



**THE EFFECT OF CLIMATE CHANGE ON DEVELOPMENT PROJECTS: THE CASE  
OF MEDA (EMERTA)**

**MARIA TADESSE TAMRAT**

**A RESEARCH PROJECT REPORT SUBMITTED TO ADDIS ABABA UNIVERSITY,  
COLLEGE OF BUSINESS AND ECONOMICS SCHOOL OF COMMERCE IN  
PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF  
MASTER OF ARTS IN PROJECT MANAGEMENT**

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**ADDIS ABABA, ETHIOPIA**

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**ADDIS ABABA, ETHIOPIA**

# **ADDIS ABABA UNIVERSITY**

## **SCHOOL OF COMMERCE**

### **DECLARATION**

I, the undersigned, declare that this project work entitled “**The Effect of Climate Change on Development Projects: The Case of MEDA (EMERTA)**” is my original work and has not been presented for degree requirement in any other university, and all the sources used to support this particular study have been appropriately acknowledged.

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**ADDIS ABABA UNIVERSITY**  
**SCHOOL OF GRADUATE STUDIES**  
**MASTER OF ARTS IN PROJECT MANAGEMENT**

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## **ACKNOWLEDGMENTS**

To God be all the Glory!

AMDG!

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## ACRONYMS

BDS	Business Development Service Providers
CC	Climate Change
CRGE	Climate Resilient Green Economy
ECC	Environment and Climate Change
EMERTA	Ethiopians Motivating Enterprises to Rice in Trade and Agribusiness
GCF	Green Climate Fund
GSCM	Green Supply Chain Management
IPCC	Intercontinental Panel for Climate Change
MEDA	Mennonite Economic Development Associates
MSMEs	Medium Small and Micro Enterprises
MIM	Monitoring and Impact Measurement
NAP	National Adaptation Plan
UNFCCC	United Nations Framework of Conventions for Climate Change
WMO	World Meteorological Organization

## **ABSTRACT**

*Projects are a key part of the solution for huge problems like climate change and project management plays a significant role. While projects are also affected by the existing change in the climate. This study aims to assess the effect of climate change on projects and existing coping strategies in the project management for Ethiopians Motivating Enterprises to Rising in Trade and Agribusiness (EMERTA) project at Mennonite Economic Development Associates (MEDA). The study is a quantitative and descriptive research data collected from 20 projects' senior and implementing staff and 5 partner organizations. The study found out that climate change is occurring in the project area and the major manifestations are drought, flood, pests, and disease. Its effect on project intervention is through the accessibility problems, and weather and rainfall variability leading to flash floods and drought. EMERTA project is not affected in terms of scope, schedule, budget, or goal because the project is proactive and has the support of the management towards environment sustainability, and climate change adaptation. The study's recommendations for the identified gaps are all projects should consider climate change as a potential risk for implementation and develop a coping mechanism at the planning stage. The do no harm/do good approach to environmental protection is a good practice but in addition to it, Green Supply Chain Management (GSCM) helps in reducing the carbon footprint of organizations.*

*Keywords: Climate change, project management, sustainable development*

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background of the Study

The current ecosystem, society, economy, and governance are at risk of climate change. Though in a different way and level climate change is affecting the world. The climate crisis is a grand challenge with an increasing urgency that needs to be addressed if societies around the world are to survive and prosper. The United Nations Framework Convention on Climate Change (UNFCCC) defines climate change in Article 1 as “a change in climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable periods of time” (UNFCCC, 1992). Intergovernmental Panel for Climate Change (IPCC) has reported that climate change is real and human activities, largely the release of polluting gases from burning fossil fuel (coal, oil, gas), is the main cause. Impacts of a 1.1-degree centigrade increase in temperature are here today in the increased frequency and magnitude of extreme weather events from heatwaves, droughts, flooding, winter storms, hurricanes, and wildfires. (IPCC, 2000)

Climate change poses a serious threat to future development, especially in areas where poverty is widespread and important assets such as infrastructure are underdeveloped even for current requirements. Climate change has a high cost in terms of maintenance, repairs, and lost connectivity; however, many of these costs can be reduced or avoided by taking proactive adaption measures. (Schweikert et al, 2014). It is a crucial consideration for protecting current and future investments and the economic, social, and other functions they serve. (Chinowsky, 2011). Much of the recent climate change literature focuses on the implications on human life, economic activity, physical assets, and the environment, as well as the necessity to address these impacts proactively in order to minimize present and future development damages. (Channing et al 2011) Climate change and its potential consequences are referred to as a "disaster" in several of these studies, and they must be factored into current planning strategies. However, there is sometimes a disconnect between impact assessments and concrete, actionable outcomes that

allow decision-makers to invest in crucial areas to prevent and adapt to climate change consequences. (Chinowsky, 2014)

In recent years, there has been a growing realization that adaptation to climate change and climate variability are actually connected. Given direct and certain proof of unfavorable effects of such occurrences, adapting to current climatic oscillations is already sensible in an economic growth context. As many human-induced changes in climate manifest themselves through increased or altered climate variability, such adaptations are anticipated to increase society's resilience to cope with many of the negative effects of climate change. (Agrawala and Cane, 2002). Adaptive capacity can be influenced by a variety of elements such as wealth, technology, education, knowledge, skills, infrastructure, access to resources, various psychological factors, and management capacities. When adaptation is linked to good governance structures, it has been proved to be successful and long-lasting. (Block et al, 2001 and Brooks et al, 2005)

The technology and behavioral adjustments required to accomplish climate targets are delivered through projects. Project management has always been regarded as an important tool for 'getting things done,' and it is likely to play a crucial role in the fight against climate change. By efficiently guiding intricate efforts, project managers play a critical role in the successful transition to a resilient, low-carbon world. One of the most important challenges for the project management profession's future is where it stands in regard to massive, complicated, and overwhelming environmental and societal problems that no business, government, or individual can handle alone, such as climate change. (Davies, 2016) As projects are key part of the solution they are also affected by the existing change in climate. Thus, its necessary to study the impact of climate change on project management as well.

Project managers have the opportunity to reduce both the causes and consequences of climate change. The case of middle east is project managers are a good example. A cause is the use of unsustainable materials such as concrete, and the consequence is unnecessarily high CO2 emissions. However, in the Middle East, project managers have the challenge of finding materials that are sustainable but will also stand up to the heat. In this way, they can seek to diversify the Saudi economy and reduce its dependency on hydrocarbons. Scientists, urban

planners, environmental experts, and projects managers are coming together to lead the way on climate change and promote renewable energy.

## **1.2 Background of the Organization**

MEDA (Mennonite Economic Development Associates) is an international economic development organization that creates business solutions to poverty. For nearly 70 years, MEDA has been creating business solutions to poverty that are sustainable, scalable, measurable, and replicable. ( [www.meda.org](http://www.meda.org) )

MEDA has worked in over 70 countries and brings a unique market systems approach to project design that integrates technical assistance and access to capital. As an early leader in innovative finance, MEDA leverages public and private funding to advance social enterprises around the world that are positively impacting social, environmental and governance challenges in their communities. ( [www.meda.org](http://www.meda.org) )

MEDA's EMERTA project is working to increase decent employment opportunities and the incomes of women and men in the Amhara Region of Ethiopia. The project improves the business performances of agricultural producers and of micro, small, and medium enterprises (MSMEs). EMERTA aims to foster environmentally sustainable value chain growth. (EMERTA project implementation plan)

MEDA believes that economic growth should happen in conjunction with, not at the expense of, environmental sustainability. As EMERTA works with entrepreneurs to establish flourishing businesses and improve livelihoods, a climate change lens is essential to ensure those businesses are resilient in the face of Ethiopia's changing conditions, and that skill sets gained by entrepreneurs emphasize adaptability, critical thinking, and understanding of market opportunities. Such skills enable entrepreneurs to develop new businesses as industry trends shift in response to climate and land use changes. (EMERTA project implementation plan)

The project's environmental sustainability strategy is designed to achieve good environmental management where poor environmental practices are currently being used, in order to "do no harm" as the sectors grow and to protect natural resources for future use. "Green growth"

(products, services, business models, or other environmental innovations) are pursued as opportunities arise. (EMERTA project implementation plan)

### **1.3 Statement of the Problem**

Major environmental concerns in Ethiopia include water access and sanitation, deforestation leading to soil erosion and aridity, and soil degradation due to misuse of chemical inputs. These conditions also lead to health concerns, as degraded watersheds reduce nature's capacity to filter water and create safe water for agriculture and home use, while agricultural chemicals seep into groundwater and make food unsafe. Climate change exacerbates these problems and irregular water availability patterns have intensified over the past decade. Longer droughts ravage much of the country in dry zones, while more severe flooding affects the agricultural plains in the north that are ill-equipped to handle the increase in rain. (NAP, 2019) Projects are also subjected to climate change effect as climate change touches every aspect of human life.

Studying the effect of climate change on development projects is important to know the level of effect it has on project intervention, monitoring, and evaluation. Studies show that developing countries will incur a higher relative cost of climate change impact. While proactive adaptation measures can significantly reduce impacts and costs when compared with the reactive no adapt scenario. (Chinowsky, 2013)

Thus, development projects along with the professional practitioners, have the opportunity to advance and adapt to play a significant part in whether or not the impact of climate change in the years to come will be disastrous or manageable. Future projects can be appropriately safeguarded by applying appropriate risk mitigation techniques. This study's purpose is to investigate the effect climate change has on development projects the case of MEDA's EMERTA.

### **1.4 Basic Research Questions**

- How is climate change affecting project implementation?
- What are the coping strategies projects developed for the change in climate?
- What are the recommendations for future projects in the era of climate change?

## **1.5 Objective of the Study**

### **1.5.1 General Objective**

The general objective of the study is to assess the effect of climate change on projects and existing coping strategies in the project management

### **1.5.2 Specific Objective**

- To identify climate change effect on projects implementation
- To identify current coping strategies in project management for the existing climate change
- To analyze possible recommendations for future projects

## **1.6 Significance of the Study**

The study is a good input for development related projects especially for the agriculture sector to initiate, plan, monitor and control projects in the era of climate change. The study identifies major climate change related project problems and strategies to cop up with it. The study also helps policy makers, academicians, and future researchers to incorporate climate change effects in project design and implementation while the project itself contributing to the adaptability and mitigation of climate change.

The findings of the study particularly help and benefit governmental and non-governmental organizations to understand the effect of climate change and management perspective to cop up the change. It is hoped that the study has of significance to organizations by contributing to a better understanding and knowledge of climate change relation to project management issues. Academics, policymakers, development managers and practitioners, as well as the general public interested, will benefit greatly from the information collected by this study in issues of climate change and development program management.

## 1.7 Scope of the Study

The study is conducted on MEDA's EMERTA Project. The study predominantly focused on assessing challenges of climate change on project implementation by the above-mentioned organization. The study is limited to challenges of climate change related to project management. The finding of the study is related to the environment and climate change aspect only and not to the overall challenges, progress success or failure of the project. The study is limited to descriptive design and data is collected using questionnaire so additional scientific data is not included in this study.

## 1.8 Limitation of the Study

The study focuses on a single project and a single organization working in Amhara Region. This will not give a clear picture on the real issue of climate change in different projects and in different locations of the country and beyond. The time and resource constraint for conducting this study emanates the researcher to focus only on quantitative study. Some respondents were unavailable, and others did not have enough time to fill and return the required questionnaire has hindered effective data collection and findings.

While doing this research it was found interesting to see the impacts of project management knowledge and practice on climate change as well. Morris, 2017, research show that project management clearly has a role in addressing the causes and consequences of climate change. He also believes that all project managers should be actively involved in reducing the incidence and impacts of climate change. Examining comprehensive costing (Environmental, Economic, and Societal) and its implications for decision-making at the corporate level. Procurement must define its actions in light of climate change, and ultimately, organizational learning must be improved so that performance may be improved through important positive feedback.

## 1.9 Definition of Terms

**Weather:** Describes the condition of the atmosphere, usually expressed in terms of air temperature, rainfall, or wind speed, over the timescale of days to weeks.

**Climate:** “The ‘average weather’, or...the mean and variability of [temperature, precipitation, and wind] over a period of time ranging from months to thousands or millions of years. The classical period of time is 30 years, as defined by the WMO”

**Climate change:** Climate change refers to long-term shifts in temperatures and weather patterns. These shifts may be natural, but since the 1800s, human activities have been the main driver of climate change, primarily due to the burning of fossil fuels (like coal, oil, and gas), which produces heat-trapping gases.

**Mitigation:** “Intervention to reduce the anthropogenic forcing of the climate system; it includes strategies to reduce greenhouse gas sources and emissions and enhance greenhouse gas sinks.”

Adaptation: “Adjustment...in response to actual or expected climatic...effects, which moderates harm”

**Resilience:** “The ability of a social or ecological system to absorb disturbances while retaining the same basic structure and ways of functioning...and the capacity to adapt to stress and change”

*Definitions from IPCC Fourth Assessment Report: Climate Change 2007*

## **1.10 Organization of the Study**

This study is organized into five chapters; chapter one is introduction, giving a background of the study while putting the topic of study in perspective. It gives the statement of the problem and the significance of the study. This chapter also outlines the objectives, limitations, scope, and definition of key terms.

Chapter two presents the literature review on concepts of climate change and its relation to project management. Chapter three outlines the overall methodology that is used in the study. This includes the research design and approach, data types and sources, target population, data collection methods, measurement, validity and reliability, data analysis and presentation and ethical considerations.

Chapter four outlines how data was analyzed, results presented and discussion of findings according to the data collected. Chapter five outlines the summary in line with the objectives of the study, conclusion, and recommendations of the study. References and appendices are found at the end of the paper.

# CHAPTER TWO

## LITERATURE REVIEW

### 2.1 Introduction

This chapter presents the literature review on general concepts of climate change, its effect in Ethiopia, international and national agreements, and strategies. The chapter will also review the relationship with overall projects and the effect of climate change on projects. Finally, the chapter reviews sustainable development in the era of climate change.

### 2.2 Concepts of Climate Change

United Nations states, Climate change refers to long-term shifts in temperatures and weather patterns. These shifts may be natural, such as through variations in the solar cycle. But since the 1800s, human activities have been the main driver of climate change, primarily due to burning fossil fuels like coal, oil, and gas. Burning fossil fuels generates greenhouse gas emissions that act like a blanket wrapped around the Earth, trapping the sun's heat, and raising temperatures. (UN, 1992)

Greenhouse gas emissions that are causing climate change include carbon dioxide and methane. These come from using gasoline for driving a car or coal for heating a building and the like. Clearing land and forests can also release carbon dioxide. Landfills for garbage are a major source of methane emissions. Energy, industry, transport, buildings, agriculture, and land use are among the main emitters. ([www.un.org](http://www.un.org))

Climate stressors such as rising temperatures, sea level rise, water scarcity, and extreme weather events such as droughts, storms, and floods are posing a growing threat to people's health, livelihoods, and well-being. They are increasingly disrupting key services, reducing agricultural production, and destroying infrastructure and residences. (World Bank, 2021)

Climate change's effects on several aspects of civilization are intertwined. Drought can have a negative impact on food production and human health. Flooding has the potential to transmit illness and cause harm to ecosystems and infrastructure. Human health problems can lead to an increase in

mortality, a reduction in food availability, and a reduction in worker productivity. (National Oceanic and Atmospheric Administration, 2022).

For many, the availability of fundamental requirements such as fresh water, food security, and energy will be impacted by climate change, while attempts to address climate change, both through adaptation and mitigation, will similarly inform and define the global development agenda. Climate change and sustainable development are inextricably linked. Poor and developing countries, particularly least developed countries, will be among those most adversely affected and least able to cope with the anticipated shocks to their social, economic, and natural systems. (Verburg, 2015)

To minimize the effect on people's wellbeing, these impacts need to be considered and integrated in all investments and projects, regardless of their sector, nature, and financing. Ideally, no building, factory, transport infrastructure, or any other asset, should be designed and built without considering disaster and climate risks. (World Bank, 2021)

## **2.3 Climate Change Effect in Ethiopia**

Climate change impacts everyone, but not in the same way. Neither do they all have the same ability to respond to the obstacles they face. The most vulnerable countries, particularly the Least Developed Countries and Small Island Developing States, have once again found themselves in the worse condition. Climate change is already having an impact on economic growth, health indices, water availability, agricultural production, and vulnerable ecosystems in these countries. (UN, 2007)

The most serious challenge to African agricultural development is climate change (IPCC, 2014). Ethiopia, in particular, is extremely sensitive to climate change and its consequences since its economy is strongly reliant on rain-fed agriculture, which accounts for over 42% of GDP, 90% of exports, and 85% of total employment (FAO, 2016).

Ethiopia - as a country and its people - has been the subject of costly natural disasters in its long history. Droughts, floods, human and livestock diseases, crop diseases and pests, hailstorms, and wildfires (specific to some regions) are the major climate-related hazards in the country, affecting the livelihoods of significant numbers of people. (NAP, 2019)

Moreover, experience has shown that the country is exposed to unpredictable rains including the complete failure of rains, seasonal shifts in rainfall patterns and shortage of rainfall (drought) and this uncertainty is expected to increase with climate change. Overall, the anticipated changes in temperature and rainfall as a result of climate change are expected to exert direct and indirect impacts on all elements of human wellbeing. This history and limited capacity to adapt to climate risk, uncertainty and change over time has made the country and its people vulnerable to the current and anticipated impacts of climate change. (NAP, 2019)

## **2.4 International and National Strategies and Agreements on Climate Change**

### **2.4.1 Paris Climate Agreement**

The international political response to climate change began at the Rio Earth Summit in 1992, where the ‘Rio Convention’ included the adoption of the UN Framework on Climate Change (UNFCCC). This convention set out a framework for action aimed at stabilizing atmospheric concentrations of greenhouse gases to avoid “dangerous anthropogenic interference with the climate system.” The UNFCCC which entered into force on 21 March 1994, now has a universal membership of 197 parties. In December 2015, the 21st Session of the Conference of the Parties (COP21/CMP1) convened in Paris, France, and adopted the Paris Agreement, a universal agreement which aims to keep a global temperature rise for this century well below 2 degrees Celsius, with the goal of driving efforts to limit the temperature rise to 1.5 degrees Celsius above pre-industrial levels. It also establishes the global goal on adaptation including strengthening resilience and reducing vulnerability to climate change. The aim of addressing climate change issues in major projects contributes to the implementation of these global goals on the local level. (UNFCCC, 2015)

Signed in 2015, the Sendai Framework commits every country at all levels to reduce disaster risks and build resilience. It includes a target to substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including through developing their resilience by 2030. Ensuring climate resilient investments will contribute to meeting the target. (UNFCCC, 2015)

## 2.4.2 2030 Agenda for Sustainable Development

In the 2030 Agenda for Sustainable Development, Member States express their commitment to protect the planet from degradation and take urgent action on climate change. The Agenda also identifies, in its paragraph 14, climate change as “one of the greatest challenges of our time” and worries about “its adverse impacts undermine the ability of all countries to achieve sustainable development. Increases in global temperature, sea level rise, ocean acidification and other climate change impacts are seriously affecting coastal areas and low-lying coastal countries, including many least developed countries and Small Island Developing States. The survival of many societies, and of the biological support systems of the planet, is at risk”. ([www.un.org](http://www.un.org) )

Sustainable Development Goal 13 aims to “take urgent action to combat climate change and its impact”, while acknowledging that the United Nations Framework Convention on Climate Change is the primary international, intergovernmental forum for negotiating the global response to climate change. More specifically, the associated targets of SDG 13 focus on the integration of climate change measures into national policies, the improvement of education, awareness-raising and institutional capacity on climate change mitigation, adaptation, impact reduction and early warnings. SDG 13’s alphabetical targets also call for the implementation of the commitment undertaken at the UNFCCC and for the promotion of mechanisms able to increase capacity for effective climate –change related planning and management in least developed countries and Small Island Developing States. ([www.un.org](http://www.un.org) )

The outcome document of the Rio+20 Conference, the Future We Want, underscores climate change as “an inevitable and urgent global challenge with long-term implications for the sustainable development of all countries”. Through the document, Member States express their concern about the continuous rising of emissions of greenhouse gases and the vulnerability of all countries, particularly developing countries, to the adverse impacts of climate change. Given these concerns, Member States have called for the widest cooperation and participation of all countries in an effective and appropriate international response to climate change. Addressing climate change issues in major projects can also contribute towards the goals of the 2030 Agenda for Sustainable Development, adopted by the General Assembly of the United Nations on 25 September 2015, and e.g. the Sustainable Development Goals 9 “Build resilient infrastructure” and 13 “Take urgent action to combat climate change and its impacts”. (UNFCCC, 2015)

## **2.5 Ethiopia's CRGE Strategy and NAP on Adaptation to Climate Change**

Ethiopia aims to achieve middle-income status by 2025 while developing a green economy. Following the conventional development path would, among other adverse effects, result in a sharp increase in GHG emissions and unsustainable use of natural resources. To avoid such negative effects, the government has developed a strategy to build a green economy. (CRGE, 2011)

The national Adaptation Plan Ethiopia on the other hand states that Ethiopia aims to proactively and iteratively the integration of climate change adaptation in development policies and strategies, including macroeconomic and sectoral policies and strategies at the national level, as well as Regional and Woreda plans and strategies to achieve middle-income status by 2025 while developing a green economy. (NAP 2019)

NAP-ETH focuses on the sectors that have been identified as most vulnerable, namely: agriculture, forestry, health, transport, power, industry, water and urban. Within these sectors, 18 adaptation options have been identified for implementation at all levels and across different development sectors, recognizing the considerable diversity in context and vulnerability across Ethiopia's regions and social groups. (NAP 2019)

## **2.6 Climate Integration in Development Project**

### **2.6.1 Global Climate Fund (GCF)**

The Green Climate Fund (GCF) recognizes that development projects often have both “developmental and climate objectives,” but as a specialized climate fund, GCF has set the principle that “those with purely developmental objectives should be financed from sources other than GCF.” However, the development and climate change benefits of projects are often mixed and thus not easily isolated from each other. For example, irrigation could both increase current crop yields and mitigate yield losses in the future under climate change by ensuring and regulating water input to farmlands, and these two effects cannot be qualitatively separated (Lobell, 2014).

## **2.6.2 Japan International Cooperation Agency (JICA)**

As a development partner, the JICA is exerting efforts to address climate change in developing countries with the momentum of the Paris Agreement and other international frameworks, including the Sustainable Development Goals (SDGs) and the Sendai Framework for Disaster Risk Reduction 2015-2030. JICA integrates climate action and development by building global partnership with four priority issues in climate change cooperation; Promote low-carbon, climate-resilient urban development, and infrastructure investment; support climate policy and institutional development; Enhance climate risk assessment and countermeasures; and Enhance conservation and management of forests and other ecosystems. [www.jica.go.jp](http://www.jica.go.jp)

Given this difficulty, quantitative evaluation of the effectiveness of climate change adaptation is not included in the practice of development finance. The Japan International Cooperation Agency uses a checklist approach where projects are regarded as adaptation projects if certain qualitative criteria are met. Adaptation can be either the primary or secondary objective of a project, and quantification of adaptation effects is not required to establish eligibility to be called an adaptation project. (UNFCCC, 2015)

## **2.6.3 World Bank**

To maximize benefits of World Bank projects, it is critical to ensure that investments are robust, throughout their lifetimes, to a changing climate. The World Bank Group's newly launched Climate Change Action Plan 2021-2025 starts from the premise that climate and development need to be integrated. To help align climate and development, the newly launched Resilience Ratings System provides a simple approach to measure and disclose the extent to which adaptation and resilience considerations have been integrated into project design. The Action Plan identifies and prioritize action on the most impactful mitigation and adaptation opportunities, and we will drive our climate finance accordingly. This means helping the largest emitters flatten the emissions curve and helping countries achieve successful adaptation and resilience to climate change. (World Bank, 2021)

The World Bank is already the largest multilateral provider of climate finance for developing countries. The Plan includes a commitment to increase delivery to an average of 35% of total World Bank Group financing for climate over the duration of the Plan. At least 50% percent of

International Development Association and International Bank for Reconstruction and Developing climate finance support adaptation. (World Bank, 2021)

Identifying and prioritizing opportunities for high-impact climate action to inform future World Bank Group climate engagements and investments. Prioritizing action in key systems energy; agriculture, food, water, and land; cities; transport; and manufacturing that must be transformed to address climate change, achieve a resilient and low-carbon future, and support the protection of natural capital and biodiversity. (World Bank, 2021)

#### **2.6.4 European Union**

The climate change and major projects review of European Union states that the consideration of climate change requirements, both adaptation and mitigation should be initiated as early as possible in the development cycle of a project. By doing so, the corresponding climate resilience measures and mitigation options can be optimally integrated in the project cycle. [ec.europa.eu](https://ec.europa.eu)

The European Union has developed a guideline for project managers to help developers of physical assets and infrastructure incorporate resilience to current climate variability and future climate change within their projects. They are aimed at helping project developers understand the steps they can take to make investment projects resilient to climate variability and change. (EU climate-adapt guideline for project managers)

The Guidelines provide information on the steps that can be undertaken to integrate climate resilience within a familiar project lifecycle appraisal practiced by project developers. They are intended to help manage the additional risks from climate change; to complement and integrate within the familiar project appraisal processes used in project development, but not to replace existing project development processes. [ec.europa.eu](https://ec.europa.eu)

By considering how a project is vulnerable to climate variability and change, assess current and future climate risks to the success of the project, identify and appraise relevant and cost-effective adaptation options to build climate resilience, and integrate adaptation measures (resilience measures) into the project lifecycle. Application of these Guidelines helps to minimize climate change related loss to public, private and combined public/private investments, leading to more robust investment projects and, ultimately, more resilient economies. [ec.europa.eu](https://ec.europa.eu)

Developers can improve the success of investment projects and ensure their long-term sustainability using Guidelines, project developers can also demonstrate to project funders/financiers that climate resilience has been considered. The Guidelines can be applied for two types of projects: 'Climate-influenced projects' – assets and infrastructure projects whose success may be affected if climate change is ignored, and 'Climate adaptation projects' – whose main aim is to reduce vulnerability to climate hazards, such as a flood management scheme. (EU climate-adapt guideline for project managers)

### **2.6.5 United States Agency for International Development (USAID)**

Addressing the climate crisis requires a holistic approach to development. Building off our previous 2012–2018 Climate Change and Development Strategy, which focused on specific climate change mitigation and adaptation measures, our new Strategy takes an unprecedented whole-of-Agency approach. At the center of the new Strategy are ambitious targets that USAID aims to achieve by 2030. Five foundational principles will be embedded into all actions taken under the Strategy: Locally Led Development, Equity and Inclusion, Private Sector Engagement, Nature-Based Solutions, Evidence, Technology, and Innovation. (USAID, 2021)

Responding to the climate crisis represents an economic, technological, ecological, and socio-political opportunity for countries to transition into societies with greater equality, well-being, and sustained prosperity for all. The two main Strategic Objectives are targeted direct action to prioritize and confront the most urgent demands of the climate crisis. Carefully target climate change mitigation and adaptation efforts to the highest priority communities and locations. Systems Change is fully addressing the climate crisis requires long-term, transformative changes that affect every aspect of society and will be neither easy nor quick. (USAID, 2015)

USAID takes a systems approach to the larger transformations such as transforming food systems to be more resilient, less wasteful, and less environmentally destructive, or transitioning economic systems to be less carbon-intensive in ways that are comprehensive, equitable, and locally led.

## 2.7 The Future of Development and Project Management

Science and technology have exacerbated global problems in the past, for example, by contributing to unsustainable growth and climate change, or by achieving efficiency breakthroughs that eventually lead to increased collective usage of limited resources. Furthermore, the existing science system has failed to transform findings on subjects such as climate change into practical policy recommendations on several occasions. (Naustdalslid, 2011)

More sustainability science is urgently required in the world today. That is a new, more active academic field of study that illuminates complicated, often disputed, and value-laden nature-society interactions while producing useful scientific knowledge for long-term development. Dealing with dangers, uncertainties, ethical difficulties, and the proper use of the precautionary principle are all part of this. It entails collaborating with affected groups to identify challenges and objectives, as well as crucial trade-offs. (Kates et al., 2001)

Sustainability science has attracted tens of thousands of researchers, practitioners, knowledge users, teachers and students from diverse institutions and disciplines from across the world, notably Latin America, Africa, and Asia. That diversity alone sets it apart from many other scientific fields. Typically, researchers use transdisciplinary approaches, bringing together scientific, lay, practical and indigenous knowledge, as well as fundamentally different world views. (Kates, 2011)

There was found to be less resistance in the coal-mining regions where scientists, policymakers, and coal miners had come together to jointly identify alternatives for regional development and individual livelihoods. Nevertheless, in the broader scientific landscape sustainability science remains a niche field. To realize its full potential sustainability, science should be scaled up significantly. (Verburg, et al, 2015)

Organizations working on net-zero carbon plans must show commitment and the ability to execute them effectively. The project profession's perspectives on climate change and its role in solving the primary concerns are revealed in research performed by the Association for Project Management on 'Future Trends: Tackling Climate Change.' According to the survey, the most major barrier for project managers in pushing their firm toward a decarbonization/net zero plan is competing priorities. Because the world is currently in a condition of climate emergency, this study is worrisome; it must be prioritized in all aspects of development, including project management. (Davies, 2016)

# **CHAPTER THREE**

## **RESEARCH METHODOLOGY**

### **3.1 Introduction**

This chapter outlines the overall methodology that were used in the study. These include description of the study area, the research design and approach, data types, sources of data, target population, data collection methods, measurement, validity and reliability, data analysis and presentation and ethical considerations.

### **3.2 Research Design and Approach**

Descriptive research design is used in this study because of the need for sufficient and precise data relevant to meet the specific objectives of the study by guarding against bias and ensure maximum reliability as Kothari (1999) recommends. As Babbie (2004) also point out, descriptive research design is more precise and accurate since it involves description of events in a carefully planned way. This design refers to a set of methods and procedures that describe variables. It involves gathering data that describe events and then organizes, tabulates, depicts, and describes the data.

Therefore, descriptive research design is used so as to assess the effect of climate change on project implement at EMERTA project. Descriptive research design provides information which could be used as a basis for important decisions that are to be made on the effect of climate change on project implement at EMERTA project.

Quantitative design approach is used, so that numerical data were analyzed using statistical procedures. Quantitative research approach provides the fundamental connection between empirical observation and mathematical expression of quantitative relationships. In quantitative research approach, the data analyzed with the help of statistics and the numbers yield an unbiased result that can be generalized to some larger population.

### **3.3 Data Types and Sources of Data**

Primary and secondary data sources are used for the study. Primary data is collected through questionnaire. Closed-ended and open-ended questions are administered to respondents. Reliable, adequate, and appropriate published secondary data sources are used including publications of governmental and non-governmental organizations, journals and articles prepared by research scholars.

### **3.4 Method of Data Collection**

The main data collection instruments used in this study is questionnaire. This is used for the purpose of collecting primary quantitative data. Data from questionnaire is collected by sending printed questionnaire to the senior management team and the implementing staff.

### **3.5 Target Population of the study**

The study focuses on a single project of MEDA-called EMERTA. The number of the total senior management is 5 which all of them are participated in the study. Three senior value chain specialist, six BDS specialists and 4 cross-cutting teams from finance, gender, environment, and grant specialist and two MIM team have participated in the survey. In addition, 10 staff of partner organization supporting the project have been participated in the assessment. The study therefore targeted a population of 30 respondents 20 from MEDA-EMERTA project team members and 10 from partner organizations.

### **3.6 Sampling**

The study followed a Purposive, Non -Probability sampling technique. This is to squeeze the information gathered from the management, implementing staff, and implementing partners and describe the major impact of the findings have on the population and conclude.

### **3.7 Measurement**

Data is collected through a questionnaire with questions where respondents indicated responses on statements in a Likert scale. Effects of climate change related to the climate change existence, the

effect on the project and the coping strategies by the project is measured using a 5-point Likert scale ranging from ‘strongly disagree’ to ‘strongly agree’. Questionnaire is administered to 30 respondents from senior management, implementing team and partner organization.

### **3.8 Validity and Reliability**

Validity and reliability measurements are carried out whether instruments meet standards. The researcher determines the instrument’s content and construct validity through the help of expert judgment (the supervisor) who assessed and evaluated the instrument. A pilot test was also undertaken where questionnaires was administered to 5 respondents.

In addition to the primary data, documentary evidence such as policies, minutes of meetings, project planning records, published and unpublished documents, books, articles, periodic reports and other related resources are used to supplement and triangulate the study. In this study the data obtained from questionnaire is triangulated by document analysis.

### **3.9 Data Analysis and Presentation**

The study uses of quantitative data analysis. Numeric data collected from questionnaire of EMERTA project quantitatively analyzed using statistical procedures. After the coding process is completed, the quantitative data analysis is carried out using software program: Excel 2016.

The results of the data are presented in the form of percentages, frequencies, mean and standard deviation. The result of the questionnaires is finally combined to analyze the effect of climate change on project implementation of EMERTA.

### **3.10 Ethical Considerations**

The study is conducted in an ethical manner. The researcher explained to the respondents the purpose of the study and assure them that the information given would be treated as confidential and their names would not be disclosed. All who participate are not coerced into participating in the research. Informed consent is sought from all the participants that agreed to participate in the research.

The researcher ensured that guarantees to the participants concerning confidentiality will be given and strictly observed. Information will not be made available to anyone who is not directly involved in the study. The researcher honors patents, copyrights, and other forms of intellectual property by accrediting and acknowledging of contributions from various parties.

# CHAPTER FOUR

## DATA PRESENTATION, ANALYSIS, AND INTERPRETATION

### 4.1 Introduction

This chapter present the results of the primary data which was collected through the use of questionnaire. Descriptive statistics was used to analyze the data. Response rate, demographic information, and the findings on the key objective areas of the study is presented and interpreted to assess the effects of climate change on EMERTA project. The findings presented in tabular summaries and their implications discussed.

### 4.2 Demographic Information

Out of 30 questionnaires which were issued 25 were correctly filled and returned which is a response rate of 83%. According to Kothari and Gang, (2014) a response rate of 50% is adequate for analysis and reporting; a rate of 60% is good and a response rate of 70% and over is excellent; therefore, this response rate was adequate for analysis.

As shown in the table and figure below, 10 (40%) of the respondents are women which shows a good representation of women in the organizations and helps to see the both the men and women perspective. The table below shows the gender of respondents. Three of the 10 women are also on the top management position that are involved in the decision-making process.

*Table 1 Gender of respondents*

Gender		
Variable	Frequency	Percent
Male	15	60
Female	10	40
<b>Total</b>	<b>25</b>	<b>100</b>

Nearly half of the respondents are between 36 and 45 years of age and there is no one under 25 years old. All of the respondents also confirmed that the highest level of their education is a master's degree in different fields of study. The table below shows the age group and level of education of respondents.

*Table 2 Age group and level of education of respondents*

<b>Variable</b>	<b>Frequency</b>	<b>Percent</b>
<b>Age Group</b>		
18-25 Years	0	0
26-35 Years	1	4
36-45 Years	12	48
46-55 Years	9	36
Above 55 Years	3	12
<b>Total</b>	<b>25</b>	<b>100</b>
<b>Level of Education</b>		
Secondary Education	0	0
College Diploma	0	0
Undergraduate degree	0	0
Master's Degree	25	100
Doctoral Degree	0	0
<b>Total</b>	<b>25</b>	<b>100</b>

88% of the respondents have worked in the organization between one and five years long and 96% of the respondents have more than 10 years of experience. This shows that all the respondents have plenty of experience in the organization and their overall work experience has enormous advantage for the assessment since they have the skill, knowledge and familiarity about the issues related to project management and their area of expertise. The table below show the respondents' years of experience in the company and total years of experience respectively.

*Table 3 Years of experience in the company total years of experience*

<b>Variable</b>	<b>Frequency</b>	<b>Percent</b>
<b>Years of Experience in the Company</b>		
Less than 1 Year	0	0
1-3 Years	10	40
3 -5 Years	12	48
5-10 Years	2	8
More than 10 Years	1	4
<b>Total</b>	<b>25</b>	<b>100</b>
<b>Total years of Experience</b>		
Less than 5 Years	0	0
5-10 Years	1	4
10-15 Years	10	40
15-20 Years	2	8
More than 20 Years	12	48
<b>Total</b>	<b>25</b>	<b>100</b>

The demographic information shows that all the interviewees are educated and in the most productive age group that comprised both education and work experience.

### **4.3 Climate Change Perception**

The study aimed to assess the project and implementing partners perception about climate change. To assess their perception about climate change respondents were requested to indicate the extent to which they agree or disagree with the following statements concerning climate change prevalence.

The responses were rated on a five-point Likert scale where: 5 – Strongly agree, 4 – Agree, 3 – Not sure, 2 – Disagree, 1 – Strongly disagree. The assessment result identified that majority 92% of the respondents strongly agree/ agree that climate change is affecting themselves and their project implementation.

All the respondents also confirmed that there is increased flood incidence, drought occurrence, high pest infestation or rainfall variability. The table below shows the perception of the respondents about climate change

*Table 4 Perception of climate change*

<b>Questions</b>	<b>Strongly agree</b>	<b>Agree</b>	<b>Not sure</b>	<b>Disagree</b>	<b>Strongly disagree</b>	<b>Total</b>
Climate change affecting project and individuals	14	9	2	0	0	<b>25</b>
Incidence of drought has increased	20	5	0	0	0	<b>25</b>
Incidence of flood has increased	15	10	0	0	0	<b>25</b>
Incidence of pest infestation has increased	15	10	0	0	0	<b>25</b>
Rainfall Variability has increased	15	10	0	0	0	<b>25</b>

These findings are totally in line with the literatures reviewed and the CRGE, 2011. Ethiopia is vulnerable to climate change induced disasters such as drought, disease, flood, pests, wildfire, and landslide, amongst others. These different hazards occur with varying frequency and severity. Some result in nationwide disasters, while the impacts of others are more localized (Adane et al., 2006).

The finding also shows that climate change is affecting the respondents both individually and in their project intervention. These leads to the second part of the study which is assessing the effect of climate change on project intervention.

## 4.4 Climate Change Effect on Project Intervention

The second major focus of the study is identifying the effect of climate change on project intervention. To identify the major effects on project implementation, respondents were provided with the following statements and the responses were rated on a five-point Likert scale where: 5 – Strongly agree, 4 – Agree, 3 - Not sure, 2 – Disagree, 1 – Strongly disagree.

Out of the 25, 22 of the respondents agree/strongly agree that climate change affects the project implementation at least once a year. The mean of the result is 4.2 while the standard deviation 3.5665. This shows that only 3 (12%) of the respondents are not sure about the effect of climate change effect on the project implementation at least once a year.

*Table 5 Climate change effect on the implementation of the project and among parties*

<b>Questions</b>	<b>Strongly agree</b>	<b>Agree</b>	<b>Not sure</b>	<b>Disagree</b>	<b>Strongly disagree</b>	<b>Total</b>
Climate Change affect project implementation at least in a year	8	14	3	0	0	<b>25</b>
Partner organizations claim challenge in implementation	20	5	0	0	0	<b>25</b>
Beneficiaries and clients claim challenge in implementation	18	7	0	0	0	<b>25</b>
Time sensitive activities affected by climate change	13	12	0	0	0	<b>25</b>

None have disagreed to its effect on the project. this shows that the climate change is visible in the project area at a scale that can affect development interventions unless and otherwise proper action is taken. The table below shows the mean and standard deviation of the respondents.

*Table 6 Mean and standard deviation of the result on CC effect on implementation*

<b>Questions</b>	<b>Mean</b>	<b>Standard Deviation</b>
CC affect project implementation at least once a year	<b>4.2</b>	<b>3.5665</b>
Partner organizations claim challenge in implementation	<b>4.8</b>	<b>1.0954</b>
Beneficiaries and clients claim challenge in implementation	<b>4.72</b>	<b>1.8111</b>
Time sensitive activities affected by climate change	<b>4.52</b>	<b>2.9120</b>

All the respondents have confirmed that the partner organizations of MEDA-EMERTA, the rice and vegetable producers and clients-MSMEs are affected in the implementation, production, and value chain development. The production process of the rice and vegetable value chain sectors are highly susceptible to weather and climate variance. Both water stress and flooding affect the production phase. In addition, rainfall variability is also critical both for rice and vegetable production. Rice production needs a lot of water while vegetable is very susceptible to disease and pest which again are dominant with change in the weather condition. This shows that the project implementation is affected by climate change across all parties of the project.

The respondents have different perception when it comes to the three constraints of project. 64%, 72% and 80% of the respondents disagree/strongly disagree to the questions that climate change is affecting the project budget, schedule, and scope. The figure below shows the responses for the questions related climate change effect on the goal, monitoring and evaluation, budget, schedule, and scope of the project. The table below shows the result.

*Table 7 Climate change effect on Scope, Budget, schedule, goal, and M&E*

<b>Questions</b>	<b>Strongly agree</b>	<b>Agree</b>	<b>Not sure</b>	<b>Disagree</b>	<b>Strongly disagree</b>	<b>Total</b>
Project budget affected by climate change	0	0	9	10	6	<b>25</b>
Project schedule affected by climate change	0	3	4	8	10	<b>25</b>
Project scope affected by climate change	0	1	4	11	9	<b>25</b>
Project goal impacted by climate change	0	0	8	17	0	<b>25</b>
Project M&E affected by climate change	0	25	0	0	0	<b>25</b>

68% of the respondents believe that the project goal is not affected by the existing change in climate change while the remaining 32% are not sure about the effect on the goal of the project. This implies that even though there is climate change, affecting every aspect of the project intervention, all the partners, clients, and producers- the project is able to persist achieving its goal, scope, budget, and schedule.

On the other hand, all of the respondents believe that the change in climate has affected the monitoring, impact measurement and evaluation of the project. This is mainly related to accessibility problem in the rainy season.

With this result its learned that the there is a clear existence and influence of climate change in the project intervention area. But the finding show that the projects final goal, scope, budget, and schedule is not affected. This means the project is resilient to climate change. UN, 2021 states building climate resilience involves all actors having the capacity to anticipate climate risks and hazards, absorb shocks and stresses, and reshape and transform development pathways in the longer term.

Combined disaster risk reduction and management (including emergency preparedness and response) and climate change adaptation approaches to develop a suite of interventions to address climate risks and impacts across and within sectors. This suite of climate risk management interventions or measures essential to drive climate resilience efforts and investments by all actors includes climate risk governance, capacity-building, Nature-based solutions used to reduce risks across sectors.

The following section describes this climate resilience building and management practices conducted by the project to achieve this result.

## 4.5 Project Coping Mechanism for Climate Change

The final point the study aimed to identify was the projects coping strategy. In order to identify the coping strategies a total of nine questions were raised by the researcher in the questionnaire survey. Similar to the previous sections a similar five-point Likert scale was applied. The study identified that all the respondents agreed to the project’s proactive way of planning and implementation in the era of climate change. The table below shows the senior management’s perception and involvement in including ECC in the intervention.

*Table 8 Management perception on ECC integration*

<b>Questions</b>	<b>Strongly agree</b>	<b>Agree</b>	<b>Not sure</b>	<b>Disagree</b>	<b>Strongly disagree</b>	<b>Total</b>
Senior management team considers climate change in intervention	17	8	0	0	0	<b>25</b>
The project management emphasis on ECC	16	9	0	0	0	<b>25</b>
ECC consideration in implementation	17	8	0	0	0	<b>25</b>
Pre-planning for risks related to climate change	15	10	0	0	0	<b>25</b>
Long-term vision with the existing climate change	18	7	0	0	0	<b>25</b>

All the respondents agree/strongly agree to the senior management team’s consideration of climate change in the project intervention. This shows the influence of project managers in development projects in the era of climate change. As it is already witnessed that the project is within budget, scope, and schedule while there is climate change impacting the intervention sectors and the geographical location.

Though the project is pro-active in the ECC component it also recognized and support emergency occurrences like flooding and drought that is affecting the rice and vegetable sectors. The project also pre-plans climate change related risks and include those scenarios in the long-term goals of the organization and project.

*Table 9 Project coping mechanism for climate change: ECC related activities*

<b>Questions</b>	<b>Strongly agree</b>	<b>Agree</b>	<b>Not sure</b>	<b>Disagree</b>	<b>Strongly disagree</b>	<b>Total</b>
Proactive engagement for climate change	16	9	0	0	0	<b>25</b>
Holistic intervention in ECC	16	9	0	0	0	<b>25</b>
Emerging issues in ECC integration	20	5	0	0	0	<b>25</b>
Project supports emergency climate change incidences	7	18	0	0	0	<b>25</b>

ECC is considered among all the sectors of intervention and focuses on the holistic approach of the ecosystem and work on emerging issues in the area using systemic approach of intervention.

Finally, there were two optional open-ended questions below the Likert scale questions. One was if there was any need to elaborate for the questions and the other was if they want to add some more information.

Five respondents elaborated on questioned priorly mentioned in the Likert scale. They have stated that the major difference MEDA-EMERTA does compared to other institutions working in the area is the project gives emphasis to the pre-planning and risk identification processes and

acting on the holistic approaches of project development. In addition, the project prioritizes the risks and mitigation practices that come along with the challenge.

Two respondents provided additional information and stated that MEDA-EMERTA's effort in integrating ECC in its intervention is good that others can also learn from the project's success. But the project can further develop itself by including green supply chain management practices to reduce the carbon footprint of the project itself.

Further participating in tree plantation and watershed management campaign is currently conducted by the project that other organizations working in the area should adopt this approach in order to bring sustainability and impact that goes beyond the project period.

# **CHAPTER FIVE**

## **SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

### **5.1 Introduction**

This last chapter contains three sections the first section deals with a summary of the finding, the second section is devoted to the conclusion of the study. Finally, the last section presents the recommendation that might be focused upon.

### **5.2 Summary of Findings**

This research was conducted with the following purpose in mind to assess the effect of climate change on MEDA'S EMERTA project. To describe the perception of climate change, see the inevitable effect on project intervention, understand existing coping strategies in project management, provide recommendations and learn from the project.

Generally, it was identified that there is a more or less similar understanding among respondents on the climate change perception, its effect on project implementation, and the existing coping strategies.

From the descriptive statistics analysis results all the respondents believe and experience climate change in their daily lives and project intervention. There is a strong belief among respondents that there is an increase in drought, flood, pest infestation, and rainfall variability. This is affecting the project intervention and monitoring and evaluation.

The descriptive analysis of climate change effect on the project, all project implementing partners, and project beneficiaries, (both MSMEs and producers) agree that climate change is affecting their work in terms of extreme weather effects rainfall variability, and pest infestations. The project's implementation and M&E are also affected by CC and time-sensitive activities like vegetable and rice production are affected by the seasonal rainfall variability.

The three constraints of the project: time, budget, and scope are somehow not affected. This is mainly because the project strictly focused on planning proactively in integrating ECC.

The analysis of coping strategies for the tackle of climate change found that the top management considers climate change in the planning, identifies potential risks, pre-plans weather-related incidents ahead of time, and provide feedback for emergency responses and disaster risk reduction activities. The project focuses on working on holistic and proactive approaches to integrate ECC in its activities and act proactively.

### **5.3 Conclusions**

The research aimed to assess the effect of climate change on the current coping strategies of MEDA-EMERTA project. The finding of this study suggests that the company has a better practice and has full support and commitment from the top management side.

The data analysis and the findings indicated that the project's management approach of using the holistic way is impactful for the development and climate change resilience and reduces the vulnerability of the society to climate shocks.

It was also identified that even with the current change in climate and extreme weather incidents, the project can cope with the change within budget, schedule, and scope without any challenge. This is because of the detailed planning activities conducted every year with all partner organizations and project clients. In the planning session, there is risk identification and activities developed with the potential risk and possible mitigation measures in mind.

The research objective and research question have been addressed and this study also contributes to the gap in the problem statement. The findings of this study contribute to the practical industry. The result of this study can be used as a guideline by various parties such as non-governmental organizations, Development agencies, policymakers, regulation agencies, and researchers to formulate their development strategies to integrate the environment and climate change component in every aspect of the project cycle.

### **5.4 Recommendations**

Based on the finding obtained and conclusions are drawn the following recommendations are proposed

- The study revealed that climate change is real and with adequate pre-planning and

proactive measures it is possible to manage the risks related to project implementation within the scope, time, and budget constraints.

- The current status of the climate change coping management practice of MEDA-EMERTA including the do not harm approach can be scaled up to reduce the carbon footprint of the project itself through green supply chain management practices. Therefore, to safeguard the environment from pollutants, comply with the law of the land and exploit the advantages that emanate from the very nature of green supply chain practice, the study recommends MEDA-EMERTA go further to green supply chain management practice implementation to adopt the concept of environmentally responsible supply chain management fully.
- As stated in the literature reviewed, Zhu and Sarkis (2007) mentioned in their institutional theory, Government regulation can be one of the main institutional factors that drive businesses to implement ECC-friendly practices. Thus, the government should support development projects and the NGO sector in integrating ECC into every project proactively.
- Since the organization's and management's perception of ECC has a significant influence on the implementation of activities integrating ECC; the company's top management should provide environmental awareness for their employee and educate them about the benefit and advantages of ECC and provide information on the progress of the company on the effectiveness of the company's environmental objectives to its employees.
- Regarding the methods available to adapt to the change of climate there is no single solution nor a combination of solutions is the perfect solution. It requires an informed and proactive top management as they are potentially in the decision-making position to mitigate the causes and outcomes of climate change however, they are very dependent on the resources available to them as well as the type of project underway. From the data collected it is evident that climate change and the impact it has on development projects is a serious concern because of the many different opinions obtained from the participants of the survey and the interviewees regarding the reality and seriousness of climate change.

- Research Implication: The knowledge gained in this study will create awareness among professionals in the development especially project managers in terms of the implication of climate change on development projects. Thorough research should be conducted before the implementation phase so that adequate planning can be done to mitigate the effects of climate change.
- Project management practitioners need to start applying an informed and proactive approach to prepare as well as they can during the planning phase and have ample information during implementation.
- A case studying the scope, analytical framework, and criteria for a project on Development and Climate Change are important. A starting point for a project is that development and climate change policies imply a two-way relationship: choices about development pathways influence climate change as well as the vulnerability of societies to climate change impacts; on the other hand, climate change impacts could influence the rate and level of economic development itself. Examining such linkages would also reinforce understanding of sustainable development. Thus, it would be necessary to study the linkages and impacts in further research.

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**APPENDIX**

**QUESTIONNAIRE**

**Addis Ababa University College of Business and Economics**

**School of Commerce**

**Department of Project Management**

Dear Respondents, this questionnaire intends to gather information to a project to be conducted concerning **The Effect of Climate Change on Development Projects: The Case of MEDA (EMERTA)** in partial fulfillment of the requirements for the Master of Art in Project Management degree and to be submitted to Addis Ababa University School of Commerce to Project Management Department. Your participation is important for the success of this study. Kindly respond to all items to reflect your opinion and experience. The information provided will be only used for academic purpose and will be treated with utmost confidentiality.

**Background to the Study**

Climate change is one of the biggest risks facing governments, businesses, societies, and ecosystems around the world. The climate crisis is a grand challenge with an increasing urgency that needs to be addressed if societies around the world are to survive and prosper. The United Nations Framework Convention on Climate Change (UNFCCC) defines climate change as “a change in climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable periods of time” (UNFCCC, 1992).

Thus in the era of climate change it is found necessary to study about the effects of climate change on project implementation, this study will be an input for future project development and management.

Thank you for your time and consideration!

**Instruction:** Read carefully and give appropriate answers by ticking the appropriate box.  
The information provided will only be for the purpose of this study.

**Section A: General information**

1. Gender	Male <input checked="" type="checkbox"/>	Female <input checked="" type="checkbox"/>			
2. Age	18-25 yrs. <input checked="" type="checkbox"/>	26-35 yrs. <input checked="" type="checkbox"/>	36-45 yrs. <input checked="" type="checkbox"/>	46-55 yrs. <input checked="" type="checkbox"/>	Above 55 yrs. <input checked="" type="checkbox"/>
3. Level of Education	Secondary Education <input checked="" type="checkbox"/>	College Diploma <input checked="" type="checkbox"/>	Undergraduate Degree <input checked="" type="checkbox"/>	Master's Degree <input checked="" type="checkbox"/>	Doctoral Degree <input checked="" type="checkbox"/>
4. How long have you been working in the company	Less than 1 yr. <input checked="" type="checkbox"/>	1-3 yrs. <input checked="" type="checkbox"/>	3-5 yrs. <input checked="" type="checkbox"/>	5-10 yrs. <input checked="" type="checkbox"/>	10 or more yrs. <input checked="" type="checkbox"/>
5. How many years of experience do you have	Less than 5 <input checked="" type="checkbox"/>	5-10 Years <input checked="" type="checkbox"/>	10-15 Years <input checked="" type="checkbox"/>	15-20 Years <input checked="" type="checkbox"/>	20 or more <input checked="" type="checkbox"/>

**Part Two Questionnaires**

Please indicate the level of climate change effect in your company, and use "Tick (✓) where you agree on a point scale (1= Strongly Disagree, 2= Disagree 3= Neutral/Not Sure 4= Agree 5= Strongly Agree).

No	Climate change effect	Strongly Disagree	Disagree	Neutral/Not Sure	Agree	Strongly Agree
		1	2	3	4	5
<b>I. Climate Change existence</b>						
1	Do you believe that climate change is affecting you and your project implementation?					
2	Unusual drought has increased in your					

	project area.					
3	Unusual flood has increased in your project area					
4	Unusual pest infestation is increasing in your project area					
5	There is a seasonality change- short or long rainy season or long dry season , unexpected rain etc					
<b>II. Climate Change effect on project</b>						
6	Project implementation is impacted because of the severe climate condition at least once a year					
7	Partner organizations are having difficulties because of the climate change effect					
8	Project beneficiaries (Producers and MSMEs) are having difficulties because of the climate change effect					
9	Project implementation budget is affected by the effects of climate change					
10	Project implementation time and schedule is affected by the effects of climate change					
11	The project scope is affected by the effects of climate change					
12	Time sensitive activities like vegetable/rice production is affected by the severity of the weather condition					
13	Effect of the change in climate is one of the reasons that it is impacting the project's goal of increasing income					
14	Climate change has affected the M&E					

	of the project-frequent travel and access to implementation is hindered at some seasons					
15	The senior management team considers the effects of climate change on the project intervention					
<b>III. Project Specific coping Strategies</b>						
16	The project supports emergency drought or flood affecting the project area					
17	The project pre-plans for any risks and assumptions that can occur in the implementation period					
18	The project includes long term vision in its planning and implementation					
19	The project aims holistic approaches in its intervention					
20	The project includes environmental consideration in implementing its activities					
21	The project identifies emerging issues in the project intervention area					
22	The project tries to stay proactive in changes in the existing scenarios related to environment and climate change					
23	The project management gives special emphasis to environment and climate change					

24. Anything that might be needed to elaborate from the above questions.

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25. If there is anything you might need to add.

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End

Thank you!