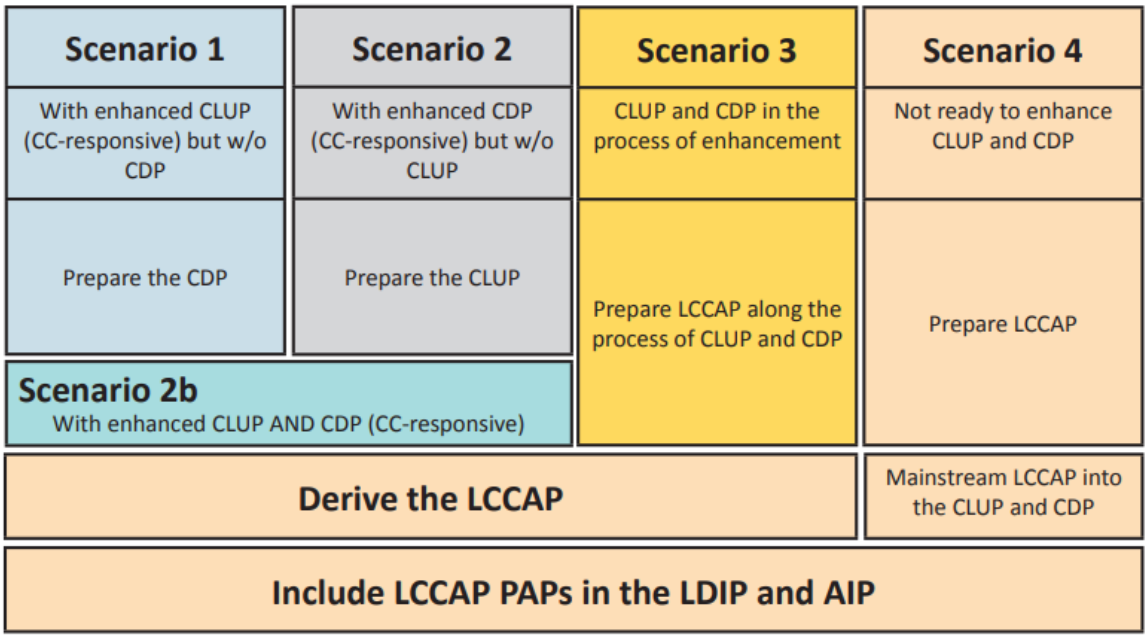
The development planning of Kidapawan City faces a major challenge because its core local plans, including LCCAP, CLUP, CDP, and LDRRMP have asynchronous update cycles.

Table 7. Timeline of Key Local Plans in Kidapawan City

Document/ Plan	Timeline/ Covered Periods	Number of Years
Climate and Disaster Risk Assessment (CDRA)	2021-2030	10 years
Comprehensive Land Use Plan (CLUP)	2021-2030	10 years
Comprehensive Development Plan (CDP)	2020-2025	6 years
Local Climate Change Action Plan (LCCAP)	2016-2025	10 years
Local Disaster Risk Reduction and Management Plan (LDRRMP)	2021-2023	3 years

As shown on Table 7, Kidapawan City's latest LCCAP has a timeline from 2016 to 2025 and was developed before the completion of the Climate and Disaster Risk Assessment (CDRA) and the revised Comprehensive Land Use Plan (CLUP). In this regard, the LCCAP fails to incorporate the current spatial hazard data and vulnerability analyses from the CDRA.

Based on the Enhanced LCCAP Guidebook (2017) released by the Department of Interior and Local Government (DILG) and the Climate Change Commission (CCC), there are different planning scenarios (see Figure 12) when formulating the LCCAP. In the case of Kidapawan City, since both CDP and LCCAP were developed prior to the CDRA being created, it is imperative that these two be updated side-by-side.



Source: DILG and CCC 2017, 5.

Figure 12. LCCAP Planning Scenarios

The first scenario targets CLUP enhancement when the plan is climate-responsive but not the CDP. The second scenario focuses on updating the CLUP when the CDP is climate-responsive but the CLUP is not. The best possible scenario occurs in Scenario 2b when both CLUP and CDP are climate-responsive, hence, enabling direct LCCAP development from existing plans.

The third scenario requires the LCCAP to be updated simultaneously with the CLUP and CDP. Conversely, the least favorable scenario under this framework occurs when both plans lack climate responsiveness and readiness for enhancement. The LCCAP needs to be developed independently in this scenario before its integration into the next update of CLUP and CDP.

Nonetheless, the LCCAP's identified climate actions need to be integrated into the local government's Local Development Investment Program (LDIP) and Annual Investment Program (AIP), through Climate Change Expenditure Tagging (CCET) regardless of the chosen scenario.

As for the existing LDRRMP, while it includes CDRA outputs, its three-year duration creates a shorter strategic perspective than other plans with longer timeframes. In the interview with KI 3, he mentioned that they purposely create the LDRRMP with a three-year timeframe because their objective is also to align it with the term of the mayor. In the case of Kidapawan City, its mayor has been re-elected for another term (three years) and hence, it benefits from political continuity.

> *"It is term based. The logic is why we made it term-based so that it won't be difficult to implement the plans. Usually, when the mayor changes or there's a new local chief executive, the plans become white plans…because new mayors have their own platforms that they want to introduce. Some of those are not aligned [with] the plan of their predecessor." – KI 3*

Thus, to address this barrier, the city government should ensure smooth coordination across all Technical Working Groups involved in each plan and systematically determine which plan/s to prioritize or that need urgent updating. In addition, the recommendation from the DILG and CCC (2017) to concurrently update the CDP and LCCAP would benefit Kidapawan City.

Nonetheless, the role of national government agencies is crucial. For one, national agencies such as the DILG, Department of Human Settlements and Urban Development (DHSUD), and the CCC should provide planning calendars updates and standardized templates for LGUs to improve their strategy implementation. These agencies should also use policy memoranda to promote synchronized updates and provide technical backstopping during plan revisions while assisting LGUs to address political transition-related timing issues.

4.3.2 Technical and resource capacity constraints

Most of the interviewees conveyed that Kidapawan City still faces technical capacity constraints, especially with the evolving national and local policy landscape in relation to climate and disaster resilience. The City Planning and Development Office (CPDO) received training on Climate and Disaster Risk Assessment (CDRA) and Geographic Information Systems (GIS), through DILG and DHSUD. The training programs have provided technical staff with fundamental skills for hazard mapping and vulnerability assessment, and risk-informed land use planning. The CPDO uses its acquired capabilities to create planning documents, including the CLUP, CDP, and Annual Investment Plans.

However, the sectoral offices responsible for field-level service delivery, including agriculture and environment, face the most significant challenges among all offices. For instance, KI 2 points to insufficiently trained staff and climate-specific tools as major obstacles that prevent them from implementing adaptive practices and conducting damage assessments.

> *"The challenges are primarily related to technology and IT. There are a lot of technologies in agriculture related to climate change, but we still don't know how to implement them…We really want our Agricultural Extension Workers' capacity development related to climate change and conduct massive training to our farmers, but we still lack knowledge and equipment for that. So sometimes, the training is not really effective. Although we have programs that we do for climate change adaptation, the farmers should also understand, through trainings, what climate change adaptation really is." – KI 2*

KI 2 explained that there are assigned Agricultural Extension Workers for each barangay, and they are the ones who really go on the field to provide training to the farmers and conduct crop assessments. However, they conveyed that these workers themselves need to be trained with the latest and up-to-date scientific knowledge, especially relating to climate change. She mentioned that the Department of Agriculture, through its Agriculture Training Institute, is usually providing these types of training, but this is only on an ad-hoc basis.

Meanwhile, the City Environment and Natural Resources Office (CENRO) faces resource capacity and technical constraints in tasks including, greenhouse gas (GHG) inventory assessments and climate tagging. CENRO takes part in planning activities and backs reforestation and protected area management but their technical contribution to climate strategy implementation remains restricted to working group membership under CPDO or other agencies.

Interestingly, the City of Disaster Risk Reduction and Management Office (CDRRMO) has shown active measures to improve its risk monitoring capabilities, despite the technical limitations in equipment and localized data collection. A major limitation that was raised during the interview was the insufficient number of Automatic Weather Stations (AWS) that are currently deployed in the city. As of the interview, KI 3 cited that only 15 AWS units had been installed, falling short of the office's target of one station per barangay.

The LGU has introduced this initiative because it needed real-time community-level data to support disaster preparedness and climate-informed planning. The city established its own monitoring system through local resource utilization because they deemed that national weather infrastructure does not provide hyper-localized monitoring. According to KI 3, the localized AWS units serve dual purposes by providing essential disaster response capabilities and agricultural resilience enhancement due to rising rainfall variability and drought risks.

> *"Our plan is to use our automatic weather station not just for emergency response, but also that its data can be used by our agriculture sector. This way, we can plan properly which crops should be prioritized or are more viable in a certain barangay depending on the rainfall return period. Then, that can also be translated later on into resiliency." – KI 3*

Such initiatives show how LGUs can advance their work despite limited resources. This innovation of Kidapawan City also showcases their proactiveness in dealing with climate-related hazards.

Nevertheless, national agencies including the PAGASA, the country's meteorological agency, the Department of Agriculture (DA), and the CCC should enhance their training programs to provide specialized tools for greenhouse gas inventory assessments, ecosystem-based adaptation solutions, and results-based monitoring systems, among others.

4.3.3 Data availability and management constraints

The main technical and institutional challenge for CCA and DRR integration in Kidapawan City stems from insufficient accessible, real-time, localized data from both national government agencies and within the city government itself. For one, the interview with KI 6 revealed that they experienced problems when trying to get detailed data from national agencies.

> *"Whenever we ask for data, for example from the Department of Environment and Natural Resources, that is specific to Kidapawan, these are also not disaggregated. Recently we needed baseline data for forests, it was challenging since they didn't have localized data." – KI 6*

This is compounded by the lack of an internal database within the City Government. According to interviewees, the offices operate independently with their own record systems (e.g. spreadsheets and paper-based filing systems) without any shared platform or data sharing protocol between offices. Hence, if they need specific data from another office, they need to ask directly or contact the person in-charge.

In order to address this, the possibility of investing on a database management system and needed technical skills to facilitate this system may be explored by the City Government. Besides KI 6 mentioned that they would need a database, especially that they have piloted the reporting of their greenhouse gas emissions (GHG) inventory. In the near future, this database will also be essential for the City Government to support evidence-based policies and meet national (and even international) reporting requirements. Aside from this, having a database

could support their transparency and accountability which could help the city in possibly accessing external sources of funding for CCA and DRR-related projects.

Furthermore, the Environmental Management Bureau (EMB), Mines and Geosciences Bureau (MGB), PAGASA and the Department of Information and Communications Technology (DICT) need to develop user-friendly data portals for LGUs while standardizing vertical data-sharing protocols and providing digital infrastructure funding for LGU-level data dashboards. Better access and usability of information depend on establishing open data standards and defining clear data ownership responsibilities between national and local actors.

4.3.4 Translating national guidelines into the local context

The integration of CCA and DRR in Kidapawan City faces a persistent challenge because national climate and disaster policies need to be adapted into specific local measures that are both practical and relevant to the area. National agencies such as the CCC, DENR, and DILG publish guidelines to support climate-responsive planning, but these guidelines tend to be complex and distant from local implementation capabilities.

KI 6 explained that some national frameworks lack practicality when implemented at the local level.

> *"So, [we] need to have a separate ordinance. What is applicable at the local level. Then also to set boundaries. Because…there are other functions at the national level that are not devolved to the LGU. For example, the mining is not within the bounds of the city government. It is still the national government, specifically through the Mines and Geosciences Bureau of the Department of Environment and Natural Resources." – KI 6*

Another example mentioned by KI 6 is on the issuance of Environmental Compliance Certificates (ECC) which also fall under the DENR, particularly through its Environmental Management Bureau (EMB).

"We are not involved in monitoring. It's the EMB. It's the monitoring of the issues. Lately, unlike before, we don't know what their activities are." – KI 6

Hence, the practice is that when an establishment is able to secure an ECC from the DENR-EMB, it can be issued a business permit. This gap highlights the lack of a vertical coordination mechanism between national government agencies and local government units.

To manage this barrier, KI 6 further added that they are planning an Environmental Code to enable the city to establish its own environmental standards, monitoring protocols, and permit conditions to align with local development objectives and climate and disaster risk assessments, but without overstepping and/or still in compliance with national guidelines. The legal instrument would also allow local authorities to exercise environmental quality oversight, while enforcing stronger local compliance standards and bridging the information gap between national regulators and LGU offices.

Moreover, KI 7 stressed that local plans need specific guidelines about climate action integration and formal procedures for sectoral engagement in climate and DRR governance structures. The institutionalization of local climate and DRR planning can be improved through template models of ordinances together with legal drafting support and policy translation services from the CCC, DENR, and DILG, among others.

Lastly, KI 7 pointed that local governments, as frontliners in responding to climate-related hazards, would also need support from the national governments in terms of access to climate financing. KI 7 stressed on two things as regards this suggestion: (i) a dedicated "climate resilience fund" that can be used by local governments, similar to that of the local disaster fund; and (ii) easier access to national and even international climate financing, such as the People's Survival Fund (PSF), Green Climate Fund (GCF), respectively.

5. DISCUSSION

This Chapter provides the discussion and analysis based on the results presented from the previous section of the paper. It likewise follows the structure of the preceding chapter where it first discusses the six enabling conditions or criteria - (i) institutional and technical capacity; (ii) plans and policy alignment; (iii) risk assessment; (iv) financial resources; (v) coordination mechanisms; and (vi) monitoring and evaluation framework - in relation to climate change adaptation (CCA) and disaster risk reduction (DRR) integration in Kidapawan City's local development planning.

The analysis then shifts to the second sub-section identifying the main obstacles and institutional barriers that prevent full CCA and DRR integration alongside the strategic entry points to address barriers. Lastly, it provides an additional analysis from the researcher based on lessons learned from Kidapawan City's experience and how it may or may not be a reflection of the realities of other local governments in the Philippines.

5.1 Assessment of the extent and nature of CCA and DRR integration within the local development planning process of Kidapawan City, Cotabato

5.1.1 Institutional and Technical Capacity

Mainstreaming CCA and DRR into local development planning requires both institutional and technical capacity. For this enabling dimension or criterion, the researcher looked into the existence of organizational structures, together with designated roles for CCA and DRR implementation, technical personnel capabilities, and system tools or equipment that support planning and implementation. It reveals that the current institutional framework of the City Government of Kidapawan has both CCA and DRR components, however, each has a distinct level of development, specialization, and integration.

In terms of disaster risk governance framework, the city has an established structure with its dedicated City Disaster Risk Reduction and Management Office (CDRRMO). The Local Disaster Risk Reduction and Management Plan (LDRRMP) and DRR-related decisions are also discussed together with the City Disaster Risk Reduction and Management Council (CDRRMC). The establishment of a dedicated office and the structure of the council are both required under Republic Act No. 10121 of the DRRM Act of 2010. Having a dedicated office for disaster risk also means a certain budget is allocated to hire fulltime regular employees who will perform risk assessments, conduct community preparedness, coordinate activities with other concerned offices and stakeholders.

In contrast, the climate change governance framework at the local level is quite different. In the case of Kidapawan City, several departments including the City Planning and Development Office (CPDO), City Environment and Natural Resources Office (CENRO), City Agriculturist Office (CAO), and CDRRMO share responsibilities for climate change functions although they lack a central office dedicated to these tasks. Different offices also support climate planning through their individual functions (e.g., Local Climate Change Action Plan preparation, forest management, climate-smart agriculture) but the absence of a dedicated climate change unit indicates weak institutional climate governance at the local level. Hence, while the Climate Change Act of 2009 requires LCCAP preparation from local governments, it does not specify the requirement for a dedicated local climate office unlike the DRRM framework. Furthermore, while it can be argued that the possible reason behind this is because climate change should be considered as a multi-sectoral issue, the same argument can be said about disaster risks. Thus, the existing institutional framework, and therefore, capacity is affected.

Meanwhile, technical capacity for risk-informed planning also varies among the different offices in Kidapawan City. It is the CPDO and CDRRMO which are mostly trained on Climate and Disaster Risk Assessment and Geographic Information Systems (GIS) to embed hazard and

exposure data into planning instruments like CLUP and CDP. Other departments including the CAO and CENRO encounter challenges related to limited personnel strength and insufficient equipment and specialized tools availability.

The distribution of climate-related roles across different sectors alongside departmental technical barriers hinders the city's capability to integrate climate resilience systematically throughout its operations. Development planning remains dependent on individual departmental initiatives since there is no central coordinating office or focal point dedicated to climate change.

5.1.2 Plans and Policies Alignment

The City Government of Kidapawan City developed its two core plans, the Comprehensive Land Use Plan (CLUP) 2021-2030 and Comprehensive Development Plan (CDP) 2020-2030, and derivative plans, the Local Climate Change Action Plan (LCCAP) 2016-2025 and Local Disaster Risk Reduction and Management Plan (LDRRMP) as mandated by national policies. However, the individual plans of this city show different levels of CCA and DRR integration.

The CLUP uses the most extensive implementation of risk-informed spatial planning methods. The plan incorporates the outputs from the Climate and Disaster Risk Assessment (CDRA) through its implementation of risk avoidance measures such as hazard-prone area, no-build zones, and protective land use areas. It also uses zoning ordinance and overlay zones to show how hazard data can be used for enforcing land use policies.

Spatial integration serves as a crucial mechanism that enables resilience because it informs urban development and helps identify high-risk areas. Hence, the CLUP serves as a spatial instrument for resilience but its ability to affect sectoral programs regarding climate-smart

agriculture and social infrastructure resilience depends on how this spatial instrument is used in other plans, such as the CDP, LCCAP, LDRRMP, and even other derivative plans.

The second plan reviewed was the CDP, an investment plan for medium-term development. Ideally, CDP should be aligned with the CLUP in terms of spatial planning approaches and sectoral development measures. The document includes varying degrees of CCA and DRR references in health, agriculture, environment, and social welfare sections. Each sector uses climate and disaster risk data different and according to the respective office's priorities for the term. For instance, the agriculture office uses climate risk information to support Agriculture Extension Workers in their roles in training farmers. The environment sector uses climate and disaster risk information to support its programs in watershed management or reforestation efforts. Such differences in applying climate and disaster risk assessments arise mainly as a result of the city government's priorities and likewise, from the different levels of technical abilities when they are developing their plans and the respective projects, programs, and activities for each fiscal year.

Moreover, the LCCAP stands as a crucial climate planning tool for the city but demonstrates one major obstacle to plan integration as it is already outdated in terms of aligning with the CDRA and CDP priorities. As it was developed before the revised CDRA and CLUP, its effectiveness as a planning resource for current decisions and climate investment guidance is limited.

Lastly, the LDRRMP demonstrates strong operational DRR content with emergency preparedness, early warning systems, and contingency planning but provides weak integration in terms of long-term adaptation and development goals. Despite the document following the requirements of national DRRM frameworks, its connections with LCCAP and CDP exist at a practical operational level instead of a strategic one. Another notable observation from the

LDRRMP is its focus mainly on response strategies and short-term projects. This is the case given that their plan is term-based, or is updated per the mayor's administration or stint, equivalent to three years. Thus, the plan acknowledges climate change adaptation but lacks detailed information about long-term projections and ecosystem-based solutions.

5.1.3 Risk Assessment

Local development planning requires risk assessment as its foundations towards CCA and DRR integration. Kidapawan City conducts Climate and Disaster Risk Assessment (CDRA), as the first step prior to the development of the Comprehensive Land Use Plan (CLUP). This is part of a national mandate issued by the Department of Human Settlements and Urban Development (DHSUD) and the Climate Change Commission (CCC). By following the issued guidelines by these national agencies, there exists a structured methodology where local governments, such Kidapawan City, can assess hazards, exposure, and vulnerabilities. This approach allowed the city to measure risks from multiple hazards such as flooding, landslides, ground rupture and liquefaction, and drought.

Nonetheless, while CDRA is integrated into the CLUP, its influence on the other plans (i.e., CDP, LCCAP, and LDRRMP) remains limited. The reason behind this is because the LCCAP preceded CDRA resulting in outdated or inconsistent risk information that reduces its ability to identify problems.

In addition, although CDRA findings are referenced in the CDP, the integration depth across sectoral chapters differs. Such variability stems from the fact that not all personnel from each sectoral offices (i.e., agriculture, environment) are trained on how to use these data.

5.1.4 Financing

Local governments in the Philippines utilize the Comprehensive Development Plan (CDP) to establish medium-term sectoral development goals which become operational through the Local Development Investment Program (LDIP). The Annual Investment Program (AIP) is then derived from the LDIP. The CDP → LDIP → AIP sequence represents the official process for allocating development priorities through funding. Hence, the Local Climate Change Action Plan (LCCAP) and Local Disaster Risk Reduction and Management Plan (LDRRMP) need to be integrated into this framework either as independent plans or as sectoral components.

In the case of Kidapawan City, and mostly all local governments in the Philippines, projects under the LDRRMP are funded through the Local Disaster Risk Reduction and Management Fund (LDRRMF), equivalent to 5% of the local government's annual budget. This setup enables the City Disaster Risk Reduction and Management Office (CDRRMO) to include activities in the AIP. The earmarked fund enables DRR-related projects such as early warning systems, emergency response, and risk reduction infrastructure to receive stable financial support.

On the one hand, projects under the LCCAP and are tagged as either adaptation or mitigation depends on the LDIP and AIP for funding because it does not have its own dedicated budget allocation. The LCCAP projects receive their funding from both internal sources, including the General Fund, Local Development Fund, and LDRRMF. On the other hand, projects that are tagged as adaptation under the LCCAP and are funded through the LDRRMF is where integration of CCA and DRR is reflected.

The funding structure reveals a critical financial integration challenge because DRR receives a dedicated funding source through the LDRRMP. Meanwhile, CCA initiatives face funding risks because they depend on multiple funding sources and departmental budgeting decisions or

priorities. The city needs to achieve better climate finance integration through purposeful alignment of LCCAP priorities with the CDP and LDIP and active national climate finance program support and adaptation integration into core development planning.

5.1.5 Coordination Mechanisms

Successful integration of CCA and DRR within local development planning requires horizontal coordination between offices within the local government and vertical coordination between local governments and national and regional agencies or bureaus down to the barangays. The different coordination systems in Kidapawan City function differently depending on the sector that is handled by a particular office in the local government vis-a-vis their corresponding sector in the national, regional, or barangay level.

Specifically, disaster risk reduction and management has the most structured system as it is led by the City Disaster Risk Reduction and Management Council (CDRRMC). The CDRRMC is under the City Mayor's leadership, while it brings together representatives from city departments, barangays, national government agencies, civil society organizations, to make decisions about DRRM programs. The council acts according to RA 10121 by conducting regular meetings to maintain multisectoral participation in emergency planning and preparedness activities. It also serves as a venue where the Local Disaster Risk Reduction and Management Plan (LDRRMP) is discussed and adopted. Furthermore, it enables institutionalized and operational coordination regarding disaster-related data, resources, and responses.

In contrast, a formal structure to coordinate climate change adaptation does not exist. The City Planning and Development Office (CPDO) and City Environment and Natural Resources Office (CENRO), City Agriculturist Office (CAO), and CDRRMO work on climate-related issues, but their lack of a specific climate change office or focal unit forces them to depend on

project-based working groups and informal relationships for sectoral cooperation. The technical working groups (TWGs) established for development planning purposes is inherently less formal and seems temporary. Therefore, there is a lack of a more stable structure or mechanism that may leads to diminishing departmental engagement with climate adaptation initiatives after project periods end.

In terms of developing the Comprehensive Land Use Pla (CLUP) it is seemingly where training from national agencies including DILG, DHSUD are more prominent. In particular, training on Climate and Disaster Risk Assessment (CDRA). The said agencies deliver technical guidance, alongside hazard information, and actual capacity-building support.

At the barangay level, coordination systems exist but there is seemingly varying degree of coordination, depending on the office or sector. The barangay disaster risk reduction committees (BDRRMCs) receive support from the CDRRMO, but they do not take part in city-level planning processes or climate decision-making activities, because of lack of technical expertise. Meanwhile, barangays are also tapped by the city's agriculture and environment for monitoring of projects (e.g., Canopy '25 Project). Thus, the city departments need to improve their relationships with barangay stakeholders because this will enhance the effectiveness of community-based DRR programs and locally driven climate adaptation strategies.

In terms of other external stakeholders, while representatives from the civil society organizations (CSOs) and non-government organizations (NGOs), and Indigenous Peoples (IPs), in meetings and consultations by the city government, the study was not able to determine the level of participation these stakeholders can make or whether they can influence decisions.

5.1.6 Monitoring and Evaluation (M&E) Framework

The fundamental role of Monitoring and Evaluation (M&E) enables local governments to measure implementation progress and resource use while adapting their strategies through evidence-based decision-making in CCA and DRR integration. Development and sectoral plans such as the Comprehensive Development Plan (CDP) and Local Disaster Risk Reduction and Management Plan (LDRRMP) include M&E frameworks, which specify indicators along with responsible offices. The established frameworks focus mainly on outputs through activity completion metrics (e.g. number of trainings conducted, number of seeds distributed) rather than assessing resilience changes, reduced vulnerability, or adaptive capacity enhancement. This output-focused approach stems from both local capacity constraints together with the non-existence of standardized climate and DRR impact assessment metrics at the community level.

The City Planning and Development Office (CPDO) serves as the central entity that guides departmental M&E coordination while individual offices maintain their program tracking responsibilities. The current reporting structure remains at the surface level because there is no centralized climate data system and the Local Climate Change Action Plan (LCCAP) lacks dedicated M&E tools, hence hindering the assessment of climate adaptation effectiveness.

Moreover, the LDRRMP performance indicators follow the four pillars of the National DRRM Framework (i.e., disaster preparedness; disaster prevention; disaster mitigation; and disaster response and recovery) but the reporting system focuses mainly on preparedness and response instead of prevention and long-term risk reduction results. The CDRRMO evaluates its activities through accomplishment reports and budget utilization for compliance and transparency purposes, but these also do not fully demonstrate how communities gain resilience against disasters.

The planning and budgeting cycles lack proper integration of M&E findings. The periodic review process of plans does not demonstrate sufficient evidence that past evaluation results influence project selection in the Annual Investment Program (AIP) or modifications to key plans such as the CDP and LCCAP. The underdevelopment of adaptive management feedback loops creates an obstacle to plan refinement and iterative learning.

5.2 Challenges and gaps in CCA and DRR integration and strategies to address them

The implementation of climate and disaster-responsive local plans in Kidapawan City shows progress but CCA and DRR integration faces obstacles stemming from institutional problems, technical capacity limitations, financial constraints, and policy gaps. The present obstacles limit local plans and programs from achieving coordinated effective support for long-term resilience development. Nevertheless, these challenges can be addressed to be able to harness CCA and DRR integration in local development planning more effectively.

5.2.1 Varying update cycles

One of the institutional obstacles in Kidapawan City stems from the inconsistent updating cycles among different planning documents. The LCCAP (2016–2025) faced limitations because it was created before the Climate and Disaster Risk Assessment (CDRA) and Comprehensive Land Use Plan (CLUP) updates were finished which resulted in insufficient representation of present risk information and spatial planning strategies.

In addition to this, the Local Disaster Risk Reduction and Management Plan (LDRRMP) has a three-year operational period as the city government deems that it is more effective to align it with the administration term (3 years) of the mayor. The reason is because the Mayor leads the City Disaster Risk Reduction and Management Council and likewise the one that decides the priorities in terms of DRRM. However, one gap that can be seen from this setup, instead of

aligning the LDRRMP to that of the term of the CDP (six years) is that once a different mayor is elected, then there might be inconsistencies between what was stipulated under the CDP and the priorities of the new administration.

As a strategy to address this gap, there is a need for the city government to improve its TWGs by establishing clearer coordination system and priorities for which plans need immediate updating. Since most TWG membership overlap (e.g., representative from the environment office is part of the LCCAP, LDRRMP, CDP working groups), then having clearer coordination system would also lead to cross-checking and validating whether there is indeed alignment of objectives, especially those that relate to CCA and DRR. Besides, national agencies, specifically the Department of the Interior and Local Government (DILG) and the Climate Change Commission recommend revising or updating the CDP and LCCAP simultaneously to achieve better alignment (DILG-CCC 2017).

5.2.2 Technical and Resource Capacity Constraints

The City Planning and Development Office (CPDO) received national training for CDRA and GIS. However, its frontline sectoral offices, including City Agriculturist Office (CAO) and City Environment and Natural Resources Office (CENRO), face substantial challenges with climate-specific tools and trained staff members. Agricultural Extension Workers who operate as the main field staff in barangays need ongoing training about climate change to provide suitable adaptation services to farmers. The CAO performs climate-related programs but technical knowledge limitations and resource constraints prevent these initiatives from producing optimal results. The CENRO, meanwhile, faces difficulties in performing climate-related work such as greenhouse gas (GHG) inventories and climate tagging assessments because they lack both the necessary skills and internal funding sources.

In contrast, the CDRRMO was able to establish an innovative local monitoring system through Automatic Weather Stations (AWS) to address the lack in hyper-local weather data collection. However, despite the city already operating 15 AWS, it is still far from its goal of acquiring one unit per barangay. The office demonstrates proactive management through their use of AWS units for both emergency response and agricultural decision support which showcases effective resource utilization between departments. Thus, with this initiative, they are able to bridge the gap on technical capacity and resources.

However, the role of national agencies remains crucial. Regular technical capacity trainings, "train the trainers" activities, and supporting local governments in localized innovation are some of the programs that national agencies, such as the country's meteorological agency on utilizing existing software applications (i.e., Hazard Hunter) and the Department of Agriculture on introducing new crop cultivation systems (i.e., alternate wetting and drying). In addition to this the Department of Environment and Natural Resources and Climate Change Commission on providing technical support on crafting climate change-related proposals, since these two national agencies review proposals that are submitted to the People's Survival Fund, the local climate change financing by the Philippines, the Green Climate Fund, and the Global Environment Facility. By helping them craft project proposals, these local governments could gain confidence in applying for these existing financing platforms which are mostly untapped just because most local governments do not have enough technical knowledge on how to do develop project proposals that are aligned with national and international requirements.

5.2.3 Data Availability and Management Constraints

Limitations in accessing localized data was also one of the identified challenges in effective CCA and DRR integration in Kidapawan City. National agencies often are the ones that have the resources to collect and mandate certain data but when local governments try to access these

data or ask concerned national agencies for certain data, it lacks either detailed or aggregate information applicable to their locality, thus, making city-level planning and monitoring processes challenging.

In addition, there lacks an internal database management system which affects how the existing data management problems. In Kidapawan City, each office operates with its separate record systems through isolated spreadsheets and physical files but lacks a unified platform for data sharing. The disorganized data management system affects development planning as it could limit the ability to track vulnerability and risk patterns throughout time and to some extent, it also affects coordination among offices within the city government of Kidapawan.

Henceforth, the possibility of investing on a database management system and needed technical skills to facilitate this system may be explored by the City Government. In the near future, this database will also be essential for the City Government to support evidence-based policies and meet national (and even international) reporting requirements. Aside from this, having a database could support their transparency and accountability which could help the city in possibly accessing external sources of funding for CCA and DRR-related projects.

At the national level, concerned agencies, such as the Environmental Management Bureau (EMB), Mines and Geosciences Bureau (MGB), PAGASA, and the Department of Information and Communications Technology (DICT) need to develop user-friendly data portals for LGUs while standardizing vertical data-sharing protocols and providing digital infrastructure funding for LGU-level data dashboards.

5.2.4 Translating National Guidelines to Local Implementation

The local implementation of national guidelines remains a constant obstacle for Kidapawan City. Local offices encounter challenges when implementing national guidelines because these

documents remain too complicated and do not adequately match their specific requirements. The management of mining regulations and environmental compliance falls under national agencies such as MGB and EMB which prevents CENRO from establishing clear roles for enforcement and monitoring. The lack of local oversight of environmentally sensitive activities through the LGU prevents them from linking environmental compliance to local risk reduction targets.

The practice of awarding business permits to ECC-secured establishments by local offices has become a direct result of the existing gap in environmental standards. The city has identified the need to create an Environmental Code which will specify localized environmental standards as well as permit processes and monitoring requirements. The proposed Environmental Code would help close the current regulatory gap between national policies and local execution which would enable the city to incorporate environmental management into its climate and disaster resilience initiatives.

5.3 Lessons learned from the experience of Kidapawan City in relation to CCA and DRR integration

The experience of Kidapawan City in local development planning offers lessons on how to effectively integrate CCA and DRR. It may not be a full reflection of other local government units (LGUs) experience but some of these are quite similar to what happens elsewhere.

One of the insights is the crucial role of conducting Climate and Disaster Risk Assessment (CDRA), not only because it is part of the national guidelines prior developing the Comprehensive Land Use Plan (CLUP) but also because it serves as a foundation in systematically integrating CCA and DRR across other plans. CDRA is a methodology that identifies risk and vulnerable areas, through an assessment of hazard, exposure, and vulnerability, and adaptive capacities of exposed elements. Therefore, such an assessment helps

determine which decision areas need priority intervention for implementing various measures. A key lesson therefore, is the ability of LGUs to synchronize the updating of their plans from the CLUP, Comprehensive Development Plan (CDP), Local Climate Change Action Plan (LCCAP), and Local Disaster Risk Reduction and Management Plan (LDRRMP) in order to facilitate coherence and ensure that climate and disaster risk data and their assessment are really considered in the planning process and subsequent projects, programs, and activities.

The second lesson that can be derived from Kidapawan City's experience is that despite the lack of formal structure for climate change-related planning, specifically on LCCAP, the existence of technical working groups (TWGs) for development plans still makes CCA, to some extent, institutionalized. However, there is a discrepancy between CCA and DRR coordination mechanisms, because DRR has a more formalized structure, through the City Disaster Risk Reduction and Management Council (CDRRMC). This structure is experienced by most LGUs in the Philippines since the creation of a local DRRMC is mandated by law.

Finally, CCA and DRR integration processes are heavily influenced by political leadership and their priorities. In Kidapawan City, the alignment of LDRRMP with the mayor's term in reflects short-term ownership and feasibility but restricts the ability to maintain continuity for long-term resilience planning across multiple political cycles. Nonetheless, since the current mayor of the city was re-elected for another term (three years), then there is some perceived political continuity.

The lessons presented in this study may not accurately represent the experiences of all LGUs throughout the country. Kidapawan City benefits from political continuity, a more structured planning environment, and overall, a more favorable condition for CCA and DRR planning and implementation, given that it is a component city (still under the jurisdiction of a provincial government in contrast with independent cities), hence it has more resources compared with

other municipalities. Specifically, smaller LGUs may face significant financial, technical, and institutional barriers and varying support from national and regional agencies and other external stakeholders. Thus, the experience of Kidapawan City needs to be understood by considering its contextual differences (e.g., technical, political, and resources) from other LGUs in the Philippines.

6. CONCLUSION AND RECOMMENDATIONS

This research assessed the rationale for and level of climate change adaptation (CCA) and disaster risk reduction (DRR) integration, the challenges at the local level. It further analyzed how CCA and DRR integration in local development planning can be strengthened to enhance resilience of local communities amidst the exacerbating impacts of climate-related hazards. It specifically focused on the experiences of Kidapawan City, Cotabato, Philippines. The study's objectives were to: (1) determine the rationale for and level of CCA and DRR within the local development planning processes of the city; (2) identify the challenges and gaps hindering CCA and DRR integration; and (3) provide specific strategies that would address these challenges and gaps.

Four relevant plans of Kidapawan City were selected for detailed review and analysis, alongside semi-structured interviews with key research participants. These plans include the Comprehensive Land Use Plan (CLUP), Comprehensive Development Plan (CDP), Local Climate Change Action Plan (LCCAP), and Local Disaster Risk Reduction and Management Plan (LDRRMP). These were examined vis-à-vis six enabling conditions or criteria identified through a review of relevant literature on CCA and DRR governance: (1) Institutional and Technical Capacity; (2) Plans and Policy Alignment; (3) Risk Assessment; (4) Coordination Mechanisms; (5) Financing; and (6) Monitoring and Evaluation (M&E) Framework.

These plans show inconsistent integration because of asynchronous planning cycles, inadequate institutional coordination, fragmented funding sources, and M&E framework that focuses mainly on outputs instead of outcomes or impacts. In addition, the permanent structure or focal unit dedicated to climate change adaptation remains lacking while disaster risk management has an established institutional framework (through the City Disaster Risk Reduction and Management Council).

The implementation of climate adaptation and disaster risk initiatives faces long-term challenges because of political changes and planning cycles that operate on specific terms. Nonetheless, despite current obstacles, Kidapawan City demonstrates signs of advancing its integration efforts through shared technical tools, such as CDRA, cross-sectoral cooperation through the creation of technical working groups, and investment in localized equipment (i.e., Automatic Weather Stations).

The research further demonstrates that successful CCA and DRR integration needs to move past policy alignment because it needs to become an integral part of institutional operations, budget procedures, and long-term planning approaches. Local governments, including Kidapawan City, must develop internal systems and capacities and obtain sustained support from national government agencies by establishing clear mandates, updated planning calendars, and technical assistance programs.

6.1 Recommendations

Based on the study's results and discussion, the following recommendations are provided to strengthen CCA and DRR integration into the local development planning in the Philippines, specifically within the City of Kidapawan and similar local government units (LGUs) that may have similar experiences:

6.1.1 Institutional arrangements

Since there is currently no dedicated office or unit for climate change adaptation across LGUs in the Philippines, unlike for disaster risk reduction and management, a more formal arrangement or structure can be institutionalized by LGUs, through an executive order. In the case of Kidapawan City, it already has Technical Working Groups (TWG) for development planning (i.e., TWG for Local Climate Change Action Plan), and hence, the functions of these TWGs may be expanded. By doing so, it will allow more coherence not just at the planning

level but likewise identifying climate change adaptation (and mitigation) projects, programs, and activities, cross-checking the alignment of these initiatives with DRR, and validating the implementation of initiatives.

6.1.2 Capacity Building and Technical Support

In relation to the first recommendation, having dedicated focal units for CCA and DRR are beneficial because capacity building and technical support can be tailored to the needs and functions of these focal units. For instance, in DRR, staff from the local government's Disaster Risk Reduction and Management Office can receive capacity building activities from national government agencies, such as the Office of Civil Defense. On the other hand, for CCA, a TWG can receive specific technical support from agencies, including the Department of Human Settlements and Urban Development, Department of Environment and Natural Resources, and Climate Change Commission, among others. Lastly, for CCA and DRR integration, joint capacity-building activities can be conducted for the CCA TWG and DRRM office.

6.1.3 Financing

In terms of financing, the integration between CCA and DRR is reflected on climate-related activities, tagged as adaptation or mitigation, and funded under the Local Disaster Risk Reduction and Management Fund (LDRRMF). As discussed in the previous chapter, DRR has a dedicated funding mechanism while CCA is funded from a mix of local government sources (from LDRRMF, Local Development Fund, and General Fund).

However, integrated CCA and DRR projects and activities funded under the LDRRMF are mostly short-term projects, and thus overlook longer term projects (i.e., ecosystem-based or nature-based solutions). In this regard, the TWG created for climate change can take a more active role in identifying and mobilizing external funding sources (e.g. the Green Climate Fund, Global Environment Facility, and the People's Survival Fund) to support systematic, integrated

programs that are aligned with both CCA and DRR priorities. These efforts would also ensure a more direct involvement of concerned stakeholders throughout the project lifecycle.

6.1.4 Monitoring and Evaluation

The current monitoring system needs to transform its focus from output-based indicators to outcome- and impact-based indicators especially for resilience-building and climate adaptation programs. The M&E systems of CLUP, CDP, LCCAP and LDRRMP should be strengthened by aligning their indicators to support this shift. This would enable more consistent and meaningful tracking of climate and disaster risk outcomes across plans, thereby improving the effectiveness and coherence of implementation. Lastly, the results of the M&E should also be systematically integrated into forward-looking planning process in order to inform the development or refinement of CCA and DRR action plans.

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APPENDICES

Appendix A – Sample Interview Guide Questions

Key informant 1

	Interview Questions	Dimension
1	Can you walk me through your process for revising or updating the CLUP and CDP—starting from risk data collection to final council approval?	Institutional Capacity
2	When was the last CDRA conducted by the LGU? Did you use the CDRA as basis in crafting broader city plans?	Risk Assessment
3	How are CCA and DRR requirements reflected in the current CLUP and CDP? Are these aligned with the national policies such as the NDRRMP, NCCAP? Are you familiar with the NAP?	Plans and Policies
4	How do you ensure that sectoral plans (agri, infra, social) align with climate-resilience goals?	Plans and Policies
5	At what stage do you coordinate with the Budget Office to match plan priorities with funding (AIP/LCCET)?	Financing
6	Has the city leveraged national funds (e.g., PSF) to support CCA or DRR efforts of the city?	Financing
7	How does your office collaborate with the DRRM Office, CENRO, and other units?	Vertical & Horizontal Coord.
8	How do you engage the barangays in terms of climate action and disaster risk reduction?	Vertical & Horizontal Coord.
9	How do you engage with the provincial government and the national government?	Vertical & Horizontal Coord
10	Do you employ indicators or GIS dashboards to track whether climate-resilient zoning and projects are implemented?	Monitoring and Evaluation (M&E)
11	Do you have a system or mechanism in place in monitoring and evaluating climate and disaster-related projects?	M&E
12	What are the current challenges or barriers that the City still faces in relation to integrating CCA and DRR in the development planning processes?	Institutional & Technical Capacity
13	In your view, what policy or budget reforms would best enable the CPDO to mainstream CCA-DRR further?	Institutional Capacity + Policies

Appendix B – Letter to Kidapawan City

RECEIVED
DATE: 4/22/25
R. Paña 10:32am

HON. ATTY. JOSE PAOLO M. EVANGELISTA
City Mayor
City of Kidapawan, Cotabato

Subject: **Request for Permission to Conduct Research in the City of Kidapawan, Cotabato**

Dear **Mayor Evangelista**,

Greetings!

I am Gelen Emil Turano, currently pursuing Master of Science in Environmental Sciences and Policy at Central European University in Vienna, Austria. I am writing to respectfully request your permission and support to conduct research in the City of Kidapawan as part of my thesis entitled:

"Strengthening Climate Change Adaptation and Disaster Risk Reduction Integration in Local Development Planning in the Philippines"

This study aims to analyze the current extent of integration between climate change adaptation and disaster risk reduction in local development plans, determine good practices, and identify governance and institutional challenges encountered and actions being taken to address these challenges towards enhancing resilience and adaptive capacities of local communities.

If permitted, data collection will involve requesting copies of the city's planning documents (i.e., Comprehensive Development Plan, Annual Investment Plan, Comprehensive Land Use Plan, and if applicable, Local Climate Change Action Plan and Local Disaster Risk Reduction and Management Plan) and related policies. It will also encompass conducting online interviews with selected local government officials and stakeholders involved in planning and disaster risk and climate governance.

Due to geographical constraints, all data collection activities will be conducted virtually. I am seeking to conduct the data gathering any time **between the end of April to May 2025**, depending on your and/or your representatives' availability.

Please be assured that all information obtained will be treated with confidentiality and utilized solely for academic purposes. Your cooperation would not only greatly contribute to the successful completion of this research but could also generate insights beneficial to the city's disaster preparedness and climate adaptation planning.

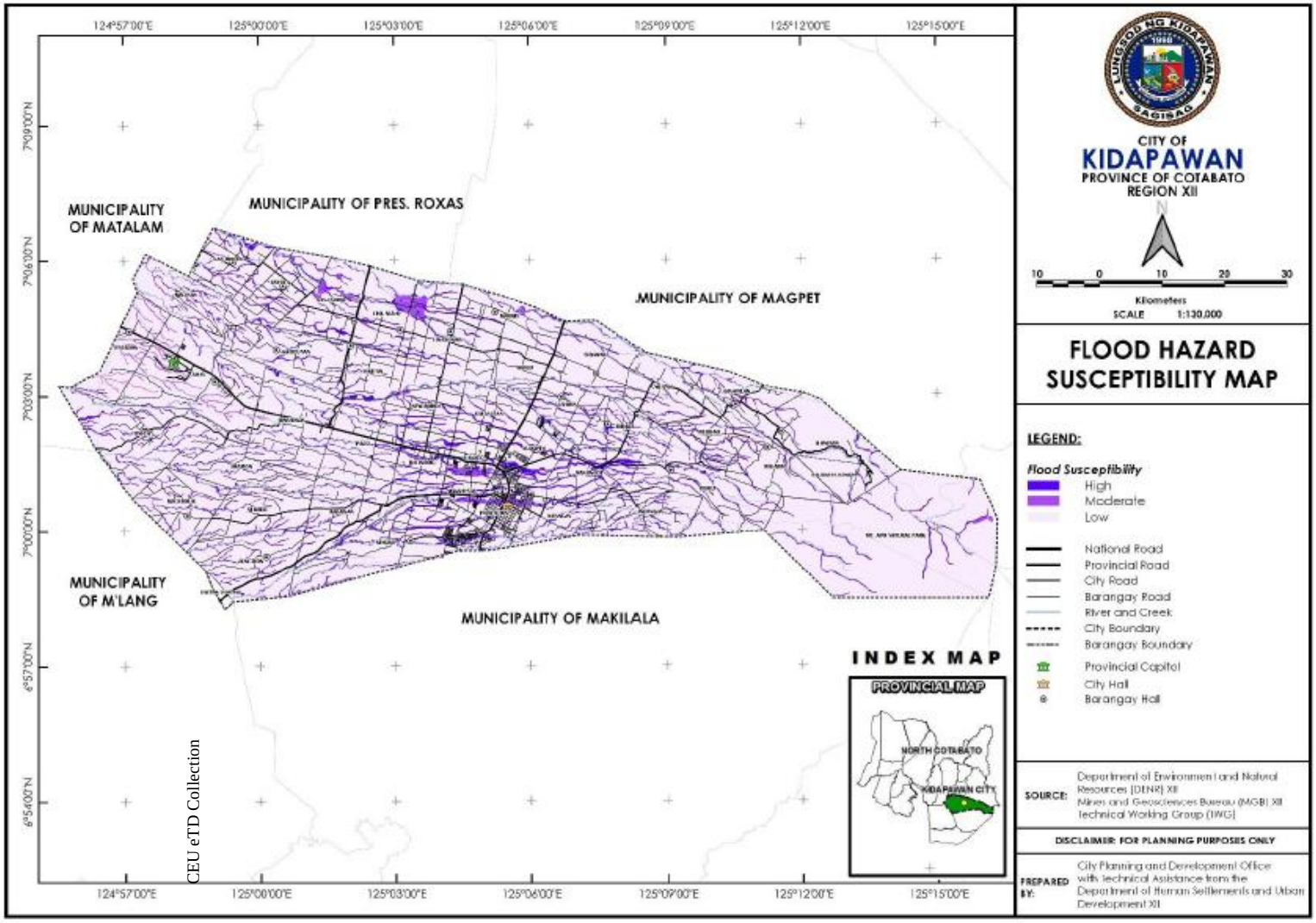
I look forward to your favorable response and appreciate your time and consideration. Should you have any questions or require additional information, please feel free to contact me at gelen.turano@gmail.com or through my Viber number +639627568909.

Thank you very much!

Respectfully,

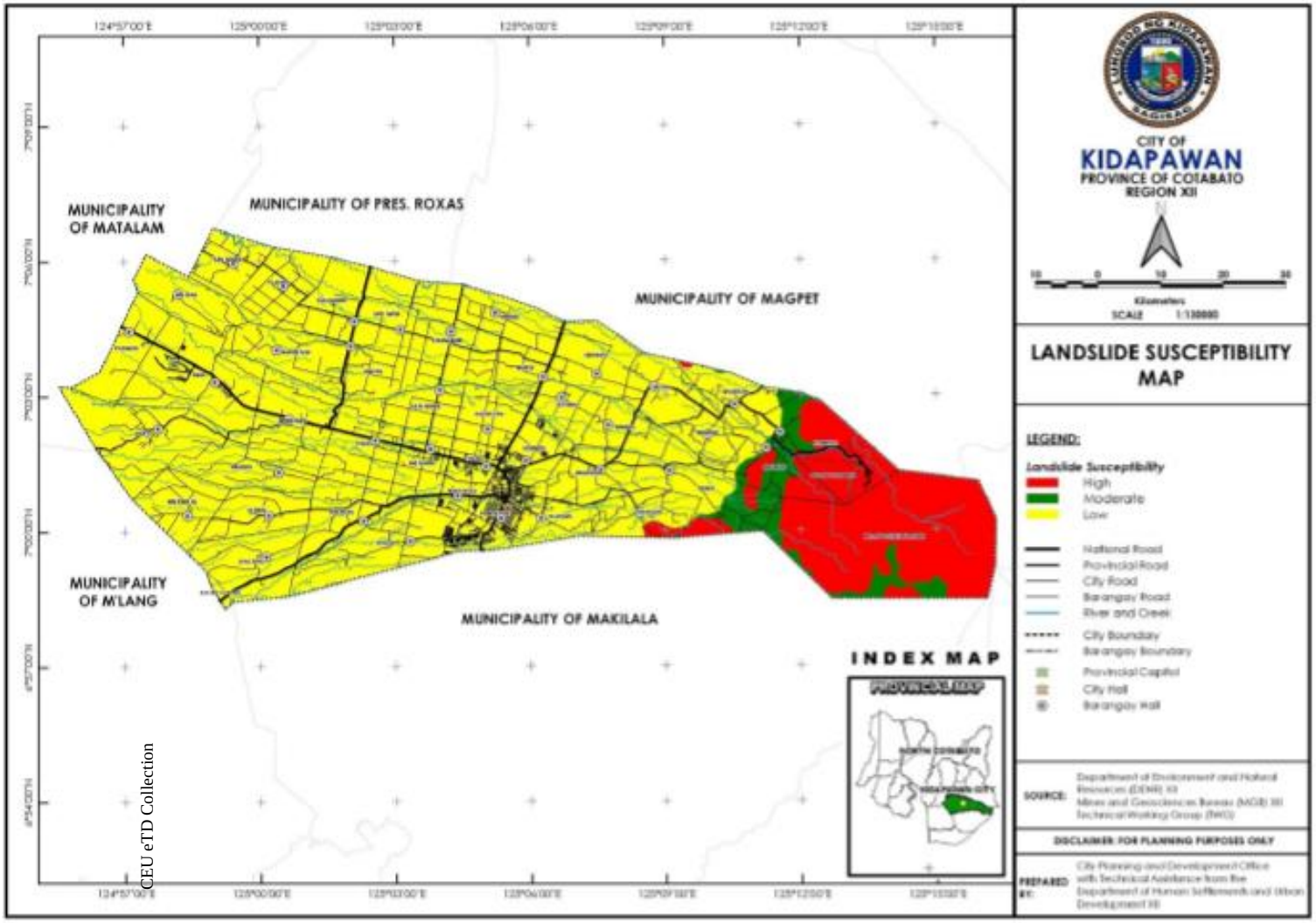
GELEN EMIL TURANO
Master's Student, Environmental Sciences and Policy

Appendix C – Kidapawan City's Flood Hazard Susceptibility Map



Source: City Government of Kidapawan 2021, 95

Appendix D – Kidapawan City's Landslide Susceptibility Map



Source: City Government of Kidapawan 2021, 97

Appendix E – Hazard Susceptibility Inventory Matrix of Kidapawan City

Barangay	Flood	Rain-Induced Landslide	Drought	Earthquake-Induced landslide	Ground Rupture
Poblacion	/	/			
Lanao	/		/		
Sudapin	/		/		
Amas	/	/	/		
Amazion	/	/	/		
Balabag	/	/		/	/
Balindog	/		/		
Binoligan	/	/	/		
Birada	/	/			
Gayola	/	/	/		
Ginatilan	/	/			
Ilomavis	/	/		/	/
Indangan	/	/			
Junction	/	/	/		
Kalaisan	/	/	/		
Kalasuyan	/	/	/		
Katipunan	/	/	/		
Linangcob	/	/	/		
Luvimin	/	/	/		
Macebolig	/	/	/		
Magsaysay	/		/		
Malinan	/	/	/		
Manongol	/	/			
Marbel	/	/	/		
Mateo	/	/	/		
Meohao	/	/			
Mua-an	/	/			
New Bohol	/	/	/		
Nuangan	/	/			
Onica	/	/	/		
Paco	/	/	/		
Patadon	/	/	/		
Perez	/	/		/	/
San Isidro	/	/	/		
San Roque	/	/	/		
Sto. Niño	/	/	/		
Sibawan	/	/	/		
Sikitan	/	/	/		
Singao	/	/	/		
Sumbac	/	/	/		
TOTAL	40	36	29	3	3

Source: City Government of Kidapawan 2021c, 26

Appendix F – Kidapawan City Monitoring and Evaluation Template for Comprehensive Development

MONITORING AND EVALUATION

City of Kidapawan
Office: CPDO
Sector: Social

MFO	GOAL/s	OBJECTIVE/s	SUCCESS INDICATORS (CDP)		BASELINE	TARGET	ACCOM PLISHMENT	MEANS OF VERIFICATION	PROGRAMS/PROJECTS/ ACTIVITIES	TARGET OUTPUT	ACCOM PLISHMENT	BENEFICIARIES	SCHEDULE OF IMPLEMENTATION		PROJECT COST		ACTUAL DISBURSEMENT	% OF ACCOMPLISHMENT	REMARKS
													Plan	Actual	Plan	Budget			
			CDP	MANDATE					Intensified Housing Program:										

NOTES:

Column 1: *Refer to LBP Form No. 4 of CY 2024 Annual Performance Budget*
Column 2-8: *Refer to Comprehensive Development Plan for CY 2020-2025*
Column 9-16: *Refer PPAs reflected in the approved CDP-LDIP for CY 2023-2025 and AIP for 2024 or PPAs implemented within the year*
Column 17: *amount utilized for the PPA*
Colum 18: *actual status of the PPA*
Column 18: *Please provide any comments or explanations, especially if the PPA has not been implemented*

Prepared by: _____

Approved by: _____
Department Head