**UNIVERSITY OF GHANA**


**COLLEGE OF HUMANITIES**

**UNIVERSITY OF GHANA BUSINESS SCHOOL**

**DEPARTMENT OF PUBLIC ADMINISTRATION AND HEALTH SERVICES MANAGEMENT**

# GHANA'S TRANSITION TO GREEN ECONOMY: PROSPECTS AND CHALLENGES

**BY**

**SCHOLASTICA AKALIBEY**

**(10703186)**

**THIS THESIS IS SUBMITTED TO THE UNIVERSITY OF GHANA, LEGON IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF MPHIL PUBLIC ADMINISTRATION DEGREE**

**OCTOBER, 2020**

## DECLARATION

I, the author of this thesis, do solemnly declare that, except for references to other people's Work which have been duly acknowledged, the work presented here was done by me as a Student in the academic year 2019/2020 under the supervision of Professor Albert Ahenkan And Dr. Theophilus Maloreh- Nyamekye of the Department of Public Administration and Health Services Management University of Ghana Business School, Legon.

18/5/2021

SCHOLASTICA AKALIBEY

DATE

(10703186)

## CERTIFICATION

I, hereby, certify that this thesis was supervised in accordance with procedures laid down by the University of Ghana Business school, Legon.

PROFESSOR ALBERT AHENKAN

(LEAD SUPERVISOR)

18/5/2021

DATE

DR. THEOPHILUS MALORE-NYAMEKYE

(CO-SUPERVISOR)

18/05/2021

DATE

## DEDICATION

I dedicate this thesis to the Lord Almighty, the source of my strength and knowledge.

I also dedicate this thesis to my Uncle Dr. David Jackson Adamah Bukari, my parents Mr. and Mrs. John Akalibey and brothers Daniel and Simon for their unfathomable love, care and support so far.

**ACKNOWLEDGEMENT**

I am greatly indebted to my supervisor, Professor Albert Ahenkan for his tireless dedication, mentorship, and support throughout his supervision of this work.

My sincere gratitude also goes to Dr. Theophilus Maloreh-Nyamekye, Dr. Kobby Mensah, Dr. Frederick Dapilah and Moses Atta for their thoughtful contributions and inspiration.

My profound appreciation goes to all the public officials working in the various public institutions (ministries and agencies) of the sectors investigated who cheerfully responded to my interviews and provided relevant information to the study during data collection processes.

Lastly, I appreciate my other colleagues from my MPhil Public Administration class for their support and constructive contributions throughout the entire process. My sincere thanks.

# TABLE OF CONTENTS

## LIST OF TABLES

## LIST OF FIGURES

## LIST OF ABBREVIATIONS

| | |
|---|---|
| AfDB | African Development Bank |
| CRMA | Community Resources Management Area |
| CPESDP | Coordinated Programme of Economic and Social Development Policies |
| EPA | Environmental Protection Agency |
| FDMP | Forestry Development Master Plan |
| FDI | Foreign Direct Investment |
| GE | Green Economy |
| GIFMIS | Ghana Integrated Financial Management Information Systems |
| GSGDA | Ghana Shared Growth and Development Agenda |
| GIZ | Gesellschaft fur International Zusammenarbeit |
| GDP | Gross Domestic Product |
| IGG | Inclusive Green Growth |
| LPG | Liquid Petroleum Gas |
| LCDS | Low Carbon Development Strategy |
| MLP | Multi-Level Perspective Framework |
| MLNR | Ministry of Land, and Natural Resources |
| MESTI | Ministry of Environment Science, Technology and Innovation |
| NDCs | National Determined Contributions |
| NDPC | National Development Planning Commission |
| NCCPF | National Climate Change Policy Framework |
| OECD | Organisation for Economic Cooperation and Development |
| PACC | Paris Agreement for Climate Change |
| SGDs | Sustainable Development Goals |
| STEPRI | Science Technology Policy Research Institute |

| | |
|---|---|
| UNDP | United Nation Development Programme |
| UNCED | United Nation Conference on Environment and Development |
| UNEP | United Nation Environment Program |
| WB | World Bank |

## ABSTRACT

There is an urgent need for Ghana to take deliberate actions to transition its economy to a GE to address the increasing environmental crisis in Ghana and meet the 2030 Sustainable Development Goals (SDGs). Therefore, this research explored the prospects and challenges of GE in Ghana, focusing on the key sectors: energy, transport, waste, agriculture, and forestry. The study was influenced by the interpretivist paradigm and adopted a qualitative approach and a case study design. Purposive and snowball sampling techniques were employed to select nineteen (19) participants from eleven public institutions of the sectors understudied. Data were analysed thematically with Miles and Huberman's (1994) data analysis approach.

The study revealed that the factors driving Ghana's transition to GE included poor environmental policies and programmes governing the use of natural resources, energy insecurity, unsustainable development patterns, and poor waste management in a brown economy. The study further discovered that there are policy frameworks and strategies to facilitate the GE transition in Ghana, although some respondents were unaware they existed.

Finally, several GE prospects in Ghana were identified. Possible challenges were: inadequate resources (funds, capacity, and technology), lack of the necessary political recognition and support, poor institutional coordination among key stakeholders and lack of climate-sensitive budget.

Based on the challenges, stakeholders should review the existing policies to attract and incentivise the private sector and foreign direct investors to invest in the transition. Investing in the transition would help to address funding issues and other challenges. Stakeholders of the transition should also help improve upon institutional and policy coordination since the transition is a collective responsibility and therefore calls for collective action.

# CHAPTER ONE

# GENERAL INTRODUCTION

## 1.0 Introduction

This chapter presents the background to the research, the problem statement that leads to the research's overall purpose, the objectives and questions of the study, the significance of the study, the scope of the study, and a chapter disposition that highlights the entire organisation of the study.

## 1.1 Background of Study

Globally, green growth and the GE have emerged as one of several paradigms for fostering an economic growth path that integrates and reconciles economic, social, and environmental objectives (Cooper et al., 2020). The concept of GE is enrooted in environmental economics (Ekins, 2002; Jacobs, 2012) but has recently gained both international and national policy-making recognition within the last decade (Wanner, 2015). Internationally, governance and policy discourses such as the United Nations Sustainable Development Goals (SDGs) and Agenda 2030 aim to realise the objective of the GE (Wanner, 2015). Indeed, the GE model of development intends to achieve all the three pillars of the SDGs: environmental sustainability and environmental justice, economic sustainability and sustainable economic growth, and social sustainability and social justice.

Many national GE strategies have been developed around the world. The Organization for Economic Cooperation and Development (OECD), whose member countries form about 80

percent of the global economies, has adopted green growth strategies (OECD, 2011). Moreover, in response to the green economy agenda to achieve sustainable development, several initiatives have emerged within the international political economy towards setting up the institutional framework that will enable transformations to a GE based on green growth (Wanner, 2015).

The World Bank defined "inclusive green growth" as environmentally sustainable economic growth (WorldBank, 2012). The UNEP defined a "green economy" as improving well-being and social equity while significantly reducing environmental risks and ecological scarcity (UNEP, 2011). The definitions offered by the World Bank and UNEP share a common underlying principle that GE and green growth represent a shared vision and pathways towards the achievement of sustainability (WorldBank, 2012). The growing interest in the concept among governments, economists, environmentalists, business and global organisations results from the recent increase in environmental crisis. Climate change, global food insecurity, financial and economic crises that have negative consequences on resource-dependent countries in the Global South are examples of such crises.

The GE in Africa aims at pursuing inclusive economic growth through programs, projects and policies that invest in sustainable infrastructure, efficient utilisation of natural resources, food security enhancement, and building resilience to natural disasters (African Development Bank Report, 2013). Indeed, GE strategies in several African countries are intended to respond to the pressing challenges of social equity, resource efficiency and ecological concerns in a coherent and integrated fashion (Cooper et al., 2020). Africa is therefore uniquely positioned to exploit the opportunities of GE since the continent is characterised by the abundance of renewable and non-renewable resources, which can help achieve inclusive sustainable economic growth. In

light of this, several African countries, such as Rwanda, Ethiopia, Kenya and South Africa, are taking action under ambitious national plans to separate environmental pressures from economic development. A leapfrog to GE (sustainable economies) by way of avoiding inefficient technologies and products in preference for resource-efficient and clean technologies (Cooper et al., 2020).

For instance, Ethiopia is one of Africa's top three fastest-growing economies globally, and a more growth rate is expected in the coming years (African Development Bank Report, 2013). Ethiopia has committed to a green growth strategy at a broader aspect of the economy through which it seeks to achieve middle-income status by 2025. Rwanda has also displayed remarkable progress in recent years and has committed itself to a long-term green growth strategy (UNECA, 2015). These two countries share great economic aspirations.

The economy of Ghana is also transitioning to a GE to address the contemporary development challenges associated with the brown economy and exploit GE's opportunities (Agyekum et al., 2016). Brown economy refers to an economy that depends on all forms of environmentally destructive activities such as fossil fuel like coal for production, generation of energy and transportation activities for economic growth or development (El Bilali, 2019).

Secondly, Ghana is transitioning its economy to green because Ghana is a signatory to the Paris Agreement on Climate Change (PACC), which serves as a legally binding document urging Ghana to transition its economy to an inclusive sustainable development economy (MESTI, 2018). This agreement requires both developed and developing countries to make significant commitments to help in solving the issue of climate change within their national capacity, and through the Nationally Determined Contributions (NDCs) (Zhang et al., 2017). The Multi-Sectoral Implementation Plan for Ghana Nationally Determined Contributions for the Paris

Climate Agreement (2018) indicates that countries who signed the PACC, including Ghana, submitted their NDCs to international authorities in charge. Therefore, Ghana aims to address the challenges of climate change in Ghana and help achieve the SDGs through coordinated actions by transitioning to a green economy. Moreover, a study indicated that the government of Ghana was stimulated to commence the transition to a sustainable approach after experiencing fuel, finance and food crises from 2006 to 2009 (UNEP, 2015).

### 1.2 Problem Statement

There are many complexities associated with the current economy (brown economy) of Ghana, such as overexploitation and underutilisation of natural resources, high carbon emission (fossil fuel combustion) and high vulnerability to climate change with low resilience. Other challenges also include ecological scarcity, unsustainable economic growth, social inequality, food insecurity, energy crisis, financial meltdown, high rate of unemployment, rapid population growth, increase in disaster, and poverty, among several others (Dekker & Hollander, 2017; Kadekodi & For, 2017).

Many of the underlying causes of these challenges can be directly linked to how resources are exploited, utilised and the unfriendly environmental policies, programs, and practices for production and consumption. Additional reasons for these challenges are the unsustainable transport systems causing health risks, air pollution and economic losses (Agyekum et al., 2016). Climate change is considered a major developmental challenge affecting various sectors in Ghana and therefore requires a multi-sectoral response to address the challenge.

The transition to a green economy is based on both international and domestic policies. Hence, a prerequisite for the success of the green economy transition in Ghana is developing a deliberate national GE policy framework or a strategy.

The government of Ghana, in response to address the challenges of climate change, formulated the National Climate Change Policy Framework (NCCPF) to enable the country to build a green and climate-resilient economy towards the achievement of a low carbon economy and sustainable development (Ghana Goes for Green Growth, 2010). Climate change has been integrated into all development strategies, including the Ghana Shared Growth and Development Agenda (GSGDA) (Ghana Goes for Green Growth, 2010).

In addition to the NCCPF, the energy sector in Ghana have a Renewable Energy Master Plan, which serves as a national policy directing the implementation of the transition of the industry from a fossil-fuel energy source to a renewable energy source from 2019 to 2030 (Ghana Renewable Energy, 2019). The master plan guide the implementation of the GE transition in Ghana. Since the country aims to derive 10% of its energy from renewable resources instead of hydropower by the year 2020 to help reduce carbon emissions (Ghana Goes for Green Growth, 2010).

The forestry sector in Ghana also has a Forestry Development Master Plan (2016-2036) formulated by the Ministry of Lands and Natural Resources (MLNR) to help conserve forest bodies and biodiversity for carbon sequestering and other purposes of green growth in a GE.

Despite various efforts made by some sectors, such as the energy and forestry sectors, towards the transition, knowledge systems capable of delivering legitimate, credible, and salient research to local policymakers for effective policies towards the transition have been questioned (Cooper et al., 2020). Previous research documented the relative lack of research capacity on climate change in African, of which Ghana is no exception. The transition requires

responsive, well-researched, evidence-based development policies and strategies (Cooper et al., 2020).

Moreover, despite the ambitious interest of Africa countries such as Ghana in the transition to a GE and sustainable development, research on the concept is limited and has led to a poor understanding of the dynamics of GE (Cash et al., 2003). Gyasi-Mensah and Hu (2018:177) also highlighted the limited empirical studies on GE in the Ghanaian context and hence, encouraged researchers to consider the concept in terms of empirical research. Besides, less research has been carried out in GE policies in Ghana (Barbier, 2011; OECD, 2011; Zabbey et al., 2014).

Few studies have focused on the challenges of GE in Ghana: Makufwe (2014) assessed the prospects and challenges of greening open spaces in the Kumasi Metropolitan. Khor (2011) also examined GE challenges in the context of sustainable development, poverty, and equity. Other researchers have also looked at how a GE transition can be financed (Ahenkan, 2020; Kofi & Prince, 2016).

In addition, some studies have also assessed the efforts made towards the transition to GE in Ghana (Agyekum et al., 2016; PAGE, 2015) and the drivers of GE (Darko et al., 2018; Lin & Xu, 2014; Mohiuddin et al., 2014; Nin-Pratt & McBride, 2014). However, these previous studies have only focused on one sector analysis to neglect other equally essential sectors as far as the transition to GE in Ghana is concerned. The concept of GE remains a new development paradigm that requires further studies to support the transition, especially from an emerging economy such as Ghana.

This study, therefore, takes a broader perspective to examine the five relevant sectors in the GE transition in Ghana. The study seeks to investigate the drivers, policy framework, and the prospects and challenges of transitioning the economy of Ghana to a GE.

## 1.4 Study Objectives

The main aim of the research is to find out the prospects and challenges associated with Ghana's transitioning to a GE. The specific objectives include:

1. To examine the drivers of GE transition in Ghana.
2. To examine the policy framework for a transition to GE in Ghana.
3. To examine the prospects and challenges of Ghana's transition to a green economy.

## 1.5 Study Questions

The following research questions were asked to help achieve the research objectives.

The main research question was the prospects and challenges associated with Ghana's transition to a GE? The specific questions were

1. What is driving (necessitating) Ghana to transition to GE?
2. Are there policy framework(s) to help facilitate the green economy transition in Ghana?
3. What are the prospects and challenges of Ghana's transition to a GE?

## 1.6 Significance of the Study

The study sought to make a relevant and valuable contribution to the much-needed scientific knowledge on GE. The study also contributed to practice by offering policy direction for policymakers to formulate domestic, home-grown, and sound development policies and initiatives for sustainable development. It is relevant to the five key sectors (Energy, Agriculture, Transport, Waste, and Forest) and some other sectors interested in GE by identifying the challenges of the transition and recommending possible solutions to address the challenges to enable a smooth transition.

Moreover, other countries, most especially African countries are likely to experience the same challenges as Ghana in their transition to a GE, are likely to benefit from this study. The study also added up to literature for which future researchers can refer to in researching the concept of GE in Ghana.

Finally, it is hoped that the finding of this study contributes to building evidence-based knowledge on GE in Ghana.

### 1.7 Study Scope

The study was limited to the drivers, policies, prospects, and challenges of the GE transition in Ghana, focusing on five key sectors: energy, transport, waste, forestry, and agriculture. The study participants were the staff members, directors and policy planners of the various sectors studied. They were recruited based on their knowledge and experience on the subject investigated. There are internal and external drivers of GE; however, this study was limited to the internal drivers of GE in Ghana because of time and resource constraints.

### 1.8 Research Disposition

This study is structured into five chapters. Chapter one introduces the research and covers the research problem, objectives, study purpose, and significance. Chapter two covers a review of the relevant literature on the definition of a green economy, the concept of a green economy, empirical studies, theoretical and conceptual frameworks. The third chapter of the study presents the research methods considered suitable for the study. Moreover, the chapter comprises the following areas: the research paradigm, design, approach, method, study area, the scope of the study, target population, sampling techniques, and sample size. The chapter also includes the data collection instrument, data processing and analysis, study limitation and

ethical consideration and the methodological approaches. Chapter four focuses on data presentation, analysis, and discussion of research findings and empirical findings guided by the research objectives and questions. The fifth and last chapter is also made of the study's summary, conclusion, and recommendations.

### 1.9 Chapter Summary

In conclusion, the background to the study highlighted GE globally and Africa in particular. It ended with Ghana situated in the context of the study. The study seeks to address relevant literature, various levels of analyses and a contextual gap in Ghana as far as the concept of GE is concerned. A purely qualitative study focuses on the prospects and challenges of GE as the scope of the study. The study's primary objective is to explore and identify the prospects and challenges of GE as Ghana transitions from a brown or carbon economy to a GE for the realisation of sustainable development. Finally, Greater Accra Region was the chosen area of study.

# CHAPTER TWO

# LITERATURE REVIEW

## 2.0 Introduction

This chapter reviewed literature related to GE and sustainable development. The concept of GE was defined in the chapter, followed by a thematic review of the concept of a green economy, drivers of a GE, policy framework, prospects, and challenges of a GE. Theoretical and conceptual frameworks were also reviewed in the final part of the chapter.

## 2.1 Green Economy Definition

The concept of "green economy" integrates ideas of several areas of philosophy and economic science, such as ecological economics, international relations theory, challenges of increasing people's well-being, and sustainable development (Poltarykhin et al., 2018). The concept has no universally agreed-upon definition (Wanner, 2015). The United Nations Environment Program (UNEP) definition is the most referred to, though there are other definitions. A GE seminal report published by the UNEP defined GE as 'an economy that improves human well-being and social equity while significantly reducing environmental risk and ecological scarcity.'

The international chamber of commerce defined GE "as an economy in which economic growth and environmental responsibility work together in a mutually reinforcing fashion while supporting progress on social development" (International Chamber of Commerce, 2012). Thus, Cato (2012) defined GE as 'an economy that socially integrates economics and ecology. That said, GE is seen "as an economic system that takes into account holistic remedial measures to incorporate economic, environmental (including ecological) and social challenges to reduce

or stop economic activities and growth considered detrimental to the environment (Mutanga et al., 2018). Interestingly, Simons (2010) defined GE as an 'economic system considering a comprehensive remedial measure en route for fiscal, ecological and societal encounters that halt or reduce economic happenings and growth'. Stemming from the definition of Osei (2017) espoused GE as 'a preferred action that improves the lives of individuals through effective management of natural resources while reducing environmental degradation.

That notwithstanding, Gibbs and O'Neill (2014) also considered an economy to be green when that economy can mitigate environmental degradation from over-exploitation of natural resources and waste, moderate human actions that contribute to climate change and effectively manage the transition process from fossil fuel economy to a sustainable economy. From all the definitions given above by various scholars, the keywords running through these definitions are economic growth'' ecological conservation and social equality. Intuitively, when an economy can achieve development from a three-dimensional angle, then it can be said that that economy is a GE.

To that end, GE can be defined as 'an economy that has decoupled economic progress from its environment and is socially developed as well. In other words, an economy capable of reducing its carbon emission to a minimum rate efficiently manages its scarce natural resources. It ensures social inclusion to achieve sustainable development is considered a green economy. GE is a guiding principle (a driving force) to achieve sustainable development. In a nutshell, the meaning of GE in this study is in line with the UNEP definition.

## 2.2 The Concept of Green Economy

The concept of GE was coined in the year 1989 by a group of world-class economists in a report titled 'Blue Print for Green Economy' (Pearce et al., 1986; Kaufmann, 1993; Barbier, 2009). The concept gained public and political support and international recognition through the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro, Brazil, in the year 1992. The conference is also called Rio Summit. The Summit called on economies to adopt National Strategies to achieve Sustainable Development (Agyekum et al., 2016). Economies were encouraged to support the GE course through locally developed strategies and measures called the 'Nationally Determined Contributions. Developing locally home-grown strategies and measures serve as a form of commitment to the global battle against climate change and to help create a green world. Ghana developed its Nationally Determined Contributions document to indicate its commitment and willingness to contribute and support the Paris Agreement's transition and signed (Pauw et al., 2020).

The fundamental aim of greening an economy is to holistically address economic growth, environmental degradation and social exclusion through an integrated approach by way of achieving sustainable development. "Green Economic" has been identified as the ultimate solution to significantly address the current complex challenges and achieve economic development, offer opportunities and numerous benefits for all nations around the globe. This thinking was inspired to find solutions to address climate change and other environmentally-related problems coupled with economic and social inequality, which has a very substantial impact in achieving sustainable development.

Other scholars argue that the GE initiative is not just about economic growth, environmental sustainability and social inclusion. But it also consists of various legislations, programs,

policies and projects in six primary areas, including promoting the production and the utilisation of renewable energy and developing standards for energy consumption in both the private and public sectors, encouraging GE investment and facilitating production. It also entails the export, re-export, and import of green technologies, goods and services; planning of environmentally-friendly transport systems, green buildings, and green cities; cutting down carbon emissions from commercial and industrial sites. GE encourages organic agriculture, conserving biodiversity and maintaining ecological balance.

Moreover, GE seeks to manage water resources usage, electricity, natural capital or resources, promote environmental education and recycling water, and develop green technology (Munyai et al., 2015). In addition to the above, climate and economic crises reveal that economies cannot embark on social and economic development for a more extended period within a degraded environment, hence protecting the environment. An integral part of the transition to GE is to invest and manage natural resources efficiently. When economies invest in nature by planting trees, preserving water bodies and reducing certain activities that pollute the environment, the transition becomes easy.

Again, the concept of GE also seeks to discourage economic activities and behaviours that are environmentally unfriendly and therefore cause environmental destruction because such actions and behaviours lack ecological virtue. Therefore, a GE aims to promote environmental virtue associated with good and comfortable life within one's ecosystem (Cato, 2012). Therefore, the responsibility of every individual to show ecological virtue (basically, respecting the safeness of the environment in any engagement, by way of disengaging in activities that tend to destroy the environment) in their dealings with the planet as far as the transition process and success is a concern.

A study conducted on the role of nature in the green transition by Brink (2014) argued that nature is society, and society is nature; in other words, whatever goes on within the environment impacts the environment and the environment influences societal activities. Therefore, it is assumed that quality and a sound environment will ensure better living standards and outstanding achievements. Given the relationship between nature and society, Cato (2012) also posited that GE is an economic activity for people and the planet. Referring to the concept as an economic activity that considers the planet.

Bailey and Caprotti (2014) believe that the logic behind GE is ecological modernisation and commodification and that GE's concept is considered a monoculture project. The reason is that other scholars consider the concept of GE to be an ambiguous and comprehensive concept. And it is therefore associated with many meanings and practices across various sectors and structural domains that are considered significant stakeholders in affecting the green agenda. Bailey and Caprotti further argued that GE is not what it appears to be and that there is, therefore, the need to delve much into the concept. These scholars continued to argue that GE might not have the needed requirements to address societal problems holistically as perceived by economists. The concept of GE was then questioned to find out whether modernising, and the commoditising ecological system can manage capitalism and ensure conflict-free politics.

Similarly, Van Den Bergh et al. (2011) argued that the hopes and expectations of green transition, in theory, are different from real happenings. Meaning, what GE on paper is other than what it involves in the practical aspect. The scholars stressed that it turns to cause another problem in an attempt to improve on one thing. For example, trying to fix the waste problem may end up causing water and air pollution. However, Bailey and Caprotti (2014) and Bergh et al. (2011) ideologies might not be far from facts. This research assumes that developmental

challenges within economies go beyond the three dimensions the concept seeks to focus on and that the argument of Bailey and Bergh et al. make sense to some extent.

Kadekodi (2013) also argued that GE might not be a panacea or a win-win as it is perceived to most, especially developing countries. Kadekodi is backed by the fact that developing countries emit less carbon as compared to developed countries. So when it comes to green investment, most investors want to invest in economies with higher emissions for a higher turnover. Many people believe that GE is a western business disguised to exploit other economies blessed with much natural capital. Although, this assertion stands to be proved (Bailey & Caprotti, 2014; Kadekodi, 2013; Bergh et al., 2011).

Another primary concern about the green agenda is the cost involved in environmental transitions. Countries are investing a massive amount of monies transitioning various sectors. For instance, in South Korea, 1.5 billion was invested cleaning up their river bodies (Prakash, 2009). The United States also invested 356 billion US dollars into its renewable energy technologies, and china, the economy considered to be the biggest investor in renewable energy, invested 2.5trillion US dollars into renewable capacity from 2010-2019. And finally, Japan also invested 202 billion US dollars into energy renewable. Several other countries like Ukraine, Morocco, Sweden, Netherlands, Russian Federation, and Taiwan invested above 1 billion US dollars in renewable capacities (Renewable Energy Investment to Surpass USD 2.5 Trillion (2010-2019), UNEP Report).

Referring to the above investment made by developed countries, it is maintained that the greening agenda is a matter of substantial investment. There is, therefore, the need for the advanced countries who strongly support the concept to support underdeveloped countries to

enable these countries to transition financially. Such countries might not be able to transform their economies due to financial constraints.

For this reason, the International Monetary Fund, World Bank, and the United Nations established a green fund to support developing countries incapable of affording the green transition cost (Buscher, 2015). Although, Switch African Green is a European Commission project that aims to provide funding support and other awards to six African countries to help enable these countries to transition to green by 2030 (Buscher, 2015). Nevertheless, this funding is to cushion economies efforts and not to finance the entire transition.

However, despite the concerns above of the concept of GE, the concept remains a mandate of change and a driver of sustainable development to eradicate poverty, unemployment, social inequality and to ensure equity, equality and improve the environment for a holistic development around the globe (United Nations Development Programme, 2012). For this reason, economies need to be supported internationally to transition irrespective of the challenges that may impede the transition because the current complexities facing the globe are too expensive to afford compared to the cost of transition to green.

Many countries such as China, France, United State, Santiago de Chile, South Africa, Kenya, Ethiopia, and Ghana are making efforts towards the transition of the agenda 2030 by formulating favourable policies and engaging in green initiatives (AFDB, 2013; Cooper et al., 2020; OECD, 2011). For instance, Ghana's economy is in transition. The government is attempting to ensure immediate actions are taken on climate change to ensure that the economy becomes a middle-income country by 2020 and to transition to GE by 2030. For this reason, the issues of climate change have been mainstreamed in the planning process at the macro,

meso and micro-level (National, Regional and District levels). In other words, Ghana has developed a National Climate Change Policy Framework (NCCPF) through a consultative process; the framework would be broad such that it can address multiple climate change challenges across board.

### 2.3 Drivers of Green Economy Transition

The drivers of GE here are referred to as the factors necessitating the green transition around the globe. GE has been identified as a new economic model that will help economies to achieve sustainable development.

There are several factors compelling economies to transition to GE. These factors include world economic instability structures, high cost of living standards, and imbalance biosphere, leading to human health deterioration. Social inequality, uneven economic growth among and between nations, food insecurity, depletion of natural capital, freshwater scarcity, institutional and market disruption, widespread poverty and environmental damage are also compelling factors (Poltarykhin et al., 2018).

These drivers were identified in a study focused on GE's prospects in Russia at the Moscow State University of Technologies and Management. These factors indicate that the brown economy (current economic model) is associated with complexities such as those discussed above. Making it very difficult to achieve and maintain economic development whilst the environment is also protected. But the leading focus of GE is to help countries achieve sustainable development. Development is not all about growth in Gross Domestic Product (GDP), but it also needs to reflect people's lives. There cannot be growth while the environment which supports the survival of human life is destroyed. The development discourse is to

improve something so, if there is a development and there are several problems associated with the development, such growth is not worth achieving.

Governments, environmental economists and world leaders support the GE transition, with the interest of transforming the world to low carbon emission, resource-efficiency and inclusiveness by 2050 to make the globe a better place for both the current and the unborn generation. Other drivers of GE are related to high carbon emission, the concept of sustainability and energy transformation (Koirala, 2018).

The era of sustainability is a primary concern as far as the transition to GE is concerned. The pathway identified to achieve most of the sustainable goals such as SDG 1 (no poverty), 6 (clean water and sanitation), 7 (affordable and clean energy), 8 (decent work and economic growth), 10 (reduce inequality), 12 (responsible consumption and production), and 13 (climate actions) is to go green.

Currently, energy sources cause high carbon emissions, which is dangerous to human health since it exposes people to respiratory disease and environmental destruction. Hence, the need to transition to rely on environmentally friendly and less health risk energy sources to save our planet and prolong human life span. Also, international pressures, air pollution, other environmental problems, physical risks of climate change and domestic unrest are considered to be the drivers of GE in China (Lin & Xu, 2014).

China is making tremendous efforts to help reduce the poverty rate in the country. But it appears their effort towards economic and social development is associated with severe environmental problems, which do not necessarily mean they should end their developmental activities to help save the planet. They need to simply adopt a more secured development

pathway to help sustain the environment. The carbon emission graph from 1980-2010 indicates that China is the highest emitter than Brazil, United Kingdom, Japan, India and European Union (Lin & Xu, 2014). Also, the drivers to green the economy of India include high fuel prices, government regulations, international pressures, judicial intervention, the strain on current resources to support economic growth and growing awareness (Arif et al., 2009).

The above drivers are inadequate waste management systems, a high dependency rate on fossil fuel for energy, and water pollution, among several other challenges common in a brown environment. To reduce carbon emissions and ensure efficient usage of natural resources, there is the need to manage waste properly through recycling. What is considered waste could be a raw material for production. GE helps ensure that waste products that can be recycled are put into efficient utilisation by ensuring effective and efficient management of scarce resources and providing clean energy and water. The best way to address emissions from energy production is by combining an appropriate mixture of various energy sources. For this reason, countries are transition to green by adopting renewable energy sources for clean and sustainable energy.

According to a study finding in South Africa (Mutanga et al., 2018). Some of the development activities, such as mining and industrial waste, pollute water bodies. As the saying goes, water is life, but water bodies are typically polluted, and this affects the availability of clean water for some people who depend on such water bodies. It is, therefore, believed that going green will help preserve water bodies for human use and other purposes.

According to the National Environmental Policy of Ghana, the matrix below (Table 2.1) consists of the current problems associated with a brown economy in Ghana (Ghana

Environmental Policy 1997). These are considered to be the drivers of GE in Ghana. In other words, Ghana wants to transition from a brown economy to a green economy because of these challenges listed in table 2.1. The environmental challenges in the first column consist of the problems associated with the current development pattern and its influence in Ghana. The causes refer to the activities that led to these problems. And the intervention refers to the measures that can be taken to address the issues. Most of these measures are green practices that can help to achieve sustainable development.

**Table 2.1 Drivers of Green Economy in Ghana**

| Environmental Challenges | Causes | Intervention/Management Activities |
|---|---|---|
| Land Degradation | • Results in declining productivity.<br>• Traditional and modern agricultural practices have led to declining soil quality, deforestation, accelerated erosion, reduced crop yields, increasing desertification conditions. | • Preparation of land use and land cover plans<br>• Mapping and environmental information systems of Natural Resources Management Programme (NRMP)<br>• National Soil Fertility Action Plan<br>• National Forest Plantation Development Programme (NFPDP) 2001<br>• Ratification of UN Convention to Combat Desertification (UNCCD)<br>• National Action Programme to Combat Drought and desertification (EPA, 2000)<br>• Ghana Environmental Management Project (3 Northern Regions) |
| Deforestation | • Marked deterioration of the condition and status of forest<br>• Forest resources mainly utilised for the production of logs for export, fuelwood extraction, charcoal production and agriculture, the main cause of deforestation<br>• Inadequate system for monitoring the rate and extent of deforestation<br>• Forest destruction through mining, bush fires and other poor silvicultural management practices<br>• Estimated annual forest cover decline of about 70,000 ha. | • Forestry Commission, since 1970 has been implementing comprehensive forest protection strategy to restore forest reserves<br>• About 30 areas (121,156 ha) of protected forests re-designated as<br>• Globally Significant Biodiversity Areas (GSBAs)<br>• Forestry Commission and Private Sector engaged in the cultivation of forest plantations (about 94,00 ha in 2004)<br>• Community-protected areas (CPAs) also called "sacred groves" are available in many communities. EPA has recorded 145 CPAs in Ghana.<br>• Forest and Wildlife Policy (1994) encourages community involvement in protecting forest resources |
| Biodiversity Loss | • Biological diversity is an indispensable component of natural resource base<br>• The rich biodiversity in different parts of Ghana – | • Various domestic policies, laws and regulations related to conservation and use of biodiversity, e.g. Forestry and Wildlife policy, water resources policy |

| | | |
|---|---|---|
| | mammals, birds and plants<br>• Changes in the environment, drought and climate variability is proximate drivers of biodiversity loss<br>• Economic development and urbanisation have resulted in rapid loss of biological diversity<br>• The current harvest of wildlife for meat is estimated between 225 and 385,000 tons annually | • Designation of "protected areas" – Six Resource Reserves, Two wildlife Sanctuaries, Seven National Parks, Six Ramsar Sites and many community-based sanctuaries<br>• Ghana is a party to many international conventions on biodiversity.<br>- Convention on Biological Diversity (CBD) - CITES<br>• Projects to conserve biodiversity: - Northern Savannah Biodiversity Conservation Project - National Biodiversity Strategy and Action Plan |
| Marine and Coastal Degradation | • Marine and coastal areas are under pressure due to: intensive agricultural production, industrial development, salt production, mining and quarrying and urban development<br>• Sources of pollution are municipal and industrial effluents, agricultural runoffs<br>• Sea erosion, e.g. Keta and Ada | • Direct investment in control structures, e.g. Keta Sea Defence Project<br>• Gabions and boulder revetments to arrest erosion<br>• Mangrove replanting and planting of other vegetative covers, e.g. at Winneba<br>• Regulatory incentives fines for illegal mining<br>• Policy reforms in land use planning and coastal zone management<br>• Investments in waste treatment and small-scale waste collection |
| Urbanisation | • Rapid population growth rate (2.2 % pa)<br>• Regular north-south, rural-urban migration<br>• Very high housing demand needs<br>• Impact of over-crowding on human health, poor sanitation, absence of sewage treatment plants<br>• Lack of planning leading to inordinate growth of cities, e.g. Accra, Kumasi, Tamale | • Policies and programmes to improve living conditions in rural areas to contain rural-urban migration<br>• Improvement in urban transport<br>• Affordable housing projects in the main cities Draft Urban Policy in place<br>• Draft Housing Policy<br>• Cabinet approval of Environmental Sanitation Policy<br>• Northern Region Small Towns Water and Sanitation Project |

| | | |
|---|---|---|
| | • Encroachment on reserved open spaces and waterways<br>• The proliferation of unapproved settlements | |
| Climate Change | • A global problem with local implications<br>• Changes in rainfall pattern and impact on agricultural production, unprecedented floods and disasters<br>• Increased coastal erosion due to sea-level rise<br>• Drought in Sahelian region resulting in southward migration of people and animals<br>• Climate change and associated health problems | • Guidebook to facilitate the integration of climate change and<br>• Disaster Risk Reduction into National Development Policies and Planning prepared<br>• Ghana is a party to the UN Framework Convention on Climate Change (UNFCCC)<br>• Studies on measures to abate climate change through forestry and Land-use using the Comprehensive Mitigation Analysis Process (COMPAP) model.<br>• Needs assessment report prepared in fulfilment of decisions of the COP of the UNFCC<br>• A report with the assistance of the Climate Technology Initiative (CTI) of the OECD lists several desired technologies based on a national set of criteria: Energy Efficient Lighting, Industrial Energy Efficiency and Landfill Methane Gas Recovery |
| Urban Noise | • Motor vehicle congestion and increasing noise levels from sirens and horns<br>• Commercial activities in markets and at lorry parks<br>• Industrial noise: factories, mining operations, quarries<br>• Noise at entertainment and social gatherings – e.g. parties, churches, mosques<br>• Equipment and engine noise, e.g. generators, corn mills and block moulding machines in | • EPA guidelines on permissible ambient noise levels for the country<br>• Noise levels for residential, educational, commercial and places of worship<br>• The inability of Municipal/Metropolitan Assemblies to enforce the guidelines |

| | | |
|---|---|---|
| | residential areas, itinerant musical shops, etc | |
| Invasive and Alien Species | • Occur in large water reservoirs – Oti arm of Volta Lake, Tano Basin<br>• Obstruction water use: fisheries, hydropower generation, transportation | • Invasive Aquatic Weeds Management Project (EPA)<br>• EPA Water-weed Management in West Africa Integrated<br>• Management of the Volta River Basin |
| E-Waste Management | • Sources are: used equipment in the form of computers, copying machines, television sets, mobile phones and electronic equipment<br>• Rejected in the country of origin and imported into Ghana without regard to their age and degree of usefulness<br>• No guidelines/manuals on disposal techniques<br>• No e-waste collection or recycling programme<br>• Burning of e-waste to retrieve useful parts<br>• Consequent emissions and toxins cause detrimental impacts on human health and the environment | • Ghana is a signatory to the Base Convention and Kyoto Protocol as well as other global treaties for the protection of the environment<br>• EPA Act 1994 (Act 490) provides the principles and mechanisms for integrating good environmental management into all developing activities.<br>• EPA Act provides a framework for waste management through the principles that refer to avoidance or minimisation and remediation of pollution, including waste reduction reuse, recycling and proper waste disposal. |
| Chemical (PCBs) | • It covers all chemicals – except pharmaceuticals<br>• Increasing use of agrochemicals – pesticides, weedicides, fertilisers<br>• Potential to cause considerable health and environmental problems production to end-use | • The Factories Offices and Shops Act 328 (1970)<br>• Draft Policy on Occupational Safety and Health<br>• Mercury Law (1989)<br>• Prevention and Control of Pests and Diseases of Plants (Act 307)<br>• Infectious Disease Ord. Cap 78 Licensing of all chemical dealers |

| | | |
|---|---|---|
| | • Presence affects the quality of air, soil and water | |

**Source**: (Ghana Environmental Policy, 1997)

### 2.4 Prospects of Green Economy

Economies have several expectations due to the promising nature of GE. In other words, there are a substantial number of prospects that come with GE, and these serve as an inspiration.

To begin with the prospects of GE, generally, economies hope to build ecological infrastructure, produce and preserve their natural capital, improve both agriculture and fish production, and address issues of freshwater scarcity when they transition to a GE.

China expects to become one of the economies with a higher Gross Domestic Product (GDP) through green products and services (World-Bank, 2011). They also look forward to becoming a leading economy globally in green business models, technologies and an essential commercialising destination for several globally significant low-carbon technologies. Moreover, China anticipates developing a society of resource-efficient, low-carbon transportation systems, intelligent green buildings which will be livable according to international standards. Finally, China expects to address climate change challenges through proactive planning when successfully transitioned (World-Bank, 2011).

California also expects to have a sustainable and resilient ecosystem with healthy ecology; they hope to overcome climate change in their ecosystem. Moreover, a significant prospect of GE in Russia is in the agricultural sector (Poltarykhin et al., 2018). Greening the agriculture sector would be cost-effective in terms of production. GE is expected to add value to forest harvest, fisheries, agriculture, and other activities that depend primarily on the environment that benefits people in developing countries.

Significant poverty reduction and secondary macro-economic benefits are expected from greening the agricultural sector globally. Greening the agrarian sector also aims at increasing productivity to reduce rural poverty than investing in any other industry (UNEP, 2011). Ecological agriculture will help relax foreign exchange constraints by reducing imported inputs and increasing exports of sustainable agricultural products (Module 4. PAGE, 2012). In addition to the above, economies anticipate addressing energy poverty through affordable and cost-effective renewable energy systems.

In a nutshell, GE's success is expected to reduce the vulnerability of the poor by building resilient and proactive systems and addressing the loss of biodiversity, desertification, ocean degradation, air, water, and soil pollution around the globe.

### 2.5 Challenges of Transitioning to Green Economy

Transitions are associated with challenges; the level of conscious effort made towards achieving the transition determines whether it will be successful or otherwise. In other words, change comes with hindrance or resistance with the fear of uncertainty of future outcomes. Hence, there is the need for policymakers, government and other stakeholders around the globe who play a significant role in the environmental transition agenda to be aware of the factors capable of causing hindrance to the transition of GE to enable appropriate solutions for a smooth transition. Therefore, the challenges are categorised into economic, ecological, social, technological, institutional and policy framework, actor cooperation and collaboration, and technical.

### 2.5.1 Economic Challenges

Transitioning to an economy of low carbon, resource-efficient, and social inclusion means doing away with economic development trends and strategies that negatively affect the environment. In this case, industries and other sectors that cause environmental pollution require innovation or, if possible, shut down. Shutting such manufacturing sectors down or making them innovative to become environmentally friendly comes with job losses. Greening economies create a job crisis in terms of traditional jobs, but on the other hand, it establishes decency and green jobs.

In South Africa, for instance, many old industries are environmentally unfriendly but are excellent sources of employment to a substantial number of the citizens and a source of economic empowerment (Kaggwa et al., 2013). Re-orienting such industries in South Africa means people in these sectors will lose their jobs, which will seriously affect their economic status because they might become unemployed.

China is also facing this same challenge; due to the high poverty rate in China, most people make a living from unfriendly environmental industries called "dirty industries". Greening China means those engaged in such industries as their source of livelihood will equally lose their jobs, including rural folks and other local communities (Lin & Xu, 2014). People who own these dirty industries will have to innovate or shut them down to help save the planet. Shutting such industries down is challenging; therefore, such people need to be convinced of getting something better in GE far better than their current livelihood source to support the new idea and make the transition possible.

In India, people do not patronise green activities due to the cost involved. As a result of high poverty levels in India, the traditional economic development models are more affordable and more preferred than the new model (green economy) that just emerged (Arif et al., 2009).

### 2.5.2 Green Economy Policy Frameworks and Strategic Plans

The evolution of the concept of GE in recent years goes hand in hand with the implementation of strategies by integrating public and environmental policies. Policy integration strategy is generally a necessary condition for the encouragement and viable development of new environmental technologies. The political will towards the transition is very crucial. The DNA of a change process depends on the political discourse of the concept in question (Chukwu, 2020; Gurria, 2008). According to Prakash (2009), international and domestic policies are the main challenge of GE. Green growth is sustainable development policies and economic policies integrated (OECD, 2011).

Adequate and appropriate green policy frameworks and institutional mechanisms play a very significant role in the GE transition. There is a dire need for a deliberate green action plan to solve the endemic environmental complexities caused by unsustainable utilisation and management of natural resources (capital) and environmental degradation in the Niger Delta State of Nigeria (Zabbey et al., 2014). However, it is very unfortunate that some countries have challenges in these policies and institutional frameworks. Green activities are not mainstreamed into current economic development policies and governments that mainstream green policies do not ensure the enforcement of the policies (Lin & Xu, 2014; Ospanova, 2014). Governments and policymakers need to formulate green policies or review the existing policies and incorporate green activities into economic and social policies targeted towards development to enable institutions, organisations and sectors to transition with the policy guide.

Formulating favourable policies to support the GE course cannot be over-emphasised. The policy intervention toward the green agenda in China is considered inefficient and therefore poses challenges towards the GE transition. The current institutional mechanisms in China are closed and tend to favour state institutions monopolised at the expense of the private sectors. Institutional mechanisms should be such that they will select both state and private sectors since they all contribute to development discourse.

Hence, the great possibility of the GE transition agenda is highly based on effective and efficient policies with a high level of legislative enforcement. Some governments are unwilling to invest in scaling up green transition projects and programs (European Energy Agency, 2019). The role of the government's commitment to the transition of GE is a very significant force. In Ghana, for instance, governments have only short-term to be in office. For that matter, longer-term policies like GE are challenging when it comes to achieving anything substantial. Due to this, governments have no option other than to go for short-term policies that primarily focus on social benefits that will make them win votes for the next election. For these reasons, governments are more likely to accept and implement GE programmes and projects if they demonstrate short-term gains (UNECA, 2015).

GE is a long-term plan and will therefore be very slow as far as the duration of government turner of office is concerned. Leaders are said to be the standard-bearers and role models by way of setting standards for their subordinates to follow. In the case of Ghana, the leaders are not committed to the green growth and green economy transition; therefore, the trickle-down effect impinges directly on their subordinates (UNECA, 2015).

According to the Inclusive Green Growth in Ghana (2016), Ghana has implemented policies that bear the GE transition of the country's economy. These policies include the Renewable

Energy Law Bioenergy Policy, Strategic National Energy Plan (2006-2020), Energy Sector Strategy and Development Plan, Urban Transport Policy, National Transport Policy, Food and Agriculture Sector Development Plan, Feed-in Tariff, Medium Term Agriculture Sector Investment Plan, Agroforestry Policy, National Environmental Sanitation Strategy/Policy and Action Plan, Strategic Environmental Sanitation Investment Plan, and the National Wood-fuel Conservation Policy among several others. All these policies articulate GE-related issues in Ghana as well as the transition.

### 2.5.3 Poor Institutional/ Actors / Stakeholders Collaboration (Governance).

Coordination and collaboration among significant institutional actors and political leaders in various institutions that play an important role in the transition are poor (Lin & Xu, 2014).

In China, for instance, the lack of local and regional government integration and non-localisation of transition ideologies into indigenous knowledge is a challenge as far as the green transition is concerned. For instance, intense and vibrate environmental civil society groups play a very significant role in the transition. They can help bridge the information and knowledge gap between the citizens and policy (UNDP, 2016). Yet, few environmental civil society groups in Ghana and most of the few are not as effective and robust as expected.

Afful-Komson (2012) identified institutional deficiency as a hindrance to African effort towards the GE transition. Lack of technical capacity for coordination and strong institutional leadership cannot be overlooked in the green transition challenges (Ministry of Environment, Science and Technology, 2012).

The role of institutional collaboration and effective coordination between actors of various institutions is critical to the transition to GE.

Brink (2014) listed the following six components of good governance; institutions and their roles, process and participation, transparency and disclosure and monitoring and evaluation. Some institutions that assume the green transition are for a particular sector and therefore do not play any role in supporting the transition. Countries experiencing institutional collaborative challenges influence the transition since GE is more collective than individualism (Vasey & Holl, 2007).

Concerning the climate change financing report by the ministry of finance in partnership with ISSER, it is emphatically stated that the leadership role ensuring coordination of climate change financing is fragile (Asante et al., 2015). Brown economies are created by the entire economy, particularly certain specific sectors so, it takes more than just a sector to help transition to green. When one sector is eager to go green and make the necessary effort without any support from other key sectors, their effort will yield no result. Therefore, this indicates how important actors need to collaborate and coordinate to support the transition to GE.

### 2.5.4 Limited Expertise (Capacity Building)

Labour skills, capacity and experiences of green practice techniques are some of the challenges. Most people in various economies have no or less knowledge of GE (Ospanova, 2014). Due to this, there is a lack of support from the populace; for GE to be successful, almost everyone has to be aware of what GE is to help make the transition a success. The concept of GE has not been incorporated into educational programmes in schools and colleges in India (Arif et al., 2009). And this makes it very difficult to gain public support as far as the green transition is concerned. For economies to transition to green, they need to shift their science, research, education, and training priorities to green (OECD, 2012). Green skills and knowledge are required for both government and private workers, professionals, and decision-makers. Every

economic model involves capacity building and skills development; hence shifting these disciplines will help make the transition easier.

GE is a new concept though it was introduced years ago but did not gain recognition as it is widely known today; for that matter, few people have an idea on the concept, and very few have the expertise. Some countries are suffering from brain drain and are therefore losing their quality human resources to other countries to the detriment of their own countries. Brain drain leads to limited human resources training in the green field to help facilitate the green transition. A typical example is in the Caribbean; knowledge in the Caribbean is fast declining in terms of quality human resources, which could have been of help to the green transition (Module 1, Introduction to the Green Economy Approach).

Lack of expertise in green is a challenge in the sense that schools and colleges are yet to incorporate green into their syllabus and programs at the tertiary level. As indicated earlier, expert knowledge on the green is very core in this transition and can therefore be made available when trained.

### 2.5.5 Inadequate Funding

The transition to GE involves especially financial costs and is about how much we are willing to pay to help preserve our planet. Even though it is costly yet it is worth the price (Barbier, 2011). For instance, countries like United States, Ukraine, Sweden, Netherlands, and Morocco, incurred huge investment in their renewable energy and river bodies to support the green agenda (Renewable Energy Investment Trend, 2019). The enormous cost associated with the transition makes it burdensome for economies to afford and is a significant challenge for developing countries (Komen, 2013).

In Spain, one challenge is distributing the cost associated with the transition (Unruh, 2002: 818). In other words, how much is supposed to be given to whom to pay and based on what criteria is the problem of cost distribution? A partnership study conducted in Europe to investigate the challenges and prospects associated with sustainable innovation and competitiveness within the transport sector revealed many challenges related to the transport sector transition. And among these challenges are financial constraints (Aggelakakis et al., 2014). For instance, Arif et al. (2009) discovered that poverty was one of the main challenges in India as far as the green economy transition is concerned. There is, therefore, the need for funding support from the international community since the transition is supported at the global, national, and district levels. Indicating that, economies need considerable funds to help make the transition possible.

Literature reveals how funding challenge is making the green transition impossible for most economies, emphasising underdeveloped countries, of which Ghana is not an exception. Funding is the backbone of the transition and must therefore be a topmost priority. Undoubtedly, the investment required by greening our economies today cannot be compared to what economies stand to lose in the future when nothing is done to address the issues of climate change challenges, global warming and Green House Gas, among several other complexities at the moment.

This indicates the relevance of resource support at the international level, without which developing countries will only sing the green transition song but will not transform their economies. Although there are grants and other funding supports at the international level, they are considered inadequate and cannot do much. Besides, the Inclusive Green Growth and GE

report in Ghana by the UN mentioned earlier also indicates that most international pledges of funding support are not redeemed.

### 2.5.6 Technology

Developing countries have problems in green technology affordability, accessibility, and technical skills and knowledge (Xing et al., 2011).

For instance, Ospanova (2014:14) "Kazakstan and other transitional and developing countries face cost prohibition procurement of such technologies due to intellectual property regulation and trade barriers".

The international community plays a significant role in the green economy transition. Technologies for green activities currently reside in the western part of the globe and are often very expensive. Shifting from a system that is motivated by profit to one where social consideration is factored into overall business goals will push the green agenda forward in many developing countries. Eventually, such a shift will make green technologies more affordable and accessible to the rural population (UNECA, 2015).

The issue of technology is a real challenge as far as the transition is concerned. In China, there is a technological barrier in terms of the techniques needed to operate the technologies requires by GE aside from the cost involved in acquiring those technologies (Geng & Doberstein, 2008). In Spain, there is also a similar challenge (Unruh, 2002:818). Therefore, to transition to GE, there is the need to move to clean technologies that require people with the requisite skills and abilities to manage such technologies. When people are not equipped with clean technology skills and knowledge, it becomes challenging to transition until training is offered in this field

to help provide the requisite skills. In India, there is indiscrimination and often irresponsible use of technology.

A report by the United Nations on Inclusive Green Growth (IGG) and GE in Ghana indicates several challenges in implementing these new models (UNECA, 2015). The challenges revealed by the report include lack of funding, sustainability and replicability of the project, lack of adequate commitment from leadership, and lack of long-term plans.

### 2.5.7 Unsustainable Environmental Management

In addition to the above challenges, Zabbey et al. (2014) identified unsustainable human activities such as uncontrolled slash-and-burn farming approach, oil exploration and exploitation, logging, mining activities, and urbanisation as a barrier towards the GE transition in Nigeria, precisely in the Niger Delta State.

The key sectors to transition to GE in the Caribbean identified the following barriers associated with the transition; absence of regulatory institutions, instruments and legislation, lack of coherent and consistent policies, high levels of public sector indebtedness/ inadequate financing. Inadequate transportation systems, particularly for perishables, vulnerability to natural hazards such as floods and hurricanes, high initial capital costs, competing demands for land by other sectors such as tourism and housing, inadequate access to land, and limited R&D resources were also transitional barriers in the Caribbean. In addition to these barriers are low land and soil quality due to poor management and utilisation of the natural environment, technical limitations related to grid absorption capacity, high transaction costs, weak national statistical systems that affect the collection of agricultural statistics, the economy of scale limitations, vulnerable marketing systems, linkages and participation in growth markets, and

inadequate availability of skills (Module 4, transitioning to a green economy in key sectors). Almost all these challenges associated with the transition in the key sectors in the Caribbean are not different from what has been discussed above in other countries.

### 2.6 Theoretical Framework

The underpinning theoretical framework of this study is the Multi-Level Perspective (MLP) Framework, also called Socio-Technical Transition theory, developed by Arie Rip and Rene Kemp in 1998 and was later refined by Geels in 2005 (Genus & Coles, 2008; Mulder et al., 1999). It is a prominent framework in socio-technical transitions (El Bilali, 2019; Geels, 2011).

The framework presents a list of factors that could drive and influence transition at three-dimensional levels; Landscape-level (Macro), Regime level (Meso) and Niche level (Micro) (Geels, 2011; Studies & Studies, 2011). The landscape is referred to the broader environment (international level) were actors, environmental problems, cultural norms, oil prices, economic growth, wars, political coalitions, problems and paradigms influence or drive transitions. The regime is the intermediate level, which considers the role and the influence of sector policies (political will), market users, practices, knowledge, networking and strategyies in terms of societal transformations. Finally, the niche is the third level where change is assumed to originate (Steward, 2012; Geels, 2004). The framework is multi-dimensional and inter-disciplinary- it takes the various factors mentioned above into consideration in the transition process (Twomey & Gaziulusoy, 2014). These factors influence transition pathways because the absence of these factors presents a challenge for the possibility of the change and vice versa. These same factors could be driving the change required.

In other words, MLP focuses on the dynamic and the prospects of a broader transition process that is concerned with successful transformative societal process and can be used to

comprehensively assess the possibilities, barriers and drivers of a transition process towards sustainable development (Geels, 2012). The framework provides a clear understanding of the complex interplay of forces in disruptive change (transition). The theory has been critiqued to be biased towards bottom-up innovations, which is very true. Some transitions are inspired from the international level (landscape); a typical example is the GE transition which this study is focused on.

Some studies have applied the framework in examining socio-technical transitions towards sustainability over the years. For instance, El Bilali (2019) recently applied the framework to examine sustainable transitions in Agriculture and Food Systems. Swilling et al. (2016) used South Africa for a case study research in reviewing the endeavour of development states and sustainable transitions by looking at the prospects of a just transition and the role of political leaders. Also, Geels (2012) applied the framework to analysed sustainable transport transitions in the United Kingdom and the Netherlands by examining the actors, barriers (policies, technological, culture, and civil society) and the dynamics associated with the transition in terms of transportations.

Another study by Bergh et al. (2011) analysed how environmental innovations and societal transitions occurred. These scholars applied various sustainability approaches, including MLP, to examine how strategies and public policy formulation and implementation barriers can be addressed towards environmental innovations and sustainable transitions in economic, social, technological, and behavioural aspects.

Unruh (2002) also draws on this framework to understand industrial countries that are locked up in fossil fuel-based energy systems. He added that creating sustainable transitions requires

disruptive innovation, associated with systems transformation, confronted with many forces ranging from infrastructure, practices, institutions, laws and regulations that can make the change successful or unsuccessful.

The theoretical framework is considered appropriate for this study since this research focuses on examining the barriers and prospects of transition to GE in Ghana.

The transition (socio-technical) to GE is not different from the transitions discussed in the framework and, therefore, will be confronted with many challenges that could make the transition process successful or unsuccessful. In other words, the study seeks to identify the barriers of the GE transition that has the tendency or potency to influence the transition. And to also find out the prospects associated with a successful transition thereof.

The GE transition is collaborative, and therefore includes multi-actors from various sectors that play a significant role in the transition process. It is generally an entire system or systems transition that can be faced with many hindrances ranging from institutional policies, technology, technical skills, resource constraints, social acceptability, governance, private-sector participation, social acceptability, knowledge level, research and development.

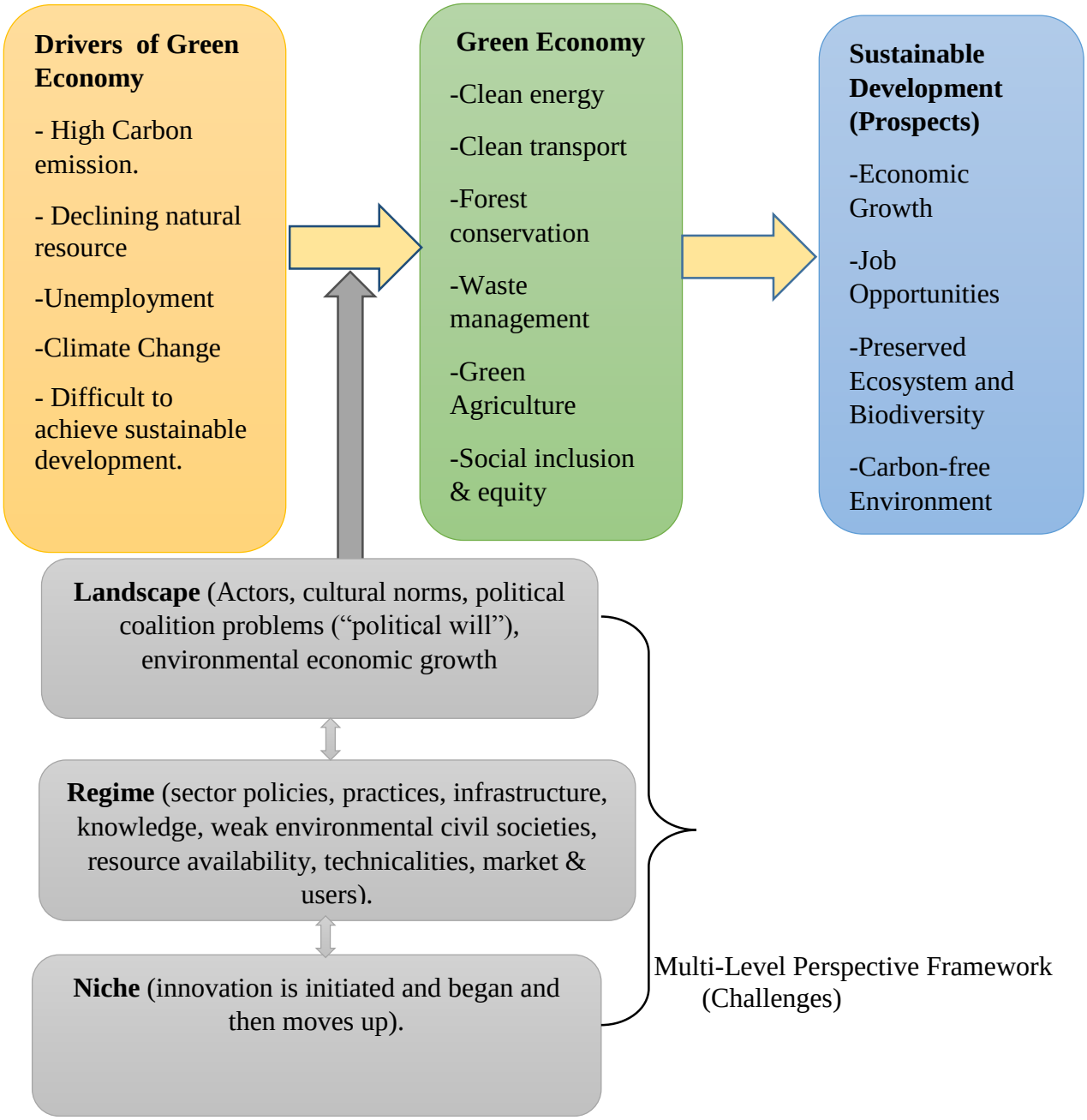
Shifting from one socio-technical regime to another is what is termed transitions according to MLP. Also, El Bilali (2019) defined sustainable transitions as "long-term, multi-dimensional and fundamental transformation processes through which established socio-technical systems shifts to more sustainable modes of production and consumption" Socio-technical transitions involve changes in culture, policies, consumer practices, business models, infrastructures and technology (Geels, 2018).

## 2.7 Conceptual Framework

Figure 2.1 depicts the study's analytical framework; it was developed based on the literature reviewed and the study's objectives. The framework presents how the research applied an aspect of the MLP framework to the study. The challenges of the transition to a GE were examined according to the various factors listed within the landscape, regime, and niche as indicated in the conceptual framework.

However, to focus on the study, the various levels of the theory were overlooked. The study focused on the factors at the various levels in a non-hierarchical order to enable the achievement of the study objectives. The study explored the prospects and challenges associated with the GE transition in Ghana regarding actors' collaboration, sector policy, resources availability (Finance), technology, governance, private sector participation, education (knowledge or capacity), and infrastructure. The study also considered other challenges depending on the research findings.

**Figure 2: Conceptual Framework**




**Source:** Author's Construct, (2020).

The first antecedent on the left represents the current economy (brown economy), containing the factors that necessitate (drivers) the green transition in Ghana. It indicates the drivers' compelling countries to transition to GE. To mention but a few of the drivers are insufficient natural resource utilisation, global warming, food insecurity, social inequality, climate change,

and a high rate of unemployment. The arrow between the drivers and the green economy stands for the transition process. The diagram moderating the transition process consists of the factors capable of influencing the GE transition representing the challenges. The factors are presented in various levels according to the MLP but, this study examined the factors in general. Within the diagram titled Green Economy comprises measures to be taken to be able to transition to GE such as clean transport, by transitioning from fuel vehicles to chargeable vehicles (electronic vehicles), clean energy (Solar P.Vs), waste management, forest conservation, green agriculture, and social inclusiveness and equity.

The Multi-Level Perspective approach focuses on the dynamic and the prospects of a broader transition process concerned with the successful transformative societal process (Geels, 2012). The study applied the approach to comprehensively assess the GE transition regarding drivers, prospects, and challenges of a transition towards sustainable development in Ghana.

Finally, the outcome antecedent headed sustainable development connected with the green economy is an indication that green economy is the driver or the pathway to achieving sustainable development. Achieving sustainable development means sustainable economic growth, carbon-free economy, preserved ecosystem and biodiversity, substantial employment opportunities, social inclusiveness and sufficient natural resources. The prospect of the green economy can be referred to as the potential benefits that will help achieve sustainable development. This is what the research's conceptual framework is meant to communicate and relates to the MLP.

## 2.7. Conclusion

Finally, it can be concluded that the concept of GE is considered to be the way forward to address most of the modern complexities associated with development, precisely sustainable development. Therefore, the onus lies on economies, government and world leaders to help transition countries from brown economies to green economies by decoupling economic activities from the environment and ensuring efficient utilization of natural resources by promoting waste recycling initiatives and actions to achieve green economies around the globe. The literature review brought to light the effort being made by economies towards the transition of their economies to a multi-faceted development model for sustainable purposes.

From the review above, it is evident that the implementation of the green economy transition has not been devoid of challenges despite the existence of prospects of the new development model in countries like China, India, Califonia, Ethiopia, and South Africa, among several other countries. For this reason, this study is being conducted to find out the challenges that can make the transition of Ghana's economy to green impossible and the prospects of a green economy in Ghana.

The chapter also reviewed the multi-level perspective framework, which is also called the socio-technical transition theory. This theory mostly underpins sustainable development research, of which this study is not an exception. The chapter went further by reviewing what other scholars have done so far (empirical research) as far as the transition of GE is concerned.

# CHAPTER THREE

# METHODOLOGY

## 3.0 Introduction

The study explored and ascertained the prospects and the challenges associated with the transition of Ghana to a GE. This chapter, therefore, presents the method, processes and procedures employed for the research. The chapter is sub-divided into the research paradigm, research design, research approach, sampling techniques, sample size, study area, data sources, research instrument, data analysis technique and data management, including ethical considerations and the study limitation.

## 3.1 Research Paradigm

The interpretivist research paradigm influenced this research. Proponents of this paradigm believe that determining what is real and its understanding can only be possible through the subjectivity of and the intervention of reality (Saunders, Lewis, & Thornhill, 2000). Human attitude and behaviour are highly unpredictable and mainly influenced by the existing circumstances at the time of action. Unlike tadpoles that can be subjected to experiments, human beings differ.

Also, realities are not fixed; therefore, how individuals perceive common issues with logic is divergent primarily. Since the concept of GE has to do with economies, world leaders and governments (political issues), there are therefore going to be divergent views from these various stakeholders.

The study seeks to appreciate the independent thoughts of the stakeholders in the transition and explore the concept in Ghana's context. This research, therefore, seeks to rely as much as possible on the study of the participants' thoughts or perceptions about the subject matter of investigation. The interpretivist paradigm was then selected to offer the researcher the opportunity to interact with participants, explore the concept of a green economy, interpret participant views or contributions, and understand the participants' contributions to achieve the research objectives.

### 3.2 Research Design

The research design refers to the researcher's methods and procedures in collecting the data needed to help structure and solve the research problem. It also tells the information to be gathered and the source from which the data can be collected. Smith and Albaum (2005) posited that an appropriate design helps obtain relevant data to address the research problem. No method is considered to be the best. Instead, various methods provide many choices, each with its merits and demerits.

This research, therefore, employed a case study design and used descriptive and exploratory methods in qualitative research to answer the research question: What are the prospects and challenges associated with Ghana's transitioning to a green economy? The exploratory method was preferred based on the descriptive nature of the research question.

Besides, the method is considered appropriate since it is deemed necessary for descriptive research (Ishtiaq, 2019; Shi & Lai, 2013; Babbie & Mouton, 2005). Secondly, there seems to be no precise model to test and measure GE's prospects and challenges in Ghana, so the exploratory method was chosen to allow the researcher to conduct in-depth interviews to help gather relevant data for further qualitative analysis.

### 3.3 Unit of Analysis

The energy, transport, forestry, waste and agriculture sectors were the main units of analysis. These ministries and agencies of these sectors are situated in the Greater Accra region of Ghana. The research objective makes it imperative for the research to be undertaken within the various offices of these ministries under the selected sectors. The ministries and agencies under these sectors were interviewed.

The choice of these ministries and agencies was informed by their roles in the implementation process of GE in Ghana and their contributions to understanding the research problem and questions, respectively. They were also selected based on their understanding of the concept of the green transition in Ghana. The research sought to use as the unit of analysis the energy, transport, waste, agriculture and the forestry sector's prospects and challenges of the green economy transition in Ghana.

### 3.4 Research Approach

Qualitative and quantitative are the two main research approaches in carrying out social science research. To achieve the investigation's main objectives, the qualitative approach was considered the most appropriate under the exploratory design. The qualitative research approach was chosen because, the method serves the best purpose in terms of explaining and describing the likely challenges associated with the implementation of a GE in Ghana and the prospects thereof.

Literature shows that the qualitative research approach is suitable and recommended for exploratory and descriptive studies, of which this study is no exception. Also, the approach entails in-depth investigation of knowledge of the concept under study through interview techniques, archival and other documentary analysis, observation, audio-visual and

ethnographic study to provide a comprehensive and authentic understanding of the prospects and the challenges of GE in Ghana (Creswell, 2013 cited in Ayuen, 2015).

Moreover, the concept of GE is vast such that respondents need to be granted the necessary space or opportunity to express themselves in their own words to obtain extensive but relevant information to address the study objectives. In other words, the qualitative approach offered the opportunity to probe for more information by allowing the respondents to respond in their own words than forcing them to choose from fixed responses as the quantitative approach does.

Additionally, the qualitative methods are typically more flexible because they create room for more excellent adaptation and spontaneity between the researcher and the study participants. Therefore, the approach is considered to present the researcher with a better understanding of the challenges and prospects of transition Ghana to a GE.

### 3.5 Study Area

Primary data was collected from the energy, transport, waste, forestry and agricultural sectors located in the Greater Accra Region of Ghana. Accra is chosen as the study area because it is the capital of Ghana and the sectors that play a key role in the transition have their head offices within the region. Also, change always begins from the top and trickles down to the lower level. For this reason, it was assumed that getting to these sectors was considered appropriate because their success in dealing with the transition challenges will make it possible for the other regions to transition.

Also, the head offices of the various sectors in Accra formulate policies for their agencies and department to implement. They also monitor and evaluate the progress of the green economy

transition. It is assumed that the kind of information that the head of these sectors will provide may not be available in their sub-offices within the other sixteen regions in the country since it is a new concept. The study also considered some agencies under the ministry of energy, transport, waste, forestry and agriculture within the Greater Accra Region.

### 3.6 Target Population

A group of individuals or participants with particular attributes of interest and relevance from which a sample is selected for generalisation is termed target population (Creswell, 2003). Wilson et al. ( 2010) also referred to the target population as all the items or cases from which a sample is chosen. The target population of this study encompasses the staff members of the five sectors understudied within the environmental directorate, development planning directorate and other divisions that play any role in the GE transition.

Therefore, the study population entailed the Ministry of Energy and Energy Commission representing the energy sector, Ministry of Environment, Science, Technology and Innovation, and Environmental Protection Agency representing the waste management sector.

Also, the Ministry of Transport and the Ministry of Aviation representing the transport sector. Additionally, the Ministry of Lands and Natural Resources (Forestry Department) and Forestry Commission represent the forestry sector, and the Ministry of Food and Agriculture also represent the agricultural sector. The study targeted the staff members within these ministries and agencies because it is assumed that the concept of GE is new and well known to the people who are working towards its success in the study sectors. Therefore, these staff members are considered to have an in-depth knowledge of GE and can help provide relevant, valid and in-depth information to answer the research questions and achieve the research objectives.

### 3.7 Profile of Study Sectors

The research is focused on only five key sectors considered to be the highest emitters of carbon in Ghana (Ahenkan, 2020; MESTI, 2012). Although other sectors such as industries, construction, and tourism contribute to environmental damages, the five sectors considered in this research are the energy, transport, waste, forest and agriculture sectors. These sectors are profiled below.

#### 3.7.1 Energy Sector

The ministry of energy in Ghana is responsible for the formulation, implementation, monitoring and evaluation of energy policies in Ghana, and it is owned and controlled by the government of Ghana. Concerning the transition to clean and renewable energy, the ministry and the energy commission are responsible for formulating, implementing, coordinating, monitoring and evaluating the green transition. Agencies under the energy sector, including but not limited to GridCo, Bui Power, Volta River Authority, and Ministry of Aviation (MoA), also work hand in hand with the MoT since MoA facilitates activities related to flights. The ministry is located in the Greater Accra Region of Ghana.

#### 3.7.2 Transport Sector

The transportation sector is key in terms of the green transition because transportation activities in Ghana are one of the major causes of environmental pollution, especially air pollution. The Ministry of Transport (MoT) is responsible for providing transport services in Ghana. Transportation alternatives within the country include marine, air, road, ferry and rail. The

ministry is responsible for policy formulation, coordinating and integrating sector plans and strategies.

Also, undertakes national-broad planning, implementation, development of data, leads road safety activities and programmes. The ministry also trains and develops human resources for the maritime industry needed in the sector. The ministry has fifteen (15) agencies and departments. Among the agencies managed by the MoT include Ghana Airport Company (GAC), Drivers and Vehicle Licensing Authority (DVLA), Ghana Ports and Harbours Authority (GPHA) and National Road Safety Commission (NRSC) (Ministry of Transport Website).

### 3.7.3 Forestry Sector

Forestry is under Land and Natural Resources (MLNR); the ministry was developed under section 11 of the Civil Service Law 1993 (PNDC 327). The ministry is legally mandated to manage and utilize the nation's lands, forest and wildlife resources, including mineral resources, to achieve social and economic growth. The ministry is responsible for policy formulation, and they also have oversight responsibility for all resources in Ghana, including lands. The MLNR ensures the conversation of forests and the ecosystem in Ghana.

### 3.7.4 Environmental Sector (Waste)

The Ministry of Environment, Science, Technology and Innovation (MESTI) is responsible for promoting sustainable development through sound environmental governance, intensive awareness creation, partnership and collaboration. MESTI formulate environmentally sound policies and regulatory framework to ensure the appropriate environmental friendliness, science and technological use of the environment. MESTI promotes the GE in Ghana, improves

the capacity to adapt to climate change impacts, strengthens regulatory and institutional frameworks for managing sustainable resources. Agencies under the ministry include Environmental Protection Agency (EPA), Ghana Atomic Energy Commission, Land Use and Spatial Planning Authority and National Biosafety Authority.

The research considered the Environmental Protection Agency among the other agencies under MESTI because the agency seems to have direct environmental responsibility and helps to address waste management issues. For this reason, the researcher interviewed the Ghana National Cleaner Production Centre, an office of EPA that is in charge of ensuring clean production and proper waste management (waste recycling) in the country.

### 3.7.5 Agriculture Sector

The Ministry of Food and Agriculture is responsible for agricultural growth in Ghana. The core mandate of the ministry is to formulate appropriate agriculture policies, plan and coordinate agriculture projects, and monitor and evaluate the projects implemented. The sector aims to promote sustainable agribusiness and agriculture broadly through valid extension and supportive services to farmers, traders, processors, and research and technology development.

The ministry supervises Ghana Irrigation Development Authority, Grains and Legumes Development Board, Veterinary Council and Fisheries. To mention but a few of the agencies under the ministry are Alliance for Green Revolution in Africa (AGRA), Food and Agriculture Organisation of the United Nations (FAO), Canadian International Development Agency (CIDA), German Development Cooperation (GIZ), International Food Policy Research, and International Fund for Agriculture Development (IFAD).

### 3.8 Sampling Technique

The researcher employed non-probability sampling techniques; purposive and snowball sampling, to select the study respondents.

#### 3.8.1 Purposive Sampling

The study used purposive sampling **(**Expert sampling), called subjective, judgmental, selective, or deliberative sampling. The main aim of purposive sampling towards achieving the objective of qualitative research is to focus on identifying the features of the population under study, which will best answer the research questions (Saunder et al., 2011). The research considered only staff members who work directly in the departments, divisions and units within the ministries and agencies of the sectors under study.

These staff members are considered to have first-hand experience, information, and requisite knowledge on the concept of green economy as far as Ghana's transition is concerned. These people possess rich details on the concept under study since their roles in these sectors are directly related to the concept under investigation. Moreover, GE is considered a new concept and therefore requires people working towards its achievement and are privy to the information. Expert sampling was used to select key informants from the target population.

#### 3.8.2 Snowball sampling

Snowball sampling was also employed to help reach out to agencies under the sectors listed above. The Snowball sampling technique is a non-probability sampling technique used to identify potential participants for a study when such participants are hard to come by (Stephanie, 2014). With snowball sampling, other study participants who know other potential participants that the researcher does not know directs the researcher to the other participants

who could provide information to the concept under study. Hence, the technique was employed to allow the researcher to reach out to other potential respondents through the recommendation of other respondents.

The various participants within the ministry of energy, transport, waste, agriculture and forestry recommended energy commission, forestry commission, National Development Planning Commission as potential participants and therefore must be considered, this was because getting a particular sample size from the ministries was difficult. Therefore, there was the need to consider participants from elsewhere but within the five sectors based on which the study is focused. So, other agencies under the various ministries listed above were deemed to be based on the directors' responses in these sectors or ministries.

For instance, the respondents interviewed at the ministry of finance linked the researcher to interview some key informants in the ministry of food and agriculture responsible for handling green issues in that sector. Also, a respondent from MESTI recommended potential respondents to be interviewed at EPA, MLNR, MoT and some others agencies.

### 3.9 Sample Size

The sample size refers to a reasonable number of the target population that a researcher uses to make inferences. The sample size is significant in empirical studies since it helps to make an analytical generalisation. In other words, the researcher's ability to make analytical generalization depends on the sample size used for the study, which indicates how relevant the sample size is (Onwuegbuzie & Collins, 2007). Out of the fifty-five (55) target population, a sample of nineteen (19) participants were selected for the research. This sample size was considered adequate for the study based on the expenses involved in obtaining the data (budget constraints) and the limited period of the research (Gratton & Jones, 2005: Kothari, 2004).

Another determinant for the sample size chosen was the concept of saturation. According to Malterud, Siersma, & Guassora (2016), saturation occurs when adding more respondents does not add anything new to the data obtained. Hence, to avoid the risk of redundant data, the sample size was considered appropriate for the study. The challenge of expert availability was also a determinant for the sample size. These were the main factors that determined the sample size for the study.

The number of respondents interviewed in the various sectors or ministries vary because the number of participants willing to participate in the study made themselves available. The number of participants from a sector ready to contribute to the research was given a chance to participate. In other words, all the sectors were given equal opportunities to be interviewed according to the number of respondents willing to participate.

**Table 3.1 Categories of Respondents**

| **Sector/Ministries** | **Job Description** | **Department/ Division** | **Number of Respondents** |
|---|---|---|---|
| Ministry of Environment, Science, Technology and Innovation (MESTI) | Assistant Director | Environment | 1 |
| Environmental Protection Agency | Chief of Programmes<br>&<br>Director of Ghana Clean Production Center | Climate Change and Energy Sources<br>&<br>Ghana Clean Production Center | 2 |
| Ministry of Transport | Senior Planning Officer<br>&<br>A staff member | Policy Planning, Monitoring and Evaluation Directorate | 1 |
| Ministry of Aviation | Policy, Planning, Monitoring and evaluation officers | Policy, Planning, Monitoring and Evaluation | 1 |

| | | | |
|---|---|---|---|
| Ministry of Lands and Natural Resources | Principal Planning Officer<br>&<br>Head of Research Unit | Forestry Directorate | 2 |
| Forestry Commission | Director for Ecotourism and Stakeholders<br>&<br>Director for Timber Industry | Wildlife of Forestry Commission, Forest Service Division<br>&<br>Timber Industry Division | 1 |
| Ministry of Energy | Ag. Deputy Director<br>&<br>Renewable Energy Manager | Renewable Energy | 2 |
| Energy Commission | Renewable Energy Manager &<br>Licensing Officer | Renewable Energy<br>&<br>Licensing Unit | 2 |
| Ministry of Food and Agriculture | Deputy Director and Head of Environment and Climate Change.<br><br>Deputy Director<br><br>Public Relations Officer | Deputy Director & Head of Environment, Climate Change Unit.<br>&<br>Policy Planning, Monitoring & Evaluation | 3 |
| National Development Planning Commission | Director<br><br>A member of staff | Development Planning | 2 |
| Ministry of Finance | Senior Officers | Economic Strategy and Research | 2 |
| Total | | | 19 |

### 3.10 Sources of Data

Data were obtained from both primary and secondary sources to ensure data validity and reliability. Primary data refers to the data gathered from the field (information source) and has not yet been analyzed or processed. For instance, meeting the director-general of the energy sector in his office to discuss GE's challenges and prospects, the director's response is a typical example of primary data.

Primary data is usually gathered using instruments such as interview guides, semi structured-questionnaires, and observations, among other tools (Wilson, 2010). This study collected primary data through in-depth interviews with study participants. The in-depth interview helped the researcher to obtain much more detailed and relevant information for the study.

Unlike primary data, secondary data has been collected and processed already. Such data include but are not limited to everything from conference papers, policy documents magazines, annual reports, published case descriptions, journal articles, newspaper reports, and the government printed sources. The study resorted to most of the secondary data sources listed above on the subject matter and materials from research engines like google scholar, sci-hubs, Scopus and emerald insight.

Secondary data was employed to broaden the knowledge and understanding of the concept under study. Besides, it was affordable and accessible in terms of time and cost (Ghauri & Grønhaug, 2005). Also, Saunders et al. (2009) posited that secondary data provides an unobtrusive measure because they have already been collected. Secondary data informs what has been done and what is left to be done to bring new ideas to bear on the study. It also served as the basis of the study.

### 3.11 Data Collection Method and Instrument

The research employed an in-depth interview for the data collection with the use of an interview guide. An interview is one of the qualitative data collection instruments that allow researchers to communicate with respondents, such that it helps to verbally provide exciting insight and in-depth information from the feedback and general behaviour of respondents (Wilson, 2010).

Interviews are relevant since it provides access to the context of respondents' behaviour and helps the researcher understand the meaning of that behaviour concerning the concept under study. Seidman (2006) posited that the primary assumption with in-depth interview research is that the purpose people make of their experience influence the way they carry out that experience. Again, interviews permit researchers to elaborate on specific questions and key themes. A structured interview guide was employed as the main instrument for primary data collection to enable the researcher to collect data through personal interaction or interviews mainly carried out in a well-structured manner (Kothari, 2004). The guide also enabled the researcher to gain a detailed insight into the phenomenon investigated. It was a face-to-face interview with field notes taken during the interviews. Also, the interviews were recorded. Averagely, each interview took one hour thirty minutes. Diary and field notes entries were frequently reviewed to ensure the validity of the data collected.

### 3.12 Data Analysis

Boeije (2010) qualitative data analysis entails dismantling, segmenting and reassembling the data obtained to form meaningful information (findings) and to draw inferences. The data obtained from the interviews were analysed thematically with Mile and Huberman's (1994) data analysis approach. To identify and describe patterns and themes from the perspective of the respondents' the data gathered was coded to enable the researcher to understand and explain

these patterns and themes. The data collected was categorically and chronologically organized, reviewed repeatedly, and continually coded during the data analysis.

A list of major ideas that surface during the interview was recorded. Recorded interviews were transcribed verbatim. Field notes and diary entries were regularly reviewed to ensure the correctness and validity of the data collected. Data were thematically analyzed, matching the reliability, credibility, and validity of the responses to the research questions. This method was much more appropriate for the study because it allowed the researcher to match relevant data to the research, and therefore ignores data considered irrelevant (Yin, 2014; Schutt, 2014).

### 3.13 Ethical Considerations

The researcher exhibited ethical considerations in the course of the research. The researcher obtained permission to collect data from the five key sectors with an introductory letter from the University of Ghana Business School (UGBS).

The respondents were informed that the data would be used for academic purposes only, and this was boldly stated on top of the interview guide. The researcher ensured that participants voluntarily take part in the study. Therefore, they were informed that they have the liberty to withdraw from any stage of the study.

Based on the liberty, one of the respondents from a significant sector that is very key in the transition insisted the researcher should not record but write everything which was adhered to. A high degree of confidentiality was assured during the data collection. Therefore, participants were made not to disclose their names to ensure anonymity in the responses provided.

### 3.14 Research Limitation

First of all, time and resource constraints presented a significant challenge to the study, of which external drivers of GE were not considered. Among the sectors, few were hostile towards the researcher. Some of the management staff were not available to be interviewed.

Also, getting more than two respondents within a ministry and their agencies was an enormous challenge. So the researcher ended up interviewing one or two key informants depending on the number of persons willing and are available to participate in the study from the various sectors listed above.

The challenge of getting respondents came about because the concept of GEis not known to most people or the staff of the various sectors. For this reason, many were not acquainted with information to provide relevant data, so the researcher ended up focusing on the directors and the staff members. They were in charge of the transition within the sectors studied. Moreover, those who could provide relevant information for the study were also difficult to access due to their busy schedules and scarce numbers.

It was also assumed that interviewing three respondents from the same sectors will repeat data since they are all in the same sectors and will face the same challenges and have the same prospects, this affected the sample size the researcher intended to use. Despite all these challenges, it was hoped that the comprehensive information gained from the respondents was enough to provide a reliable and valid analysis for the research questions in achieving the research objectives.

#### 3.14.1 Reliability

Scholars and researchers are of the view that research data gathered should not be adulterated or tampered with. In other words, research is not about subtracting or adding any information to the data collected from the field, to maintain the credibility, neutrality, reliability and validity

of the data (Yin, 2009; Chisnal, 1997). Reliability here means the consistency and stability of results derived from the research (Yin, 2003).

Yin (2009), reliability helps to reduce biases and errors to the barest minimum. The interview questions at a data collection point were reviewed, which allowed the researcher to reformulate a new interview guide with the same data collection instruments. The reformulation of the interview guide refined the data collection plans in terms of content and procedures, development of vital lines of questioning, note-taking and use of tape recorders to ensure the data is reliable for the research.

### 3.14.2 Validity

According to Chisnal (1997), validity is the extent to which a study is free from both systematic and random errors and therefore measures what is supposed to be measured. The validity of a test is based heavily on appropriately extended criteria, and it can be predicted by the following method. Construct validity is identifying correct operational measures for the concepts under study (Yin, 2009); internal validity involves seeking to establish a causal relationship, where certain conditions are believed to have led to other conditions (Yin, 2009). And external validity has to do with defining the domain to which a study's findings can be inferred.

Data were gathered through face-to-face interviews with the directors of the environmental unit, development unit, and policy planning, monitoring and evaluation unit within the various sectors interviewed. To enhance the validity of the interviews conducted, respondents were informed, and a mutual date was considered favourable to both the researcher and the respondent before interviews were conducted on agreed dates.

The researcher took note while on the field with a pen and a field notebook during the interviews. The interviews were also recorded on tape, edited, transcribed by the researcher

and some transcriptions were cross-checked by a few participants. The notes were compared to the recorded interviews for discrepancies and to ensure data validity.

# CHAPTER FOUR

# DATA PRESENTATION AND DISCUSSION OF FINDINGS

## 4.0 Introduction

This chapter presents the findings and discussions of the research based on the data collected from the nineteen in-depth interviews held with the participants from the various key sectors studied. The drivers of GE in Ghana are highlighted in this chapter. Policy Frameworks and Strategies driving the energy, waste, transport, agriculture and forestry sector towards the GE transition implementation were analysed.

Also, the chapter discussed the prospects and the challenges associated with the transitioning of Ghana to a GE. Five themes were developed out of the findings; theme one: Drivers of GE in Ghana, these two: Policy Frameworks, Master and Strategic Plan to facilitate the GE Transition in Ghana, theme three: Prospects of GE in Ghana, theme four: Efforts made so far towards the GE Transition in Ghana and theme five is the Challenges of the GE transition in Ghana.

Table 2 in chapter three contains the categories and basic information of the participants interviewed. The various ministries interviewed are numbered in numerical order, and for anonymity, the names of respondents have been coded according to the numbers assigned against the ministries interviewed. Ministry of Environment, Science, Technology and Innovation (MESTI)-Respondent 1, Environmental Protection Agency –Respondent 2, Ministry of Food and Agriculture-Respondent 3, Ministry of Lands and Natural Resources (Forestry)- Respondent 4, Forestry Commission- Respondent 5, Ministry of Energy-Respondent 6, Energy Commission-Respondent7, Ministry of Transport- Respondent 8,

Ministry of Aviation- Respondent 9, Ministry of Finance- Respondent 10 and the National Development Planning Commission- Respondent 11.

### 4.1 Background Information of Respondents

The interviewees were made up of directors, policy planners and some staff members of the various departments in charge of working towards the transition of Ghana to a green economy in the sectors understudied. This class of respondents was purposefully selected based on their skills and experiences as far as the concept of GE and the transition is concerned.

Most of the respondents hold a first degree; some had a second degree, while few also hold a doctorate. Almost all the respondents were male, with only one female, and the average age of the respondents is up to forty (40) years. Based on their experience and skills, they could efficiently respond to the research questions, thereby appropriately addressing the research objectives. The findings and discussions are presented below.

### 4.2 Understanding Green Economy

The research seeks to examine the understanding of the respondents on the concept of GE. The respondents' definitions were almost the same although, some tried to relate the definition to their sectors. For example, below are some of the definitions of GE according to the participants:

> *"Green Economy is an economy that ensures economic growth which must be sustainable and at the same time not putting the scarce resources we have at risk while ensuring environmental integrity"* (Respondent 1).

Other participants remarked that:

*".... green economy in our sector is about how we can marry both forest bodies and farmlands without destroying our forest lands for farmlands.....GE is more like doing sustainable forest management and also doing sustainable agroforestry"* (Respondent 4).

> *"…. green economy is an economy that does not destroy its environment for the sake of economic progress"* (Respondent 3).

Almost all the interviewees agreed to the same definitions of green economy as presented above. The definitions given by the respondents revealed that green economy is centred on sustainability or sustainable development since "sustainability" runs through almost all the definitions. Also, the respondents' definitions are not entirely different from the definitions of GE in various literature.

### 4.3 Drivers of Green Economy

Drivers of GE refer to the factors calling for transformation within the economy of a country. Certain factors inspire change or modification. Drivers here refer to the necessary factors necessitating a change in the economy of Ghana. The study identified several factors driving the GE transition agenda in Ghana. The general GE drivers in Ghana identified by all the respondents were sustainable development, overexploitation, climate change, carbon emission and unfriendly environmental development models.

In addition to the general drivers, some respondents also identified specific drivers in Ghana; such drivers were environmental degradation cost, system complexity, abusive utilization of agrochemicals, energy security, cost of fossil fuel, deforestation and expansion of cocoa lands, poor waste management, and the negative impact of the brown economy on health. Both general and the specific drivers are analysed below, beginning with the general green economy drivers.

### 4.3.1 General Drivers of Green Economy in Ghana

These drivers were the dominant drivers identified and discussed by almost all the respondents.

#### 4.3.1.1. Sustainable Development

According to the Brundtland Report (1987), sustainable development meets the present and future generations' needs. Any development that benefits the present generation and takes care of the next generation is considered sustainable. Sustainable development is characterised by quality and longevity. The world aims to achieve sustainable development goals, also known as global goals (Agenda 2030), and GE has been identified as the pathway to achieve this vision, so internationally, countries are transitioning fossil fuel-based economy to GE. Ghana's economy is also in transition.

The respondents indicated that, for the next generation of Ghana to benefit from the development of the present age and the natural resources that are Ghana's sources of survival and development, Ghana needs to transition its economy to a GE. Participants explained that unless Ghana goes green or else, the country will not pass on to the next generation the necessary resources they may depend on for their survival and development. A respondent unequivocally said:

> "*……. in our interest and for the interest of the future generation, we are to ensure our natural resources are kept in a usable state for the sake of those coming after us. As much as we depend on these natural resources for our survival, growth, development, and well-being, how we use them does not guarantee sustainability. Hence, there is the need to ensure that the sources of our economic development are not jeopardised before the next generation arrives…"* (Respondent 1).

A respondent also opined:

> "*The problem is with the sustainability concept about the fact that the economy of Ghana depends a lot on the exploitation of natural resources. Resources are used*

> *for export in the economy, and so the way we manage our resources determines how development will be in the future. So, suppose these resources are finite, and the rate of renewable is short. In that case, we need to take into accounts the need to manage these resources sustainably to meet our needs and that of the future generation, which green economy can help us achieve…."* (Respondent 5).

When respondents were asked on whether the brown economy supports sustainable development, a respondent reported that:

> *"The current economy (brown economy) does not support sustainable development. Therefore, Ghana needs to go green to help achieve the Sustainable Development Goals"* (Respondent 8).

Again, a respondent remarked:

> *"The current development model is not sustainable, so there is the need to look for sustainable development pathways to achieve sustainable development in Ghana. …"* (Respondent 3).

From the respondents' responses, the sources of Ghana's development are based on its natural resources and, therefore, the environment. For this reason, there is the need to manage the environment and the natural resources sustainably such that the next generation will not be deprived of benefiting from the environment and all other developments undertaken by the present age. They explained that the current development model in Ghana does not support sustainability due to its numerous negative impacts on the environment.

The respondents acknowledged that though Ghana is economically progressing, the progress is at the expense of its environment and natural sources. Therefore, there is the need to transition to a GE to decouple the environment from economic development. The respondent was quite reasonable because the core concept of GE is to achieve sustainable development.

#### 4.3.1.2 Climate Change Related Challenges

Climate change is a significant change in the climate (temperature, precipitation, or wind patterns) lasting for an extended period. It could be global or national. Such changes are

generally associated with unpredictable weather patterns, ecosystem destructions, economic losses, extreme temperatures, increase exposure to crop disease and pest, exacerbate humanitarian disasters (drought, forest fires, flooding, rise in sea level…etc.), income inequalities between and within economies, and make specific locations uninhabitable. Climate change makes efforts towards sustainable development unfruitful, especially in developing countries where Ghana is no exception.

Climate change is caused by nature and some human-induced actions such as carbon emissions. Most countries, including Ghana, are being faced with climate change because of the type of development model adopted.

The respondents identified climate change as one factor driving Ghana's economy to transition to green to adopt a development model that would help address climate-related challenges and preserve the ecosystems from destruction and extinction. A respondent had this to share:

> "*Globally, the driving force behind the concept of the green economy is the climate change agenda. I think the impacts of climate change are already known regarding its impact on health, lives and properties. The resilience of our infrastructure is all affected by the current economy that we have. The problems of the current economy include the impact of climate on the economy and health-related issues; therefore, changing course will help the country and the world at large"* (Respondent 8).

The respondent believed that climate change is why economies around the globe are transitioning to a green economy due to the impacts on the economy of Ghana and health. It is believed that when Ghana does not change course towards its development patterns, more of the effects of climate change is yet to hit the country when things get worse. Therefore, a green economy transition is identified as the best solution to address climate-related complexities.

#### 4.3.1.3 Environmental Unfriendly Development Models

The development models or pattern adopted in Ghana at the moment is what is called brown economy. In a brown economy, the activities, policy regulation frameworks and strategies, technologies, and practices towards development are detrimental to environmental safety. In other words, Ghana might economically be progressive, but the environment is in jeopardy. A typical example of the impact of a brown economy is climate change and its related effects on economies and humanity.

There is a negative relationship between economic growth, environmental safety, and social development with a brown economy. In order words, when there is economic progress, ecological and social development regresses because of the impact of economic growth. The respondent indicated that this type of development model is not suitable for the country. Therefore, there is the need to change course and adapt to a better development approach that will support environmental safety. A respondent shared this:

> *"The use of agrochemicals, tractors, and fires to prepare farmlands reduces the population of soil born organisms and even the organism within the vegetation (flora) that are also relevant for ecosystem management. These farm practices are environmentally unfriendly"* (Respondent 3).

Another respondent explained:

> "*The policies, technologies, programs and the practices driving the use of our resources towards development is environmentally unfriendly or adage and therefore the impact on the environment is high"* (Respondent 2).

A respondent also shared this:

> *"The current sources of energy that we have is not environmentally friendly, so there is that need to switch to a green and cleaner source of energy"* (Respondent 6).

According to the respondents, a green economy can offer Ghana the opportunity to employ environmentally friendly development models, such as climate-smart cocoa, one of the green

economy's environmentally-friendly agriculture cocoa farm practices. If Ghana continues with brow economy, the environment will destroy and will not be conducive for human and other living organisms' survival. The respondents were also precise with the policies, practices, and technologies, indicating the need to change or review the current development policies, practices, and technologies in Ghana. When Ghana transitions to a GE, the dirty and adage technologies will be replaced with green technologies, also called clean technology; policies will be reviewed to mainstream environmental issues for environmental safety and ecological virtue.

#### 4.3.1.4 Overexploitation / Overharvesting of Natural Resources

Harvesting renewable resources to the point of diminishing return is considered overexploitation. The unsustainable rate of resource harvesting is a driver of GE in Ghana regarding the data gathered. Overexploitation is associated with resource destruction and extinction. Harvesting more than what is needed of the resources without replenishing what was harvested just because there appear to be abundant resources is a problem in Ghana.

People also harvest more resources than they need because most of these resources cost nothing to harvest; the values and contributions of the natural or renewable resources are not quantified in monetary terms; hence they are taken without any measure. Sometimes people harvest more of these resources and turn to mismanage them without any concern. A respondent indicated:

> *"We do not efficiently manage our resources, and quickly we go harvest more because it appears to be in abundance, we overexploit our resources and do not also use them efficiently. Green economy can help address the challenge of mismanaging and overharvesting natural resources in Ghana*" (Respondent 2).

Another respondent unearths that:

> *"…Currently, we depend more on the extractive industry, we take a lot of natural resources and exploit them without replenishing them, we export our raw materials in the raw form, so we end up taking too many than required, so we become inefficient. For instance, we take too many than is required in the extractive industry. …. We are currently not efficient in terms of the utilization of our natural resources. Overexploitation is one of the key issues we can talk about in the economy as far as the green economy transition is concern…"* (Respondent 5).

The respondents believed that due to over-exploitation of renewable resources, Ghana should transition to manage it's natural efficiently.

Moreover, the country depends a lot on the extractive industry, where mostly raw materials are exported in their basic form, without any value addition. When resources are shipped in their natural form, much is not gained compared to processed and value addition. It is therefore assumed that, for Ghana to gain more from its export, much of the raw materials (natural resources) need to be cultivated, which mostly leads to over-harvesting without replenishing what has been harvested. The green economy has to do with the efficient and proper management of natural resources.

To address the over-exploitation of resources in Ghana, GE is the remedy to address some of the harm caused already while ensuring resources are harvested measurably and managed efficiently now and in the future. Over-harvesting can also be related to rapid population growth. Meaning, that much is taken from the environment due to high population growth than necessary to help feed the growing population. It also means the environment is bearing more than the actual capacity required of it.

### 4.3.2 Specific Drivers of Green Economy in Ghana

These drivers are considered specific because they were identified and discussed by some of the respondents, unlike the dominant factors discusses by all the respondents.

The specific drivers identified were environmental degradation cost, system complexity, and abusive utilization of agrochemicals, energy security, cost and impact of fossil fuel, deforestation, and poor waste management.

#### 4.3.2.1 Environmental Degradation Cost

The cost that is incurred in cleaning the environment after exploiting natural resources is what is termed as environmental degradation cost. According to a respondent, the cost involved is very expensive, and sometimes the monies paid to take care of the mess caused are just a peanut. A respondent explained:

> *"… one of the drivers is the cost involved in cleaning the environment after utilization the environmental resources. Making the water body-friendly for fish and the people who depend on the fish for their diet is prohibitive. In other words, it is costly to bear the cost of cleaning the mess…"* (Respondent 2).

Given the response above, some activities in the environment cause environmental degradation, which needs to be addressed after harvesting to make the environment a conducive place for humans and other living organisms. However, the cost involved is unbearable primarily, so the environment is left in a bad state. A typical example is the impact of 'galamsy' on water bodies and mother earth. The issue of 'galamsey' in Ghana is causing more harm than good. Most communities in Ghana depend on the river bodies within their communities for their water needs. Still, due to 'galamsey', most of these river bodies such as River Pra, Daboase and River Ankobra located in the Western region of Ghana and Birim also situated in

the Eastern part of Ghana are polluted by 'galamsey' activities. Most of these are left untreated because of the high cost of cleaning the mess, and the communities end up with water problems.

The respondent also disclosed that people are made to make some pre-payment to the government before they can exploit the environment to address the mess caused by the exploitation of natural resources. These monies paid to the government are not enough to fix the mess caused by environmental degradation; mainly, the degradations are so massive that some go beyond repairs. A respondent emphatically commented as presented below:

> *"The cost of environmental degradation in Ghana is around 9.4 %"* (Respondent 2).

The respondent emphasised that it takes nine-point four percent (9.4%) of Ghana's Gross Domestic Product to address such degradation, mostly not enough. According to the respondent, the only way to address the environmental degradation in Ghana and save the cost involved in managing the degradation is to transition to a GE.

#### 4.3.2.2 Poor Waste Management

One of the main reasons Ghana wants to transition to GE is to help manage waste properly because one of the significant developmental challenges in Ghana is poor waste management. Managing waste includes actions and activities taken to collect, transport, treat and dispose of garbage. When resources are managed efficiently, waste is reduced. Generating more waste is considered inefficient utilization of resources.

Also, the more waste generated, the high cost required to manage the waste and vice versa. Green economy support recycling and reuse of trash to help reduce waste. Thus, the respondents indicated that for Ghana to manage waste properly green economy must be adopted. A respondent hinted:

> "*Managing the waste generated and the increasing adverse effect that the current approach is having on humans, and natural resources compel us to rethink how we are going about development"* (Respondent 11).

This statement of the respondent indicates Ghana is compelled to transition to GE to enable proper waste management and address the adverse effects of poor waste management on human beings and the planet. GE helps to reduce waste through recycling, thereby reducing the cost of managing waste.

#### 4.3.2.3 Abusive Utilization of Agro-Chemicals

Some farmers abuse agro-chemicals in the agriculture sector to increase productivity due to the impact of the brown economy on agricultural activities. A respondent stated that:

> "*….it is hard getting labourers so farmers apply chemicals to perform the work that labourers should have done and so we end up using many chemicals, thereby abusing the chemicals for farming"* (Respondent 3).

The interviewee's response indicates that lack of labourers compels farmers who cannot afford tractor services to apply too many chemicals right from land preparation to planting and harvesting stages of farming.

Applying more than necessary farm chemicals on the field leads to chemical abuse, resulting in environmental degradation and destroying the natural vegetation. Nevertheless, GE promotes green farming practices such as applying natural compost made out of animal remains and climate-smart agriculture farm practices.

#### 4.3.2.4 System Complexity

The complex nature of the current system, emphasising the agriculture sector, mandates Ghana to transition its economy to a GE. The cumbersome system has brought about many challenges in the agricultural sector, compelling farmers to adapt to what they can afford irrespective of the impact on the environment. A director from the agricultural sector explained how complex the system has been in a brown economy. He explained, as presented below:

> *"The complex nature of the system is that farmers need to clear land and they do not have labour or tractors to do that, so they have to find an alternative by applying weedicides and when the weeds grow again, they apply selective weedicides again to kill the weeds. Later, insects attack their crops, because their habitat for survival has been destroyed by the chemical applied and the insects also need to survive. So, the farmers now apply insecticide to kill the insects that are feeding on their crops. The way forward is to transition to GE to engage in green or climate-smart agriculture…."* (Respondent 3).

From the respondent's remarks, it can be concluded that the abusive chemical application of agro-chemical discussed above is a result of the complex nature of the system. The system determines or compels farmers to adjust to some farm practices. Also, the financial status of farmers determines the kind of farm practices they can afford. All these challenges are associated with agriculture development in Ghana in a brown economy. The respondent ended by saying that the way forward to address these challenges is to transition to a green economy that presents better farming practices such as climate-smart agriculture.

#### 4.3.2.5 Deforestation

Converting forest bodies to farmlands, ranches, urban use, and other purposes is termed deforestation. In such situations, the forest or the standing trees are removed or cleared. Deforestation is mainly driven by agriculture expansion in Ghana. The respondent identified

deforestation as one of the factors necessitating the green economy transition in Ghana. For example, an interviewee explained:

> *"We have a problem with deforestation, and we want to tackle it. Going green will help provide alternatives to tackle and address the problem…."* (Respondent 4).

From the response, it is clear that deforestation is a challenge that the forestry sector in Ghana is making an effort to address. The respondent indicated that there is inadequate cooperation between the agricultural sector and the forestry sector leading to diverse interests of both sectors. A respondent added:

> *"…. inadequate coordination among stakeholders is one of the underlying causes of deforestation…."* (Respondent 5).

The interest of the forestry sector is to grow and preserve the forest bodies in Ghana. At the same time, the agricultural sector, especially cocoa farmers, are also interested in increasing productivity by clearing forest lands in Ghana, leading to deforestation. Shifting cultivation is also one of the practices that lead to deforestation. Intensification and climate-smart agriculture (green economy farm practice) help to increase farm productivity without necessarily engaging in expanding farmlands through deforestation.

From the opinion of the respondent, GE will offer Ghana alternatives to address deforestation because GE introduces several farm practices where farmers marry forest bodies with their farmlands. In this case, no forest will be cleared; farmers will manage their piece of land with green agricultural practices to increase their productivity on the same piece of land.

#### 4.3.2.6 Cost and impact of Fossil Fuel

Fossil fuel refers to hydrocarbon, coal, and natural gas or fuel oil generated from dead plants and animals remain. The source of energy in a brown economy is fossil fuel. Ghana and some other countries depend mainly on fossil fuels for energy generation. Most industrial countries are locked in fossil fuel because they produce dirty technologies that use fossil fuel. This kind of energy source pollutes the environment through the emission of carbon and endangers

human health and reduces life span. The energy sector indicated that the cost of fossil fuel is very expensive compared to renewable energy sources. For instance, a respondent stated:

> *"Cost of fossil fuel is increasing and is one of the reasons we want to switch to greener technology" (Respondent 6).*

Another respondent added:

> *"... fossil fuel in comparison to renewable is more expensive..."* (Respondent 7).

According to the respondents, the cost of fossil fuel keeps rising, which therefore calls for the need to find a better and less expensive source of fuel. Hence the need to transition to a green economy for affordable, safer and sustainable sources of energy. The respondent also took into consideration the impact of fossil fuel on the planet. Commenting on the impact, a respondent said:

> *"……. fossil fuel has a carbon footprint on the environment"* (Respondent 6).

Another interviewee also comments:

> *"...we want to cut our carbon emissions by 30% so, the transport sector is focused more on reducing emissions from the sector in terms of the types of cars we use on our roads or allow into our country…."* (Respondent, 8).

The use of fossil fuel in generating energy, transport activities, and production leads to carbon emissions which are associated with many health problems such as cardiovascular disease and at worst, shortens the life span of humans and other living organisms.

Moreover, in Ghana most of the emission is from the type of cars on the road as indicated by the interviewee, cutting emissions in the transport sector will depend on the type of vehicle they will allow people to import. In this case, there is the need for the transport sector to coordinate with the energy sector because the type of energy in the system will tell the types of vehicles and machinery to import into the country. Considering the number of problems

associated with fossil fuels, transitioning to a GE will help reduce or stop all these problems. The concept of GE in terms of energy generation is based on renewable energy sources such as the sun for solar energy, wind turbine generators, and several others, which do not have an impact on the environment as compared to that of fossil fuel.

For instance, other countries such as Santiago de Chile and China, which are also transitioning, have introduced electronic vehicles into their systems to help address carbon emissions and other environmental pollutions problems. It also less expensive despite the technologies required to generate renewable energy.

#### 4.3.2.7 Energy Security

Having access to the continuous availability of affordable, reliable, and clean energy in different forms and sufficient quantities is energy security unlike what happens in Ghana, where the power supply is inconsistent and insecure. The interviewees responded that Ghana needs to transition its economy to a GE to address the issue of energy insecurity that the energy sector and the entire country is experiencing at the moment (in a brown economy). A respondent opined:

> *"……one of the reasons why we want to transition is to ensure energy security; energy security is being able to have sustainable energy sources and then being able to supply yourself with the source of energy that you require. And these renewable energies are quite abundant and can help us achieve energy security…"* (Respondent 7).

The same respondent added afterward:

> *"Fossil fuel has a life span and expires within a period…."* (Respondent 7).

Inferring from the response above, the energy sector is interested in achieving energy security and has identified renewable energy which is promoted by GE, to be the means through which

sustainable energy can be achieved. The last respondent indicated that fossil fuel energy expires within a period and, therefore, cannot help sustain Ghana's energy.

From the above analysis it is clear that the most dominant drivers were unsustainable development patterns (that is the quest to achieve the sustainable development goals also called agenda 2030), overexploitation of natural resources, carbon emissions, climate change-related issues and unfriendly environmental development models.

The impact of climate change presents a real challenge towards the achievement of sustainable development around the globe, hence the need for Ghana to support the international effort to build a resilient economy and the world at large.

Also, Ghana is legally bounded to commit to the Paris Agreement signed by the country to help fight climate change globally. The study confirmed the GE drivers identified by Mohiuddin (2017), Lin and Xu, (2014) and Mutanga et al. (2013:163). According to Mohiuddin (2017), the main three drivers of GE around the globe are sustainability (the quest to achieve the sustainable development goal), high carbon emission and energy transformation. Lin & Xu (2014) also identified environmental problems, physical risks of climate change, air and water pollution, and domestic unrest as the drivers of GE in China.

In addition to the above drivers, the respondents also identified poor waste management, deforestation, energy insecurity, population growth, and insufficient utilization of natural resources as the drivers of GE in Ghana. Scholars have supported these drivers, such as Mutanga et al. (2013: 163) and the Ghana National Environmental Policy (2016). For instance, Mutanga et al. (2013:163) are of the view that a brown economy is associated with poor waste management and therefore leads to inefficient utilization of natural resources. Therefore, GE

must be adopted to ensure efficient utilization of natural resources and to recycle waste to ensure proper waste management. Mutanga also encouraged proper mixture in generating energy to ensure that they address the energy crisis and reduce carbon emission in an attempt to generate energy.

Besides the drivers supported by literature, system complexity, abusive utilization of agrochemicals, expensive nature of the cost involved in cleaning the environment after utilizing the natural resources (environmental degradation cost), and policies, adage technologies, programs and the practices of driving the use of our natural resources, were new GE drivers discovered by the study that can be added to the body of existing literature on the concept of GE in Ghana.

### 4.4 Policy and Strategic Framework to Facilitate the GE Transition in Ghana

The study's second objective is to find out whether Ghana has developed a policy framework to facilitate the GE transition in Ghana. A policy framework is a comprehensive strategy or a documented set of measures and procedures which is used in decision-making to guide the implementation of a goal or a decision. Policy framework, therefore, serves as a guide or a roadmap that directs the implementation of a decision taken to ensure that all activities and resources are directed towards the achievement of an intended purpose.

GE policy framework helps to ease the GE transition, and this is because the policy will help to direct investment and the implementation of structural reforms to support the transition to a GE in Ghana. The primary purpose of a GE policy framework is to guide the implementation activities and also to encourage green practices and green business to make the transition easy and successful. And also to achieve sustainable development in the long run.

To determine whether Ghana has a GE policy, the respondents were asked whether they have policy framework /sector-specific strategies and plans to facilitate the transition of Ghana to a GE.

All the respondents responded to this question, but it was quite unfortunate that the majority of the respondents' responses indicated that they do not have any specific green policy framework towards the achievement of the transition. Although they have existing policies that capture green practices and initiatives. For instance, a respondent from NDPC explained:

> *"There is no a green economy policy per se, but there is a green economy action plan. …green economy cut across all sectors so sometimes it is challenging to have a broad document across all sectors. We encourage the various sectors to update their plans and policies and integrate green economy concepts into them as they apply to that sector. And by implementing that policy, they will be implementing green economy principles and concepts. Our ample framework has ample reference to GE…."* (Respondent 11).

The National Development Planning Commission (NDPC) is a constitutional body created by the NDPC Act 479 in 1994 to advise the government on national development policy and strategy.

In other words, the Commission represents the government of Ghana and is responsible for all development agendas in the country, which very well means that other sectors in the country depend on the policies of the NDPC to formulate sector-specific policies towards development. The later part of the respondent submission indicates that Ghana does not necessarily have a specific GE policy framework, but the current development policy of Ghana articulates GE principles and therefore supports the promotion of transitioning the country's economy to green.

The Coordinated Program of Economic and Social Development Policies (CPESDP2017-2024) developed by the NDPC confirmed that Ghana has some policies towards the GE transition in terms of greening the economy of Ghana, even though these policies are not

detailed. The document captures a brief of "what" Ghana intends to do to go green, but as to "how" the initiatives should be achieved and to enable the transition to be feasible was left untouched.

The researcher was inspired to probe for more information upon hearing "no specific green economy policy" at the national level to guide the transition of Ghana's economy to green. The researcher asked the interviewee why Ghana does not have a specific GE policy framework; meanwhile, the Commission is yet to review its existing development policy framework to integrate mainstream green practices into policies. The respondent went further to explain as presented below:

> *"…. within the development space, almost every other year something new comes out if you do not take care you will get caught on the way that you will always do policies to change things which may lead to a proliferation of policies. The ultimate purpose for all these policies is for development purpose, so if you focus on development which is what we want to achieve and how to achieve it, it is captured in the framework, which captures all the various relevant things that we as a country need to achieve our development"* (Respondent 11).

From the interviewee's responses, a number of the development initiatives are introduced almost every year globally. If Ghana intends to achieve every developmental initiative introduced, the country will end up formulating many policies leading to a proliferation of development policies. Therefore, to avoid policy proliferation, the country needs a strategic development policy plan and to identify procedures and measures through which the country could also achieve its development without going back and front with whatever will be introduced at the global level.

Another respondent remarked:

> "*Essentially, we don't have a GE policy framework, we are planning towards formulating one, but currently we rely on the National Climate Change Policy Framework (NCCPF). It was developed together with all the other sectors to look at their action that causes climate change and some other environmental problems and measures they can undertake to address the environmental problems*" *We also have National Environment Policy (NEP), Red Plus Strategy*

> *(RPS), Forest and Agriculture Sector Development Plan (FASDP), Transport Policy, Low Carbon Development Strategy (LCDS), and Sanitation Strategy"* (Respondent 1).

From the response of this respondent, it was clear that Ghana does not have a specific GE policy framework. The respondent mentioned some policies formulated to help address climate change and also to reduce carbon emission as they wait for the formulation of a GE policy to direct their implementation of the transition towards GE. However, the NCCPF and the LCDS are all policies toward achieving GE and sustainable development in Ghana. According to the respondent, the Ministry of Environment, Science, Technology, and Innovation (MESTI) coordinates with other sectors that play a significant role in the transition to formulate some of the aforementioned policies.

Another respondent also had this to say:

> "*…. we do not have a green economy policy(s), but the policies we have at the moment capture some green practices. Our mandate is to manage the forest bodies, natural resources, and lands in Ghana. MESTI, EPA, and the Ministry of Finance (MoF) are responsible to develop GE policies to implement the transition"* (Respondent 4).

The above response indicates that some sectors are not given the mandate to formulate policies independently as the respondent emphatically stated. They are waiting on other sectors for a green economy policy framework for them to be guided by these policies. This also indicates the role of MESTI in the formulation of a green economy through coordinating with other sectors such as the Ministry of Finance (MoF). A respondent confirmed an ongoing discussion at MoF on the formulation of a specific green economy policy to guide Ghana's transition. This was the interviewee's response:

> *"As far as the ministry of finance is concerned, we do not have any policy in place for the transition to a green economy in Ghana for now. But there is an ongoing discussion about preparations being made to formulate a GE policy framework to guide the country's transition to a GE"* (Respondent 10).

Another respondent also said:

> *"We do not have any GE policy or sector-specific strategy towards the GE transition though, we have a sector policy (National Transport Policy) which capture some aspects of GE initiatives"* (Respondent 8).

So far, most respondents indicated that they do not have GE policies or sector-specific strategies to guide their effort towards the transition of Ghana to a GE. Others also stated that though they do not have a stand-alone GE policy, the policies they are working with capture some green practices and activities that contribute to the transition. Some other respondents also clearly stated that they are waiting on some mother sectors to formulate the GE policies to guide their transition efforts.

However, few respondents also indicated that they had developed policies and master plans focused on guiding their implementation towards Ghana's transition to green. These policies and master plans have set targets to be achieved by these sectors to contribute to the country's transition. An interviewee remarked:

> "*The Renewable Energy Master Plan is our strategy or policy framework to guide us achieve our target as a sector in the Nationally Determined Contributions from 2015-2030. This document will help direct investment and implementation activities to enable us to achieve our commitment under the Paris Agreement. We also have the Renewable Energy Act (832)"* (Respondent 6).

Another respondent opined:

> *"The major policy we are working with is the Renewable Energy Act. We also have the National Energy policy segregated in renewables, conventional power, and petroleum"* (Respondent 7).

The energy sector indicated they have a policy or a specific strategy guiding their effort towards transitioning to a renewable energy source. According to the respondents, they have the Renewable Energy Act (REA) and the Master plan. The REA is the main or the major policy document mostly referred to. The sector has commenced working towards the transition to renewable energy to achieve its target in the Master Plan and the National Determined

Contributions. Moreover, the energy sector was guided by the programs and the initiatives on renewing the energy sector in the CPESDP (2017-2024).

Another respondent from the forestry sector also commented that they plan to guide their implementation activities towards the development and maintenance of the forest bodies in Ghana, thereby contributing to the transition. The respondent therefore remarked:

> "*Yes, we have a plan and a policy. We have the Forest and Wildlife Policy* (*FWP, 2012*) *which is strongly focused on the non-consumptive part of the forest. Our policy serves as a tool for us, we also have the Forestry Development Master Plan* (*FDMP, 2016). When you look into the (FDMP) you will see that there is a deliberate attempt of going into this green economy, e.g. we are talking about sustainable utilization of our resources, efficient use of the forest, and machinery processing"* (Respondent 5).

Drawing from the response above, the FDMP is specifically developed to facilitate the transition of Ghana to a GE in the forestry sector. Having a policy indicates the preparedness of the sectors with policies towards the green transition and the willingness to support Ghana in their unique way to help make the transition possible.

Shown in Table 4.1 contains the existing plans, policies, and strategic frameworks that articulate GE principles, initiatives, and actions as discussed by the respondents.

**Table 4.1 Green Economy Policy Frameworks, Master and Strategic Plans in Ghana**

| Sectors | Policy/Strategy | Mandate |
|---|---|---|
| **Energy** | | |
| Ministry of Energy<br><br>Energy Commission | • Ghana Renewable Energy Master Plan, (REMP, 2019)<br><br>• Renewable Energy Act (832) (REA, 2011). | To provide an investment-focused framework for developing and promoting the country's rich renewable energy resources for sustainable economic growth, reducing adverse climate change effects and improving social life.<br><br>The Act provided a legal and regulatory framework to ensure the goal of the energy sector to generate 10 percent of power from renewable energy by 2020 is achieved. |
| **Transport Sector** | | |
| Ministry of Transport | • National Transport Policy (2008) | Incorporates the requirement of GPRS II and the priorities set for the investment, improvement and operations in the transport sector. |
| **Agriculture Sector** | | |
| Ministry of Food and Agriculture | • Food and Agriculture Sector Development Policy (FASDEPII, 2007) a revised version of the year 2000 policy<br><br>• National Climate Smart Agriculture and Food Security Action Plan (2016 - 2020) | A framework to ensure sustainable utilisation of all resources, food security enhances the productivity of commodity chain-value, environmental sustainability and private sector engagement.<br><br>An Implementation framework to formulate specific strategies focused on contributing developed climate-resilient agriculture and food systems for agro-ecological zones and all human capacity required for climate-smart agriculture promotion in Ghana. |
| **Forestry Sector** | | |
| Ministry of Lands and Natural Resource (Forestry Directorate)<br><br>Forestry Commission | • Ghana Forestry Development Master Plan (FDMP, 2016-2036).<br><br>• Forestry and Agriculture Development Plan<br><br>• Forest and Wildlife Policy (FWP, 2012). | To achieve a just, prosperous and sustainable forestry sector that is inclusively and continuously optimizes welfare and provides all Ghanaians with adequate means of livelihoods.<br><br>To conserve and sustain the development of wildlife and forest resources to maintain |

| | | |
|---|---|---|
| | | environmental stability and ensure a continuous flow of optimum benefits from the forest's socio-cultural and economic goods and services to both the present and the future generation. |
| **Waste Sector** | | |
| Ministry of Environment, Science, Technology and Innovation | • Low Carbon Development Strategy (LCDS, 2016)<br>• National Climate Change Policy Framework | To contribute to global climate change mitigation by developing economically efficient and comprehensive LCDS for Ghana with monitoring, reporting, and verification systems and action plans.<br>Coordinate and provides directions to issues of climate change in Ghana. |
| Environmental Protection Agency | • National Environmental Policy (2016) | To unite Ghanaians in working towards a society where all residents of Ghana have access to wholesome water, clean air, food, decent accommodation and other necessities of life. |
| **Ministry of Finance** | • National Designated Authority (NDA) to the Green Climate Fund (NDAGCF, 2016).<br>• Climate Change Finance Tracking Tool (NDAGCF, 2016) | Provides practical guidance on the procedures and the daily operations of Ghana's NDA, including institutional mechanisms, decision-making process, accreditation and funding criteria, and other policies to strengthen operational effectiveness, efficiency and to ensure transparency.<br>Support the oversight, coordination, and management of public finance that supports climate change activities in Ghana. |

**Source:** Field Data, 2020**.**

The argument drawing from the findings is that the primary data indicate the various sectors studied have no specific GE policy framework and strategic plans to help facilitate the transition. However, the primary data contradict the findings from secondary data. The existing policy frameworks, strategic and master plans of the sectors in Table 4.1 indicate that there are policy frameworks, strategies and master plans to help facilitate the transition of Ghana to a

GE. Therefore, this can be contributed to a lack of awareness on the existence of green policies and strategies on the side of some of the respondents and poor policy coordination. From the table, there is an indication that Ghana has policy framework (s), strategic, and master plans to facilitate the GE transition, despite the negative responses of the participants.

However, the study also shows that the energy and the forestry sectors have specific and detailed policies on GE. The other sectors have policies though, and these policies are not necessarily sector-specific like that of the energy and forestry sectors policies and master plans directed explicitly towards the GE transition in Ghana.

The policies discussed by the respondents in table 4.1 confirmed the policy frameworks and strategies in the Inclusive Green Growth in Ghana Report (2016). The report highlighted the Renewable Energy Act, National Climate Change Policy Framework, Energy Sector Strategy and Development Plan, National Transport Policy, Food and Agriculture Sector Development Plan, National Environmental Sanitation Strategy/Policy, and some other policies are geared towards low carbon emission, environmental safety and poverty eradication in Ghana. This indicates that Ghana has policies to facilitate the GE transition implementation Ghana.

**The Implication of Findings on Police Framework**

The study identified several policy frameworks, strategic and master plans that articulate green principles, initiatives, and actions in the waste, transport, forestry, agriculture, and energy sectors according to their policy documents reviewed in the table 4.1and the literature reviewed.

However, both forestry and energy sectors have specific and detailed green policies with set targets and timelines to achieve their targets. The existence of policy frameworks, master

development plans, and strategic plans indicate the extent to which Ghana has embraced the concept of GE and the level of preparedness towards the transition. This confirmed the work of some scholars, for instance, Kadekodi (2013) indicated that it calls for specific strategies and policies to be attached as riders towards the transition; without these, "there is no free lunch".

Therefore, the availability of policy frameworks, strategies, and action plans means the country is ready and willing to transition the Ghanaian economy to green. The reason is that GE is all about mainstreaming public policies and environmental policies to achieve sustainable development. It also indicates what should be done at a time, the resources needed and what can be done to attract people to support and promote the transition.

The challenges identified related to policy frameworks are lack of awareness of the policies availably to facilitate the transition and poor policy coordination among and between the various sectors of the study judging from the primary data and the secondary data contradictions.

Existing literature indicates other countries have similar challenges regarding policy coordination. For instance, Zabbey et al. (2014) emphatically stated a dire need for a deliberate green action plan to solve the endemic environmental complexities caused by unsustainable utilization and management of natural resources (capital) and environmental degradation in the Niger Delta State of Nigeria.

Unfortunately, some countries have challenges when it comes to these policies and institutional frameworks. Other scholars like (Ospanova, 2014: 13) and (Lin & Xu, 2014) also indicated that some countries do mainstream green activities into their policies, but policy coordination and enforcement are challenging.

Therefore, these challenges relating to green policies in other countries are not different from what was found in Ghana regarding policy coordination and awareness creation.

It can be concluded that Ghana has policy frameworks, strategies, and action plans to facilitate the transition of the country's economy to a GE as at the period this study was conducted. However, there is an issue of poor awareness creation and poor policy coordination.

### 4.5 Prospects and Challenges of the transition of Ghana to a Green Economy

The issues discussed under this research objective were GE prospects, efforts of actors so far, and finally, the challenges associated with the transition of Ghana's economy to a GE.

#### 4.5.1 Prospects of Green Economy in Ghana

Prospects in this study refer to the potentials or future opportunities presented by GE which Ghana can exploit for its economic, social, and environmental development. Apart from the factors necessitating the transition, the potentials of GE also inspire countries to transform their economies to a GE to capitalise on its potentials to develop sustainably.

The potentials of GE as identified by the study are centred on environmental conservation and the preservation of nature, socio-economic development, availability of green employment opportunities, quality health, opportunity to improve on GDP and attracting foreign direct investors (FDIs). The prospects are grouped in thematic areas, as discussed below.

##### 4.5.1.1 Environmental Conservation and Preservation

Environmental conservation and environmental preservation are mainly used interchangeably but have different meanings. With the conservationist, humans are allowed to use and manage the environment in a responsible manner such that the natural resources can be sustained, but

the preservationist is of the view that the environment should not be used; it should be left in its raw state and for aesthetic value.

In this study, environmental conservation is applicable because GE focuses on how natural resources can be used for development efficiently and sustainably. GE also supports environmental preservation by encouraging the preservation of the ecology and biodiversity at large. The respondent indicated that Ghana expects to conserve its natural resources and preserve biodiversity, including forest bodies that could help address climate change impact after the economy's transition. For instance, a respondent had this to say:

> *"My aspiration is that our development should take into consideration the ecological limit of the planet for the environment to cope. Such that the environment will be good if not a better place for the future generation"* (Respondent 1).

A respondent also remarked:

> *"We want to see a Ghana with very low deforestation though we have started seeing improvement"* (Respondent 4).

Given these responses, the respondents hope to see that the development models driving the development of Ghana consider the ecological strength of the environment to avoid overbearing capacity, which might lead to environmental degradation and desertification. When Ghana transitions its economy, green technologies, policies, and environmentally related programs will be employed, ensuring that the environment is managed correctly and sustainably.

The respondent aspires for this green economy opportunity because the brown economy is doing much harm, such as environmental degradation and desertification to the Ghanaian environment, which calls for attention to address that challenge. Therefore, capitalizing on this potential will help Ghana conserve its ecology and biodiversity.

#### 4.5.1.2 Availability of Green Job Opportunities

Also, the respondents narrated that they hope to have green job opportunities presented by GE for Ghana to take these job opportunities to address the high rate of unemployment in Ghana. One of the major developmental challenges in Ghana is unemployment most especially graduate unemployment. GE job opportunities include green energy analysts, green technology regulators, environmental specialists, and renewable managers, among several others.

A respondent narrated as presented below:

> "*Haven transitioned to a GE, there will be green job opportunities such as solar jobs which will help address the challenge of unemployment in Ghana"* (Respondent 7).

From the respondents' point of view, it is evident that the respondents want to see the challenge of unemployment addressed by exploiting the job opportunities or the potentials of GE should Ghana succeed in the GE transition agenda.

Another respondent had this to say:

> *"We expect Ghana to create a lot of job opportunities in the transport sector and to guarantee employees of their pension after the transition to GE"* (Respondent 8).

The respondent wishes to see a country with fewer unemployed people as compare to the current rate of unemployment. According to the respondent, Ghana is planning to introduce many new and green initiatives in the transport sector, which will end up presenting job vacancies for the unemployed. For instance, the respondent emphasized that after transition, Ghana's transport system will be transformed into the use of electronic vehicles. Also mass transport will be enforced by importing big and efficient public buses where two drivers will be driving one bus with some conductors. Unlike the current system where one driver and a conductor operate the public buses, in a GE, more than one driver will be employed with some

conductors (two drivers and two conductors) to manage a bus. The respondent also added that they are looking forward to a resilient livelihood created by the GE for the vulnerable in society. This is because climate change is causing havoc by destroying people's livelihood due to inadequate resilient measures and structures.

#### 4.5.1.3 Mitigation of Climate Change

One of the major challenges of countries making an effort towards development is the issue of climate change. Climate change is causing many problems relating to some losses to Ghanaians, especially people at the grassroots level who directly depend on nature for their survival. Ghana is therefore suffering from the impact of climate change just like any other country. Building resilient economies to tackle the impact of climate change is one of the main reasons why GE is proposed to drive governments to achieve sustainable development. The respondents added that Ghana is expected to capitalise on the pillars of GE to build resilient structures and projects to help address the impact of climate change on the country and address developmental challenges associated with climate change, especially in agriculture. In the light of this, a respondent had this to share:

> "*Ghana will have resilient projects because the resilient structure will be put in place after the transition"* (Respondent 11).

In support of the view above, another respondent also remarked:

> *"We hope to mainstream climate-smart cocoa in all parts of the agriculture sector, ministries, and directorates to ensure resilience in these sectors"* (Respondent 3).

The respondent went further by saying:

> *"We are also looking at a situation where post-harvest loses will reduce to increase productivity for food security"* (Respondent 3).

#### 4.5.1.4 Socio-economic Development

The respondents again indicated that they are looking forward to a progressive and steady economic development due to the transition to GE in Ghana. For example, a respondent opined:

> "*We expect to have a progressive and a steady economic development in which the environment and natural resources are not depleted"* (Respondent 2).

In commenting on this prospect, a respondent also added:

> *"We want Ghana to engage in sustainable management to ensure poverty reduction, enhance environmental services, and economic development*" (Respondent 1).

Another respondent also opined:

> "*We want to see a Ghana that has developed sustainably, economically, environmentally and socially*" (Respondent 5).

In support of this, another interviewee remarked:

> *"…GE is a way of bringing in FDIs into the country, and so we hope to receive FDIs to help boost the economic sector of the Ghanaian economy"* (Respondent 2).

From these two responses, Ghana expects to receive more green investors to help contribute to economic progress. When Ghana transitions, several foreign investors will be attracted depending on the policies and strategies developed. If the policies make special provisions for investors, domestic and foreign investors will be attracted to invest in green business. It is argued that industrialised countries that cause so much environmental pollution will attract more foreign investors to make so many returns, unlike Ghana. Ghana is not an industrialised country but can attract foreign investors depending on the GE policies that will be developed because investors are always searching for avenues where they can make many returns on their investments.

The respondents also indicated that since GE aims to address environmental degradation, they hope to see Ghana saving the percentage of Gross Domestic Products (9.4% of GDP) used to address environmental mess for other developmental projects. They also hope to grow Ghana's GDP with green products and services. And so, a respondent had this to say:

> *"Transition to GE will help to reduce our budget because government expenditure in terms of waste will be reduced. The monies government could have used to treat waste, buy drugs, etc. will be used for other development purposes"* (Respondent 11).

#### 4.5.1.5 Improvement on Health

Another expectation from GEis to help improve on health issues related to the brown economy in Ghana. Due to the high pollution of carbon emissions and some other unhealthy activities in a brown economy, there are many health problems such as chronic disease, cardiovascular disease (coronary heart disease), asthma, diabetics, and cancer, among several others.

Also, the brown economy presents inequality in terms of accessing and delivering health services. The respondents indicated their hope to see some of these health problems reduced in Ghana after the transition to a GE. A respondent commented by saying:

> *"We want to see the Ghanaian society in a healthy environment for everyone and to minimize environmental destruction that poses health challenges*" (Respondent 8).

From the view of this respondent, environmental destruction in Ghana is associated with health challenges. Therefore, when Ghana can transition to a green economy, ecological destruction or degradation will be addressed, thereby addressing the health risks and challenges presented by the environmental damage.

Also, Ghana hopes to capitalise on the opportunities of GE to cut down its carbon emission to create a healthy and sustainable environment conducive for all living organisms, including human beings. In addition to the above, Ghana aspires to improve its GDP, attract foreign

investors, reduce waste through recycling, create job opportunities (green jobs), and achieve its targets towards achieving sustainable development goals. These prospects identified by the study are in line with what some scholars like Lin & Xu (2014), Poltarykhin et al. (2018) Vase & Holl (2007) have identified in the literature related to other countries' prospects. For instance, Lin and Xu (2008) indicated that China expects to become one of the economies with a higher Gross Domestic Product (GDP) out of green products and services. They also look forward to becoming a leading economy in the world in terms of green business models.

Also, China anticipates developing a society of resource-efficiency, low-carbon transportation systems, smart green buildings which will be liveable according to international standards, address climate change challenges through proactive planning. These were the prospects of GE expected in China after a successful transition to GE. Besides China's expectations, California also expects to have a sustainable and resilient ecosystem with healthy ecology, and they also hope to overcome the impact of climate change on their ecosystem. Restoring the ecology of California is expected to come with conserved and rich biodiversity (Vase & Holl, 2007). All of these prospects are similar to what the study identified to be the prospects of GE in Ghana.

Finally, it was observed that the respondents were more interested in the challenges associated with the transition compare to their approach in sharing their expectations or hope. This was discovered through the way respondents were reluctant to answer the GE's prospects but were very enthusiastic in sharing their challenges as far as the transition to GE in Ghana is concerned. The researcher noted that the respondent spoke less on the prospects of green economy than their in-depth knowledge shared on the challenges. The researcher made these observations during the field data collection.

### 4.5.2 Effort made so far towards the GE Transition in Ghana (Achievement)

To identify the challenges associated with the transition, the research first sought respondents in the various sectors what they have done so far about the transition. The response of the respondents on what they have done so far is captured in Table 4.2.

**Table 4.2 Effort made so far by the key sectors towards the transition of Ghana to GE**

| **Sectors** | **The effort so far towards Green Economy** |
|---|---|
| Waste Sector (Ministry of Environment, Science, Technology, and Innovation (MESTI) & Environmental Protection Agency) | • They coordinated with other sectors to formulate policies and strategies meant towards greening the Ghanaian economy. Such policies include but are not limited to National Climate Change Policies to help direct the sector's activities towards green.<br>• Environmental Sanitation Strategy: addresses waste-related issues in Ghana. to improve recycling of waste and efficient utilization of limited resources.<br>• Low Carbon Policy or Strategy: this policy aims to reduce carbon emissions in Ghana by reducing air and other pollutions cause by high carbon emissions.<br>• REDD-plus Strategy: Presents a broad sub-national intervention that aims to address the key drivers of deforestation in Ghana. |
| EPA | • In partnership with the National Petroleum Authority, EPA formulated and implemented a policy to stop the importation of diesel that has high sulphur content.<br>• EPA has also patterned with Ghana Standard Authority to adopt motor emission standards for the emissions from vehicles on the road. To ensure vehicles pass the emission test before they are allowed on the road. The policy ensures that cars that are allowed on the road pollute the environment at a nominal rate which does not lead to environmental pollution with health risk. This particular policy is under parliamentary review and yet to receive parliamentary approval for it to be implemented.<br>• Again, the sector has established a regime to collect tax from people who import e-waste into Ghana; such e-wastes include computer parts, air condition, fridges, etc. The aim is to take care of pollutions and to reduce waste generation through importation.<br>• Finally, they have a **"reclamation bond"**. The bond is in the form of a tax where organisations, companies, or individuals are made to pay some amount of money before mining our natural resources. When the beneficiaries run away after exploiting our resources, that money paid can be used to address the environmental degradation caused by their activities. |

| | |
|---|---|
| Energy Sector | • Currently, they have the Renewable Energy Master Plan and the Renewable Energy Act, which serves as an Action Plan for the energy sector.<br>• The motive behind the master plan, act, and the new developments is to help Ghana transition its energy sector to a renewable, clean, environmentally friendly and sustainable energy sector.<br>• Also, they have introduced a new and clean cooking stove and clean fuel for cooking (view images below table).<br>• They have embarked on some projects to help promote renewable energy. For example, at the moment, they have been able to provide solar home systems for rural areas that are not connected to the grid. The grid project was done in collaboration with the ministry of energy. They have been able to mount five operational mini-grids on island communities. |
| **Forestry Sector** | • They have developed a plan or a strategy (Forestry and Agriculture sector Development Plan) to help them coordinate and work together with the Agriculture Sector.<br>• They partnered with MoFA and Cocoabod to engage in Climate Smart Cocoa practices (they introduced tested, researched, management practices that enhance productivity on the same piece of land, prolong the farm's life span, and ensure pest and diseases free farms) replace sun-loving cocoa. The objective behind this initiative is to the address expansion of farmlands (deforestation) and other lousy farming practices of farm or cocoa lands which usually lead to disforestation.<br>• So far, they have kept some measures in place in the form of a token to motivate farmers to take care of the trees on their farmlands.<br>• They have also adopted a local strategy called Community Resources Management Area (CRMA). The sector had given some authority to the local people to manage forest bodies through their indigenous knowledge and management skills. The UNDP is part of the actors who helped in building a lot of CRMA in Ghana. One of the significant purposes of the CRMA is to educate communities on the need to preserve forest bodies and avoid indiscriminate burning.<br>• At the moment, they have built five resource centres for communities that are part of the CRMA to support a smooth administration of the CRMA initiative.<br>• Achievement so far, a baseline study was conducted in 2014, which revealed that Ghana's closed forest deforestation was at 1.3% and open forest deforestation was also at 1.5% annually. Another study was born in 2017 to assess the impact of the measures or strategies taken to address deforestation (climate-smart cocoa practices, CRMA, policy reforms, and incentivising tree caretakers or farmers). The study revealed that closed forest deforestation was reduced by 0.4%, from 1.3% to 0.9 %, while open forest deforestation stopped, and Ghana was instead gaining open forest at 1.2%. |

| | |
|---|---|
| | • They are also doing re-stooling in the timber industry to reduce carbon emissions.<br>• The forestry commission is also planting trees in large forest areas that have been deforested to bring those forests back to life to fight climate change.<br>• Also, through some of their projects, they have been able to build treehouses at the Kakum National Park for tourist attraction. Through the World Bank, they have been able to plant so many hectares of degraded forest in Ghana through the forest improvement project by the World Bank. |
| Transport Sector | • We have a climate change and Research Strategy document for the sector at the moment.<br>• They have a soot-free bus scheme (thus a smoke-free bus policy) document detailing how they want to transition to a soot-free bus in Accra.<br>• Together with EPA, they have also come up with emissions guidelines, and they are waiting for parliamentary approval to implement the policy (this effort has been captured against the EPA's action already, this is just a confirmation of what EPA said).<br>• Plans are already on the ground to patronize Compressed Natural Gas (CNG) buses to reduce diesel vehicles for more cars that use compressed gas.<br>• Also, they plan to move away from a pure diesel engine to a hybrid that combines diesel and electricity to save on fuel (an effort to shift away from conventional power).<br>• Moreover, the sector is working to transition Ghana's transport sector to E-mobility (electric buses, electric trains, pod way network, and cable cars, among others). They are also promoting Non-Motorised Transport, which is essential for the last mile journey. |
| Agriculture Sector | • They have policies in place (check table 3) to help make the agricultural sector resilient and robust to withstand the impact of climate change.<br>• They have trained extension officers across the country in climate-smart agriculture to expose them to Good Agricultural Practices (GAP) such as burying fertilizer instead of putting it on top of the soil to reduce the rate of nitrate emission into the atmosphere.<br>• Some communities in Ghana are taught to practice agro-forestry (combining both agriculture and forestry on the same piece of land).<br>• They also partnered with other ministries to formulate the NCCPF and the Ghana NDCs. |
| Ministry of Finance | • They have a strong climate finance advisory committee, a technical project committee that reviews climate change projects submitted to the ministry for finance.<br>• The ministry has introduced software called climatronics that is used to track funds through the Ghana Integrated Financial Management Information Systems (GIFMIS), to ensure the efficient utilization of climate funds in Ghana. |

| | |
|---|---|
| | • They also trained some Metropolitan and District Assemblies in Accra last year to build their capacities on climate change-related activities and initiatives; this year, we will be training MDAs in the northern region. Very soon, we are going to have a green budget that will capture all the green activities within the country. |
| National Development Planning Commission | • NDPC, together with MESTI, has developed a manual for GE called the GE training manual.<br>• They organise training for all districts across the country on green economy principles and concepts. Again, NDPC and MESTI developed a green economy tool kit together with STEPRIL with is part of CSIR that will help districts go through integrating GE principles and options into their development plans. They have also captured some GE principles in the development framework. |

**Sources:** Field Data. January 2020.

From table 4.2, it is clear that Ghana is making an effort to transition to green based on what the key sectors have achieved so far and what they have planned to be implemented. For instance, the energy, waste, and forestry sectors are making tremendous efforts to transition Ghana to a GE, although other sectors are also making an effort. Particularly with the energy sector, they have introduced new and clean cooking stoves, clean kitchen fuel, and biodiesel from recycled waste.

These achievements can be viewed below. The forestry sector is also making an effort. From the table, it is clear that they are now gaining the open forest they used to lose. And closed forest deforestation has not stopped but has been reduced through the effort made by the sector so far. EPA and MESTI have also coordinated with other sectors to formulate policy frameworks, strategies, action plans, and master plans to serve as a road map or a guide towards the green transition. The images below present the efforts of the energy sector so far towards the transition of Ghana to a GE.

**Figure 4.1 Clean cooking stove to replace the traditional cooking stove**

**Source: Field Data, 2020**.

**Figure 4.2 Bricks to replace firewood and to be used in the clean stove above**

**Source: Field Data, 2020.**

**Figure 4.3 Bio-diesel made from waste recycling**

**Source: Field Data, 2020**.

**Figure 4.4 Charcoal for export (can also be used domestically).**

**Source: Field Data, 2020**.

The research found that some sectors have developed master plan documents, specific policies by the energy and the forestry sector. Other sectors have also introduced clean cookstoves to replace the traditional cooking stoves, clean fuel bricks to replace firewood, and biodiesel from waste by the energy sector, as presented by the images above. However, some other sectors organised training programs and undertook projects to help build green capacities by contributing their quota towards the transition.

Having identified these efforts, the researcher went ahead to find out the challenges the sectors have encountered in their step towards the transition.

### 4.5.3 Challenges of Transitioning Ghana's Economy to a Green Economy

Having discussed the efforts made so far towards the green economy transition in Ghana, the respondents also identified and discussed some challenges (barriers) associated with the transition of Ghana's economy to green. These challenges can make the transition unsuccessful venture, hence, the need to identify these challenges to help come out with possible recommendations to address the challenges to facilitate successful growth.

The challenges that were identified by the majority of the respondents are inadequate funding, inadequate human resource, lack of green technologies, and ineffective or poor institutional coordination. However, some of the challenges are sector-specific. Lack of GE sensitization (poor education or public awareness creation), visibility issues, political challenges, socio-cultural issues, attitudinal change, lack of market for a green product (due to expensive cost), services, and lack of climate-sensitive budget were the specific challenges identified.

These challenges discussed above on the GE transition are found in table 4.3. The following abbreviations of the sectors were used to represent the various sectors studied in table 4.3

Energy Sector (ES), Transport Sector (TS), Agriculture Sector (AS), Forestry Sector (FS), Waste Sector (WS), Ministry of Finance (MoF), and National Development Planning Commission (NDPC). The ticking symbol means the sector is facing that challenges and, therefore, the cause of making it difficult for the country to transition. Where there is no ticking symbol shows that that sector is not facing that challenge.

**Table 4.3 Challenges of Green Economy Transition in Ghana**

| **Challenges of GE** | **ES** | **TS** | **AS** | **FS** | **WS** | **MoF** | **NDPC** |
|---|---|---|---|---|---|---|---|
| Lack of Funds / Difficulty in Securing Funds | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ |
| Lack of Technical Expertise/ Limited Capacity | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Lack of Green Technology | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Lack of Policy Framework/Strategy/Plan | ✓ | | | ✓ | | ✓ | |
| Poor Institutional Coordination | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Visibility Issues or "Political will" (difficulty in getting policy actors attention to support the transition) | ✓ | | | | ✓ | | |
| Political / Governance Challenge | | | | | ✓ | | |
| Socio-cultural issues | | | ✓ | ✓ | | | |
| Poor Attitude towards Change | | | | ✓ | | | |
| Lack of Climate Sensitive Budget | | | ✓ | | | | |
| Poor Awareness Creation on Green Issues/ Lack of Green Education to the Public | ✓ | | | | ✓ | | |
| Over Capacity (Energy Surplus) | ✓ | | | | | | |

**Source**: Field Data, 2020.

Discussed below are the dominant challenges identified by the study.

#### 4.5.3.1 Lack/ Difficulty in securing funds

All the respondents discussed their inability to undertake green initiatives, actions, and practices due to limited funding resources. They explained that lack of funds to purchase green technologies, undertake training to build capacities on the green, etc., remains a challenge. A respondent had this to say;

> "*The change requires money, and who is going to provide that money? Ghana is now a developing country, so donors have pulled off; they have stopped giving grants because Ghana is currently a middle-income country"* (Respondent 4).

In support of this, another respondent also shared that:

> "*…. the funds to support us execute our plans is out of someone's benevolence, and the problem is this funding is not coming, hence, a challenge of unsustainable funding"* (Respondent 6).

From the view of these respondents, Ghana used to receive funding support to undertake specific projects and initiatives for the development of which GE is no exception of such initiatives. But of late, some of these funds from donors are not forthcoming. A respondent attributed the reasons for not receiving donor funding because Ghana is now a middle-income country. And since Ghana is a middle-income country, such funding support has been withdrawn, and the focus of the donors is on the less developed countries.

Since there are no more such funds and domestically, the country is also financially incapable of providing such funds, the financial responsibility of the transition is a big challenge. Funding, therefore, remains a significant challenge in the transition of Ghana's economy to GE.

Another respondent also hinted:

> "*Transitioning to GE is considered capital intensive, and sometimes getting funding from the government to undertake some of these projects is challenging. For instance, let's look at tree plantation, which is capital intensive, and sometimes we rely on the government for funding, but the funds do not come. At times too, we receive the funds late (delays), which turn to affect us because tree planting is a seasonal activity. Assuming we demand funds during the wet season for plantation and the funds are given in the dry season, it becomes a challenge embarking on the tree plantation"* (Respondent 5).

This respondent is also of the view that although they do receive some funds or grants to support the GE transition those funds are sometimes delayed. So, activities like tree planting exercises in a particular season could not be done on time. When the funds' delay, they cannot achieve their purpose, which poses a challenge. Tree planting is significant in the transition to GE since these trees will grow to become forests and serve as a carbon sink. But in a situation where trees are not planted on time due to lack of funding, it is a challenge because when the planting season passes, it will take another year to get those trees planted. Another respondent also had this to say:

> "*Funding for climate change infrastructures and services is lacking. Ghana does not benefit much from bilateral funding and Green Climate Funds as other countries. Sometimes I think it is due to our lack of capacity to present proposals with reliable data to these institutions for funding support. Most sectors do not receive the necessary support to prepare proper projects for funding support; most of the project we prepare lack feasibility studies and reliable data, so these proposals end up not attracting funding"* (Respondent 8).

It is clear from the respondent's view that there are funds that can be accessed to support the GE transition provided the requirement to secure the funds are appropriately prepared. The respondents also indicated that Ghana cannot access this funding because the proposals presented to help gain the funding support are mostly not 'bankable' or realistic.

In a nutshell, the majority of the participants considered funding as their primary challenge. This challenge prompted the researcher to interview the ministry of finance to confirm the

respondents' responses and find out why funding is an issue as the respondent's claim. Unfortunately, the ministry of finance clearly stated that funding per se is not a challenge, but the problems have to do with the requirements to meet to secure the funds. The respondent at the ministry of finance had this to say:

> "*There are funds available for the GE transition, but the issue is that the requirement to access the funds is the challenge"* (Respondent 10).

On the other hand, the ministry admitted that Ghana does not have money allocated to green funds. However, a lot of international funds are available to be accessed for the transition. "*.... green funds can be accessed internationally",* said the respondent. The respondent added that Ghana is yet to set up a funding source (Ghana Green Fund) to mobilise funds internally to undertake green actions, projects, and programs. This statement of the ministry of finance confirmed the response of the ministry of energy, in the sense that international funding is based on philanthropic benevolence.

The National Development Planning Commission also considers lack of skills and green technology to be the significant challenge instead of finance. But one may argue, without funds, how can the sectors organise training to equip their staff with green skills and knowledge? Also, how can sectors access green technologies without purchasing? Finance remains the major challenge as far as the green economy transition in Ghana is concerned. Even though there are low hanging fruits such as waste segregation that can be practice without necessarily calling for any money or training on how to segregate waste. Such methods can be promoted to support the transition while waiting for funding support.

#### 4.5.3.2 Lack of Green Technologies

This challenge was also identified and discussed by all the respondents. They addressed this challenge by indicating that a GE has to do with green technologies, which Ghana cannot access at the moment. They added that they even need patent rights to access some of these technologies, but unfortunately, such rights are not available. A respondent opined:

> "…*we need access to new intellectual property rights because some of the new technologies (green technology) have intellectual properties with it; they turn to be very expensive if you want to acquire those intellectual technologies"* (Respondent 11).

They added that they do not have what it takes to afford green technologies such as solar panels.

Commenting on the green technology challenge, a respondent had this to say:

> *"The type of technology we have determines our ability to transition. We have a technological challenge; we do not have the technology itself and the knowledge to operate these technologies as well"* (Respondent 2).

In support of the above view, a respondent added that:

> *"Technology in terms of machinery, like measurement of environmental condition and geological equipment, are not available"* (Respondent 3).

All the respondents were in support of the view that technology is a challenge towards the transition. Some indicated that they lack the technology but the skills and the knowledge to operate these technologies are also a challenge. The technologies used in these sectors are old and out of date, and therefore do not support green efficiency. For instance, a respondent had this to say:

> "…*the technologies we have are based on some old technologies it does not allow you to make efficient use of energy, so we need to change the technology we are using"* (Respondent 11).

Transitioning to a GE has to do with efficiency in terms of energy and resource utilization, which demands green technologies. According to the respondents, green technologies are costly, so they cannot afford these technologies, making the transition cumbersome. Due to the expensive nature of these technologies, factories and industries still use their old technologies until they are financially capable of purchasing green technologies to facilitate the transition.

> *"… Many of the things we need to do to go green are not only policy but also technology. The technologies must be homegrown and evidence-based through research…." (Respondent 2).*

Drawing from the interviewee's response, the technologies to facilitate the transition should be informed through research. Meaning, that the technologies needed for the transition must be recommended through research to employ feasible and results-oriented technologies to facilitate the transition.

> *"The high upfront cost of these technologies is a major barrier to this transition. Because these technologies are not manufactured or assembled here, and by the time you import them into the country, the cost still goes up. So, for an average Ghanaian citizen, the prices are quite high"* (Respondent 7).

This particular respondent believed that green technologies are costly to afford and therefore pose a challenge towards the transition. Moreover, the cost involved in importing such technologies is very high and cannot be afforded by the average Ghanaian.

#### 4.5.3.3 Inadequate Green Technical Expertise/Capacity

Transforming the economy has to do with new skills and knowledge acquisition. Ghana cannot transition to GE while the skills and the knowledge of the sectors to transition are not upgraded to do things in a new way. For this reason, the sectors to transition need to get their capacities to build to acquire green skills and technical know-how. All the respondents admitted lack of

technical expertise in terms of skills in their numbers in various sectors is a challenge. They explained that sometimes they have the money, but the technical know-how is not available and hence, their inability to attend to or undertake green activities. For instance, the respondents shared this;

> "*We have a challenge when it comes to human resource. The green staff strength we have at the moment is limited".*

Another respondent remarked:

> *"Few officers are trained as far as the transition is concerned; we need much more officers to be trained in the area so that they can help make the transition possible"* (Respondent 6).

Another respondent hinted:

> "*We also have challenges in terms of adequate human capital related to numbers and skills. Those who have been trained in climate-smart technology are scarce, and so we have to expand to get more people involved"* (Respondent 3).

According to the respondents above, the various sectors understudied have less staff who have been equipped with green skills. However, they all admit that the number of staff trained on greening is few, so they need more staff to be introduced to help make the transition easy and feasible.

#### 4.5.3.4 Poor Institutional Coordination

Almost all the respondents indicated that one of their hustles in the transition to GE is poor coordination among stakeholders in various institutions though coordination plays a significant role in the transition process. Institutional coordination has been a significant challenge; meanwhile, the transition must be a collective approach. Otherwise, the effort of one sector will not amount to any change when the other sectors do not cooperate. Since there is no coordination among the sectors, they communicate different interests. The interest of one sector

is at the expense of other sectors, thereby making the transition very difficult. A respondent share that:

> *"To me, the biggest challenge of the GE transition is institutional coordination"* (Respondent 10).

Another respondent went further to explain, as presented below:

> *"…coordination among government institutions is poor such that, for example, Ghana Cocoa Board goes to deliver a message without considering what the Ministry of Food and Agriculture (MoFA) or forestry want. They are only interested in what they want. We do not work together, so we do not have a common interest. If we should have a common interest, then one agency will not encourage tree falling to achieve their aim at the expense of another agency"* (Respondent 4).

A respondent also hinted:

> *"Over the years, there has not been institutional coordination, and the various sectors do not build synergies tighter because they do not have a common goal"* (Respondent 8).

These were the respondent's responses when they were commenting on institutional coordination as a challenge among stakeholders of the GE transition. They indicated that each sector or institution has individual goals they seek to achieve, irrespective of GE's collective approach. The coordination issue is not limited to only internal sectors, but the respondent also indicated that other countries are not collaborating. A respondent had this to say:

> *"…sovereignty and collective responsibility of the global community is also a challenge. It is expected that as Ghana is making an effort towards the transition, Nigeria and some other countries also do their part, or else the sum effect is going to be zero. So how do we collectively mobilise others to see the same way we are seeing GE and take action as well?"* (Respondent2).

This particular respondent believed that globally countries need also to coordinate and collaborate for the transition to be possible because, without collaboration and coordination, the countries making an effort towards the GE will not achieve any result. In other words, the

transition to GE is a collective responsibility through coordination and collaboration at the global level, national level, and district level. One country or sector cannot say they are transitioning without coordination; the sum effect will be zero.

### 4.5.4 Other Challenges

The challenges discussed above are the dominant challenges according to the study and findings. However, some of the respondents also mentioned lack of awareness creation, poor visibility issues of GE, competition for policy makers' attention, and competing for resources as specific challenges facing other sectors.

#### 4.5.4.1 Lack of Awareness Creation

The level of public awareness in terms of GE transition is hard to ascertain in Ghana. Awareness regarding the environmental impact and risks in a brown economy is relatively low. Similarly, the awareness of GE potential is known to few people, precisely to those working towards the transition. The respondents noted that the public had not been given the much-needed knowledge through public education on the concept of GE. So there is no public support in the transition implementation. Moreover, the transition is a socio-technical change that needs to span through the entire economy and, requires public support. A respondent commented:

> *"There is the need to create awareness among people in the city and rural areas indicating the importance of green to enable them to support the green transition course. We should not limit the green education to people in urban areas only but to people at the grassroots level. They should also incorporate the issues of green into school curriculums. Change comes about through penetration, and so teaching green practices to children will be of help and an easy way to transition, since the children will learn and grow up knowing and practising green things and manners. The change will be easy, but we need to persist because GE is worth adopting due to its impact and benefits. Education on GE in Ghana lacks the need to embark on green education and research"* (Respondent 11).

According to the respondent, GE awareness creation is critical from all angles and should therefore be encouraged in urban and rural areas. Also, the respondent indicated the need to review schools' curriculum to capture GE so that people will be taught issues relating to GE at their infant and formative stage of life to help instill in them the practical knowledge of green practices.

The respondent added that there is the need to ensure the Ghanaian economy is transitioned to a GE to exploit the opportunities and the benefits associate. It is indicated in the CPESDP (2017-2024) that the government of Ghana will initiate GE with chiefs, queen mothers, traditional authorises, civil societies, religious leaders, and other recognised groups to begin a GE campaign as part of green education. But it appears the government is yet to engage all these bodies to support the transition.

People need to be told the impact of the brown economy and the benefit and potentials of a GE to decide which is best, either brown or green, and which of them to promote. Organic products should be made affordable for everyone to afford, irrespective of their financial status. As part of the education campaign, research also plays a very significant role as far as the transition is concerned, but, unfortunately, the respondents indicated they do not have funds to help undertake research work. According to respondent 2, the resources needed to undertake the research is limited. So, they develop policies that are not informed as they should in terms of evidence from the ground. The respondent continued by saying that:

> *So, the overall impact of such policies will not get to the point where we all want. But once it is tame and home-grown fed by evidence and then implemented, you can then say you have tailored made a solution to deal with the problem"* (Respondent 2).

The above response indicates that better policies can be formulated towards the GE transition through well-researched findings because research helps to obtain relevant information to make an informed decision.

Also, without research, the knowledge level of GE in Ghana will remain low, which will have a negative impact and implication on the transition. Since the change is time-bound, there is the need to encourage research primarily empirical research, to be undertaken to help find better and easy ways to transition and also to help increase public knowledge on the concept of GE.

#### 4.5.4.2 Poor visibility issues of Green Economy and Competition for Policy Makers Attention (Lack of "Political will")

Policymakers have not given the issue of GE attention in Ghana because GE is a long-term investment. There are many social projects and programs that policymakers turn to focus on because they think investment can make them win power in the next election. A respondent had this to say:

> *"…there is a competition for the visibility of green issues among policymakers. GE has poor visibility because green issues are seen as second-rate or are ignored, it is treated as a token. Because it is perceived to be costly and not to bring in any revenue and the benefits are perceived to be long-term, they prefer to invest in things that will bring immediate benefit. They prefer to give attention or prioritize the physical things that people can see and have short-term benefits (perceived physical benefits)"* (Respondent 2).

The respondent believes that the environmentalist is finding it difficult to get politicians or policymakers to understand and support the GE concept so they could invest in the transition. The reason is that policymakers are only interested in investing in short-term programs and can be noticed by people to enable them to win electorate votes again and not necessarily long-term programs like GE. However, GE is considered a driver of sustainable development must therefore be given the necessary attention and support. The respondent went further to explain as presented below:

> *"I think the root cause is that the policymakers think in a four-year cycle, and so, they allocate resources to visible areas for accountability purposes and to win power again"* (Respondent 2).

From the submission of the respondent, governments in Ghana spend four years in office, politicians try to make policies within the four-year cycle to invest in projects and programs that will help them win elections again. This challenge was considered a major problem because a significant role in the transition needs to be played by policymakers to help make the transition possible. Yet, several activities and programs are also competing for the politician's attention and support.

Secondly, it is assumed that policymakers are not given attention to the issues of GE because they have not been given much information on the concept and the real implication of practising a brown economy for a very long time. Whatever be the case, the challenge is that the transition of GE in Ghana is competing with other initiatives for policy makers' attention and support. Meanwhile, a policy is a driving force to help achieve the transition.

According to the research findings and analysis above, lack of sustainable funding support, lack of green technology, inadequate capacity in terms of skills and experts in their numbers, lack of necessary political recognition ("Political will") and support, poor institutional coordination among key stakeholders, socio-cultural challenges, lack of climate-sensitive budget, poor attitude towards change, lack of green education or public awareness on GE and lack of policy framework to facilitate the transition process were the transitional challenges identified.

The respondents admitted that these challenges are the difficulties they are facing in making efforts towards the transition. The dominant challenges among these challenges were lack of funding, inadequate green capacity, lack of green technology, and poor institutional

coordination among various stakeholders. These revelations are in line with previous studies. Studies indicate that some other countries, in their effort to transition, are faced with the same challenges. For instance: Xing et al. (2011) (2011), Unruh (2002), Ospanova (2014), Geng & Doberstein (2008), and the Inclusive Green Growth Report (2015) stated the interconnected nature of the challenge to lack of technology and lack of intellectual property right to be able to access green technologies.

Also, according to Arif et al. (2009), due to the poverty rate in India, funding to support the transition is a challenge due to the high cost involved in the transition. It goes a long way to discourage people from engaging in green products and services. Komen (2013) also pointed out that the transition to green will face a funding challenge, especially in developing countries, because the transition is capital intensive.

Arif et al. (2009) and (Ospanova 2014) also indicated a low literacy rate of GE awareness, or knowledge and skills among Indians and Kazakhstanis public and hence the need to shift science, research, training priorities and education to green (OECD, 2012). The challenge of institutional coordination and collaborations was confirmed by the study as Afful-Komson (2012) identified in a study that indicated that institutional coordination was considered institutional deficiency as a hindrance to Africa's effort towards the GE transition.

#### 4.6.3.3.1 Implications of the Identified Challenges

The consequences of these challenges identified by the study towards the transition are that the key sector becomes incapacitated in the transition to GE as long as these challenges continue to exist. It is going to serve as a difficulty upon the smoothness of the GE transition process in Ghana. For example, in a situation where there are available experts without green technologies

when there is the need to engage in any activity that calls for technologies, it means that it cannot be possible. However, there are experts with no technologies to help make the work successful. In that case, the work will be left undone; better still, the work can be done through other means (normal strategies) and not necessarily adopting a green strategy because of the lack of technology.

Also, people will be relaxed when it comes to greening especially when they have no knowledge, skill, or ability. They will prefer to use old-fashioned or brown economy measures to discharge their administrative duties. Building capacities is very core in the transition process, in the sense that sometimes when people's abilities are built, they can help come out with new ideas to help make things possible and easy. When people have no ideas, skills, and knowledge, they will not appreciate GE's benefit and will not support the discourse of greening and sustainability.

They may end up having a different meaning of the concept of GE. For instance, some of the respondents believed that GE is a business of the Western countries in disguise; it does not mean what they are preaching as far as sustainable development is a concern. They went further by explaining that Western countries want to make money from the green technologies they have introduced and make that money they decided to come out with stories to convince other economies to patronize their technological product in the name of greening their economies.

They also emphasised the cost of these technologies as a confirmation of their perception. Suppose GE is a panacea towards sustainable development. Why not educate key sectors involved in the transition to understand the concept well to do away with such misconceptions. Some of these beliefs and mindsets need to be addressed to help make the transition process possible.

These misconceptions of the respondent support what other scholars have presented in literature, such as Bailey (2014), Bergh et al. (2011). For example, Bailey (2014) argued that GE in its reality would not be holistic as presented globally in terms of development. It may not help address societal problems as perceived. Bailey also questioned whether modernising and commoditising ecological systems can manage capitalism and ensure conflict-free politics. Bergh et al. (2011) also indicated that GE is not as perfect as perceived by governments and international bodies because, in an attempt to do something perfectly, it instead results in causing other problems.

Again, lack of policy and policy coordination is a problem. The concept of GE cannot be possible without any policy framework, as mentioned earlier. The transition can not succeed without "political will" yet, gaining political support from various stakeholders is a challenge; (Chukwu, 2020; Resnick, Tarp, and Thurlow, 2012; Gurria, 2008). When policymakers do not support the GE concept, the transition will not be successful because the transition needs political support to invest in the transition and help enforce policies towards the implementation of the transition.

The transition is a matter of collective responsibility in the sense that, assuming agriculture, forestry, and waste sector are making an effort towards the transition and the energy sector and the transport sector are also doing nothing to support the transition, there will not be any achievement because the sectors need to work together to achieve their common purpose and set goals.

In a typical situation where Ghana is doing its best while other countries are not making any effort to achieve a common goal of sustainable development collectively, Ghana's effort will not lead to any result. Each of the challenges discussed here impedes the efforts made by the

sectors towards the transition and, therefore must be given the necessary attention to make the transition a success.

### 4.7 Application to the Multi-Level Perspective Framework/ Socio-Technical Transition Theory.

The Multi-Level Perspective framework underpinned the theoretical framework of the study. It was adopted to identify and assess the drivers, challenges, and prospects of the green economy transition in Ghana.

The GE drivers identified by the study were the quest to achieve sustainable development goals, the battle against climate change worldwide, system complexity, environmental degradation cost, climate change-related issues, energy insecurity, high carbon emission, poor waste management, overexploitation of natural resources, unfriendly environmental development models and deforestation. The first antecedent of the conceptual framework below contains the drivers of GE found by the study.

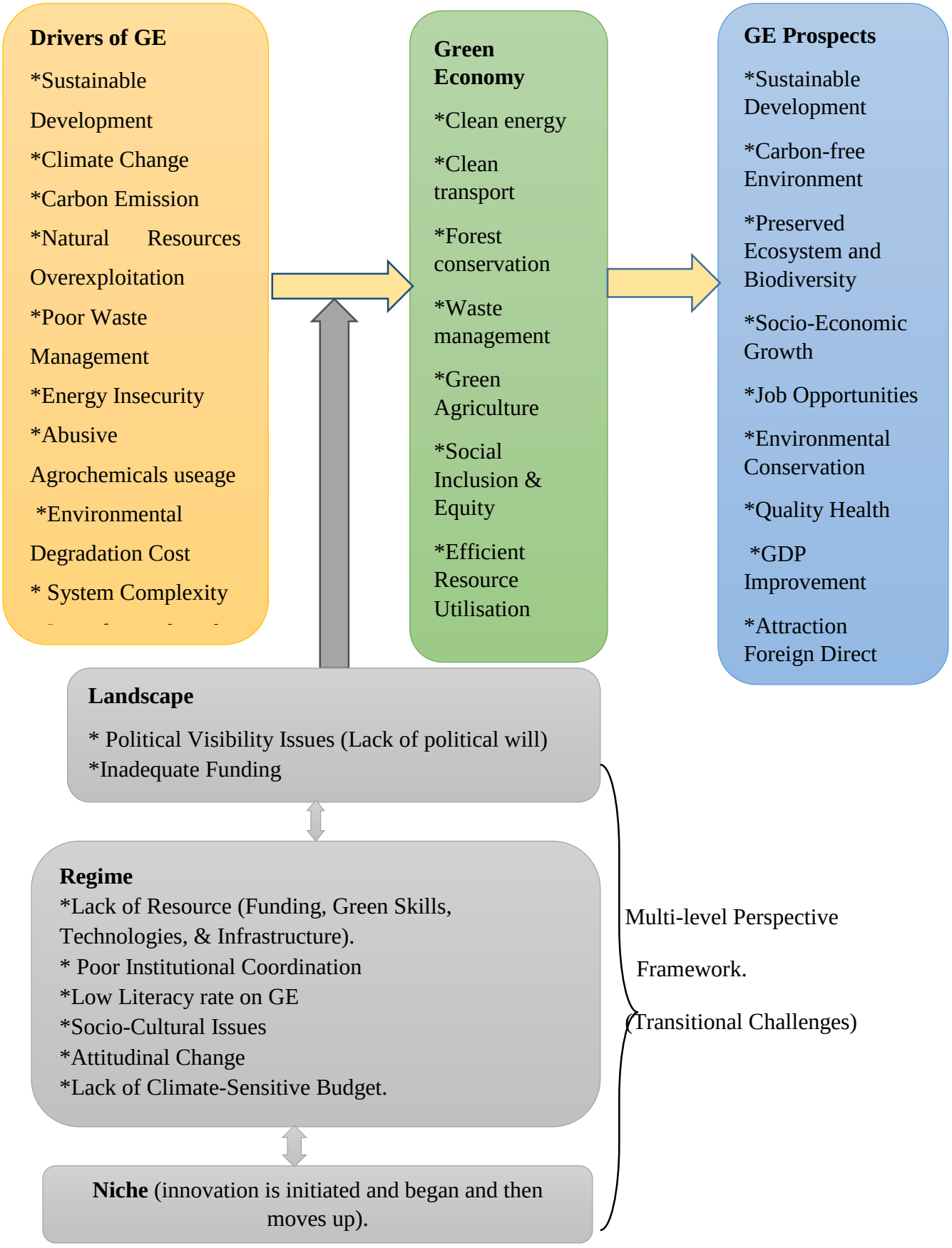
The GE Prospects the study identified were environmental conservation and preservation, socio-economic development, creation of decent and green job opportunities, Gross Domestic Products (GDP) improvement through green products and services, and a healthy environment by reducing carbon emissions to address the rate of chronic diseases in the country. These prospects are captured in the last antecedent of the conceptual framework of the study in figure 4.5.

The theory also presents several factors that influence transition (refer to figure), in the sense that the absence of these factors could be a challenge and their availability is a plus for a smooth transition. The challenges identified by the study were: resources inadequacy (funds, expertise, and technologies), political visibility issues ("political will"), attitudinal change, ineffective or poor institutional coordination, poor education or public awareness on green issues, socio-cultural beliefs, marketing challenges, and lack of climate-sensitive budget. These challenges are also captured in the conceptual framework directly under the moderator pointing between the drivers and the GE antecedent (refer to fig. 4.5).

The policy framework is one of the factors MLP considers to influence change, and the study discovered that the various sectors studied have policy frameworks according to secondary data, but the primary data contradicted the secondary findings. However, the study concluded that the sectors have policy frameworks guiding their effort towards the GE transition in Ghana after examining the existing policies of the five sectors studied.

The factors capable of driving and influencing a change according to the MLP are not different from the findings of this study.

**Figure 4.5: Conceptual Framework**



The conceptual framework in figure 4.5 depicts the GE drivers in Ghana compelling the country to transition according to the study findings. The antecedent bearing GE after the GE Drivers antecedent presents the whole concept of GE, in order words, what the concept seeks to achieve in the long run. The moderator between the GE Drivers and the GE antecedent presents the challenges of the transition as indicated by the respondents. The challenges at the landscape level show challenges at the international level, and the regime challenges also refer to national challenges. The study identified these factors as the challenges facing the sectors understudied in their attempt to transition. Finally, the last antecedent on the right presents the prospects of the GE transition in Ghana.

## 4.8 Conclusion

The findings emanating from the study have been presented and extensively discussed. The respondents' views were organized, categorised, and analysed for meaningful data to achieve the research objectives. Conclusions were then drawn from various literature available and at hand for the study. The findings revealed some GE drivers available in Ghana. The results also indicated that Ghana as a country has GE policy frameworks, strategic and master plans to help facilitate Ghana’s economy to green.

Finally, the study's findings revealed several GE prospects in Ghana, the effort made by the critical sectors studied so far, and many challenges associated with the transition of GE in Ghana. The findings were then applied to the theory that underpinned the study in figure 4.5. The next chapter presents the summary, conclusion, and recommendations of the study.

# CHAPTER FIVE

# SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

## 5.0 Introduction

This chapter presents the final part of the research and, therefore, consists of the research's summary, conclusion, and recommendations. The chapter highlights an overview of the research findings, critical lessons drawn from the study, and findings based on the interpretation of data generated through the interviews conducted purposely for the research. Finally, recommendations are made for practice, policy, and research, and an ultimate conclusion is drawn for the entire study.

## 5.1 Summary

The research sought to investigate the prospects and the challenges of the GE transition in Ghana, focusing on the key sectors that must transition immediately. The study sought to find answers to the research questions: what are the drivers (factors necessitating) of GE in Ghana? Are there policy frameworks to help facilitate the GE transition in Ghana? Finally, what are the prospects and challenges involved in transitioning Ghana's economy to green? To answer these questions posed in the first chapter of the research, the researcher reviewed extensive literature where a conceptual framework was then developed to address the three questions.

The interpretivist research paradigm influenced the research to allow the researcher to interact, explore and discover the prospects and the challenges from each respondent's points of view. Also, the paradigm was considered appropriate as it helped the researcher pose the what, the why, and how questions to probe the issue of GE in Ghana. The study adopted a qualitative

approach with a case study design. The data for the study was obtained from two main sources, namely primary and secondary data.

The primary data for this study was gathered from the in-depth interviews conducted with participants. A well-structured interview guide was adopted for the collection of preliminary data. The respondents were the directors or unit heads within the environmental directorate, development, planning and policy directorate, and top management personnel of the various ministries and agencies interviewed, as categorised in table 3.1 in the third chapter.

Participants were purposively selected based on their knowledge, experience, and role as far as the transition in Ghana is concerned. Other participants were identified and interviewed based on the recommendations of other respondents with the use of snowball sampling techniques. The data obtained from the interviews were analysed thematically with Mile and Huberman's (1994) data analysis approach. The data was coded to identify and describe patterns and themes from the respondent(s) perspective to understand and explain these patterns and themes.
The research analysis was based on nineteen (19) respondents from eleven (11) public ministries and agencies interviewed under the key sectors of the study. The suitability of using the key sectors as a case-study strategy in this research was to enable the researcher to explore and understand the extent to which the concept of GE in Ghana is perceived and to identify the challenges and prospects associated with the transition by using in-depth interviews.

According to the research findings, few people understand GE in the key sectors studied. These people were those found to be responsible in the various departments and agencies working towards the transition to GE in Ghana.

The study revealed that there exist some GE drivers in Ghana. The drivers were divided into two (dominant drivers discussed by almost all the respondents and some specific drivers also addressed by some respondents).

The dominant drivers were the quest to achieve sustainable development, over-exploitation and over-harvesting of natural resources, carbon emissions, climate change-related issues, and unfriendly environmental development models.

Also, the specific drivers were poor waste management, deforestation, energy insecurity, population growth, insufficient utilization of natural resources, system complexity, abusive utilization of agrochemicals, expensive nature of the cost involved in cleaning the environment after utilizing the natural resources (environmental degradation cost), and policies, adage or outmoded technologies, programs and the practices driving the use of our natural resources.

Sustainable development, over-exploitation of natural resources, carbon emissions, climate change-related issues, unfriendly environmental development models, poor waste management, deforestation, energy security, population growth, and insufficient utilization of natural resources were the GE drivers found to be in line with previous studies. And system complexity, abusive utilization of agro-chemicals, and the expensive nature of the cost involved in cleaning the environment after utilizing the natural resources (environmental degradation cost) were the GE drivers discovered by the study.

Again, the study found out that Ghana has GE policy frameworks and strategic plans to facilitate the GE transition in Ghana. This conclusion was reached because almost all the sectors studied have policies, strategies, and master plans directing their implementation. Also, the study found out that only the energy and forestry sectors have specific and detailed policy

frameworks with set targets and timelines to achieve their goals towards the transition. However, there is an issue of poor awareness creation and poor policy coordination.

The study revealed several GE prospects in Ghana. The prospects revealed by the survey are the creation of green job opportunities to help reduce the high rate of unemployment in Ghana. An economy of a healthy environment, the respondents also indicated that they hope to improve Ghana's GDP, FDIs to invest in Ghana's economy to support the transition and grow the economy. And to sustain the ecology and the biodiversity at large to mitigate climate change-related problems.

An interesting observation was that the respondents showed more interest in discussing the challenges of GE than the prospects; meanwhile, the researcher expected to see otherwise, this runs through all the interviews conducted.

The study discovered several efforts made by some of the sectors understudied. These efforts were the specific policies formulated and yet to be approved by parliament, projects and GE programs are organised on a timely basis to promote the concept and the transition. Both energy and the forestry sector have also developed sector-specific transition policies and master plans to guide them towards the implementation of the transition. The energy sector has introduced clean cooking fuel and stoves to change the energy sector to a renewable and clean sector.

Finally, the study identified the challenges associated with the transition. The challenges were lack of sustainable funding support, lack of green technology, inadequate capacity in terms of skills and numbers, lack of necessary political will and the needed recognition and support, poor institutional coordination among critical stakeholders, socio-cultural challenges, lack of collective role to be played by various and interrelated sectors, lack of climate-sensitive budget,

poor attitude towards change, lack of green education or public awareness on GE and lack of policy framework.

## 5.2 Conclusion

In a nutshell, the study discovered that the current development model of Ghana is characterized by several complexities such as inefficient utilization of natural resources, overexploitation of natural resources, unfriendly environmental policies and programs, climate change, and chronic diseases, among several others. Therefore, these complexities call for the need to transition to a development model that can help address these complexities and the GE model.

Also, to transition the country from a fossil fuel-based economy to a GE, the key sectors have integrated environmental policies into economic policies to help facilitate the transition. Again, the sectors have many expectations to be achieved after transitioning to a GE. For example, socio-economic development, a healthy and clean environment with fewer chronic diseases, and conserve and preserve Ghana's ecology among others.

Finally, the study discovered that Ghana is making an effort towards the economy's transition despite the challenges posing barriers.

## 5.3 Recommendation

After analysing the research findings thoroughly and drawing the conclusion, the following measures have been recommended; To begin with is to suggest measures to help address the challenges the study identified. The recommendations are presented in table 4.5 overleave.

**Table 5.1 Challenges and Recommendations**

| Challenges | Recommendations |
|---|---|
| Funding Contariants | Stakeholders can review the existing policies on GE to attract and incentivise the private sector and Foreign Direct Investors (FDIs) to invest in the GE transition to help address the funding challenges<br><br>The government of Ghana may also introduce a public-private partnership in the implementation process of the GE transition to address the financial challenge.<br><br>Stakeholders could mobilise available local resources through innovative mechanisms to help support the transition. |
| Poor institutional and Policy Coordination | Stakeholders could enhance coordination mechanisms in the various vital sectors studied to ensure better information dissemination and collaboration.<br><br>Stakeholders coordination and collaboration can be strengthened through frequent national dialogue on the subject of GE between and among the key stakeholders.<br><br>To ensure effective coordination among stakeholders, actors, institutions, and the government, the president can create an office responsible to be in-charge and to providing effective coordination in the implementation of GE among the key stakeholders. To help address the challenge of poor policy and institutional coordination of the sectors. |
| Inadequate Green Capacity | Stakeholders can organize seminars and workshops in the sectors studied to develop the staff capacities on GE to help address the capacity challenge.<br><br>Also, a strategy can be adapted to help train a large number of staff on GE skills with fewer resources. (e.g. sending less team on board to learn in developed countries and later returning to teach other staff members). The forestry sector does it so the different sectors can learn from them. |

| | |
|---|---|
| | The ministries and agencies under the energy, transport, waste, forestry, and agriculture sectors can help organise proposal writing workshops for their staff members to build their capacity to write proper and 'bankable' proposals to win international funding highly competitive. It will help to address both funding and capacity challenges. |
| Inadequate Technologies | The government can partner with the private sector to buy green technologies since clean technologies are costly and without which the transition cannot be possible. |
| Poor Education and Awareness Creation | Government can also invest in the Research and Development units within the public sectors to help build and improve upon the capacities of the researchers for evidence-based, credible, and reliable findings to inform policies and decisions on GE.<br><br>Education should focus on issues related to the brown economy and its impact on the mother earth, the current generation, and the generation yet unborn. The elite and the policymakers alone cannot affect the change, so the public's role is very significant in this direction.<br><br>Education on GE in Ghana should be taught in the Ghanaian languages such that everyone (literate, illiterate, urban dweller, and rural people) can understand and support the GE agenda.<br><br>Also, the concept of GE should be included in the academic syllabus from the primary level to the tertiary and even higher education level to help build various capacities and instil green manners and environmental virtues in young people. |
| Political Visibility Issues | Environmental economists and environmentalists should communicate with the politicians in a language to understand and support the transition. The understanding of politicians will enable them to see the urgent need to support the transition. |

Ghana has to make GE one of the topmost development priorities if only it is a solution to address most of the contemporary developmental challenges as it is perceived. And to gain the

political will of all politicians and policy implementers (policymakers) unwavering support for the program to succeed.

### 5.4 Future Studies

Future studies can investigate to find out whether the energy sector aim of ensuring that10 percent of Ghana energy is generated from renewable by 2020 has been successful or not. Other studies could also examine the external drivers of GE in Ghana since it was beyond the scope of this study.

Moreover, future research can assess the challenges and the prospects of GE in Ghana with a different methodology (quantitative or mixed-method) to judge from a different perspective. Furthermore, the study recommends future studies to look at the challenges associated with the transition to GE on a sector basis to conduct a detailed and in-depth analysis of these challenges. For instance, research can be conducted focusing on the forestry sector to find out the technical challenges associated with the sector's transition because, during the interview, some particular sectors had more technical challenges that need to be dealt with in detail, that alone could be a thesis on its own. To focus the study, the research was restrained to the study objectives. Another study can be conducted to determine the extent to which Ghana has embraced the concept of inclusive green growth and GE.

Finally, future studies could be conducted to find out how the government of Ghana intends to achieve the GE initiatives indicated in the CPESDP (2017-2024) policy document.

## 5.5 Contribution of the Study

### To Literature

This study contributes significantly to the body of existing literature on the concept of GE in the Ghanaian context by identifying four new drivers of GE and two new challenges of GE. The four new drivers of GE identified by the study were environmental degradation cost, system complexity, and abusive utilisation of agro-chemicals. The two new challenges identified were political visibility issues and the lack of a climate-sensitive budget. The study's findings provided a clear understanding of how the factors of the MLP drive and influence transition processes.

### To Policies

The study provides direction for the key sectors understudied in formulating home-grown and sound policies on the concept and ensuring policy coordination among stakeholders. One of the major concerns identified from all the five sectors was poor policy coordination, which the study recommended a possible solution to address.

### To Practice

Finally, the study provides several recommendations based on the challenges identified to the key sectors, especially the energy, waste, transport, forestry, and agriculture sectors working towards Ghana's economy to consider in their practice these recommendations for a successful transition.

## LIST OF REFERENCE


African Development Bank Report. (2012). Towards Green Growth in Africa.

African Development Bank. (2013). AfDB and Ethiopia Partnering for Inclusive Growth. *External Relations and Communication Uni*. http://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/AfDB and Ethiopia - Partnering for Inclusive Growth.pdf

Agyekum, C. K., Haifeng, H., & Ayeiwaa, A. (2016). *Ghana's Effort towards the Emergence of Green Economy*. *6*(2), 43–46. https://doi.org/10.5923/j.ije.20160602.03

Aggelos Aggelakakis, João Bernardino, Maria Boil, Panagiotis Christidis, Ana Condeço, Michael Krail, Anestis Papanikolaou, Max Reichenbach, Jens Schippl, João Vieira, (2014). Future prospects on Transport evolution and innovation challenges for the competitiveness of Europe. *ISBN: 978-618-81668-0-6*

Ahenkan, A. (2020). Financing climate change mitigation: An assessment of the private sector investment opportunities in Ghana. *Business Strategy and Development*, *3*(1), 143–150. https://doi.org/10.1002/bsd2.84

Ajadi, T., Boyle, R., Strahan, D., Kimmel, M., Collins, B., Cheung, A., & Becker, L. (2019). Global Trends in Renewable Energy Investment 2019. *Bloomberg New Energy Finance*, 76.

Alain de Serres, Fabrice Murtin & Giuseppe Nicoletti. (2010). A Framework for Assessing Green Growth Policies. *OECD Economic Department Working Papers No. 774.* *https://dx.doi.org/10.1787/5kmfj2xvcmkf-en*.

A.L. Poltarykhin, A.E. Alekseev, V.V. Kudryavtsev, T.A. Makhanova, O.Yu. Voronkova, H.T. Aydinov, (2018). Prospects for the Development of the Green Economy of Russian Federation. *European Research Studies Journal.* pp. 470-479.

Angel Gurria, (2008). Climate Change: A Matter of Political Will. OECD International Conference Center. https://www.oecd.org/newsroom/climatechangeamatterofpoliticalwill.htm.

Arif, M., Egbu, C., Haleem, A., Kulonda, D., & Khalfan, M. (2009). State of green construction in India: Drivers and challenges. *Journal of Engineering, Design and Technology*, *7*(2), 223–234. https://doi.org/10.1108/17260530910975005

Asante, F. A., Bawakyillenuo, S., Bird, N., Trujillo, N. C., Tagoe, C. A., & Ashiabi, N. (2015). *Climate change finance in Ghana*. *June*, 1–105.

Audley Genusa, and Anne-Marie Coles, (2008). Rethinking the multi-level perspective of technological transitions. *Journal homepage: www.elsevier.com/locate/respol*

Awortwi, N. (2004). Getting the fundamentals wrong: woes of public-private partnerships in solid waste collection in three Ghanaian cities. *Public Administration and Development*, *24*(3), 213-224.

Ayuen, M. (2015). *Running head : Data Collection And Management Methods Data Collection and Management Methods*. *April*, 0–9. https://doi.org/10.13140/RG.2.1.1481.3604

Babbie, E., & Mouton, J. (2005). Qualitative studies. *The practice of social research*.

Bailey, I., & Caprotti, F. (2014). The green economy: Functional domains and theoretical directions of enquiry. *Environment and Planning A*, *46*(8), 1797–1813. https://doi.org/10.1068/a130102p

Barbier, E. (2011). The policy challenges for green economy and sustainable economic development. *Natural Resources Forum*, *35*(3), 233–245. https://doi.org/10.1111/j.1477-8947.2011.01397.x

Bhavani Prakash. (2009). Challenges and Prospects for Green Economy, Eco-Business *Singapore international water week.*

Bowen, G. A. (2009). Document analysis as a qualitative research method. *Qualitative Research Journal*, *9*(2), 27–40. https://doi.org/10.3316/QRJ0902027

Braa, K., &Vidgen, R. (1999). Interpretation, intervention, and reduction in the organizational Laboratory: a framework for in-context information system research. *Accounting, Management and Information Technologies*, *9*(1), 25-47.

Breisinger, C., Diao, X., Thurlow, J., & Hassan, R. M. Al. (2009). *Green revolution in Africa Breisinger et al*. *August*.

Brink, P. (2014). *2014-pp-Nature-and-its-role-in-the-transition-to-a-Green-Economy-OPERAs-Patrick-ten-Brink*. *October*.

Africa Progress Report 2014. Grain Fish Money: Financing Africa's Green and Blue Revolutions. In *Development and Change* (Vol. 46, Issue 4). https://doi.org/10.1111/dech.12170

Caldas, M. P. (2003). Research design: qualitative, quantitative, and mixed methods approaches. *Revista de Administração Contemporânea*, *7*(1), 223–223. https://doi.org/10.1590/s1415-65552003000100015

Cash, D. W., Clark, W. C., Alcock, F., Dickson, N. M., Eckley, N., Guston, D. H., Jäger, J., & Mitchell, R. B. (2003). Knowledge systems for sustainable development. *Proceedings of the National Academy of Sciences of the United States of America*, *100*(14), 8086–8091. https://doi.org/10.1073/pnas.1231332100

Chigwendere, F. B. (2018). Chapter 6 Research Design and Methodology. *Towards Intercultural Communication Congruence in Sino-African Organisational Contexts*, 111–138. https://doi.org/10.5771/9783828871212-111

Chrislain Eric Kenfack, (2018). *Changing Environment, Just Transition and Job Creation:* Perspectives from the South. Published By: CLACSO. URL: Https://Www.Jstor.Org/Stable/J.Ctvn96f9v.7.

Chukwu Valentine, (2020). Potentials, drivers and barriers to green economy transition: Implications for Africa. *Advanced Journal of Plant Biology*. DOI:10.31248/AJPB2020.006.

Creswell, J. W. (2013). *Research design: Qualitative, quantitative, and mixed-method approaches*. Sage publications.

Creswell, J. W (2003). *Research design: Qualitative, quantitative, and mixed-method approaches*. (2nd Ed.) Thousand Oaks, CA: Sage.

Cooper, A., Mukonza, C., Fisher, E., Mulugetta, Y., Gebreeyesus, M., Onuoha, M., Massaquoi, A. B., Ahanotu, K. C., & Okereke, C. (2020). Mapping academic literature on governing inclusive green growth in Africa: Geographical biases and topical gaps. *Sustainability (Switzerland)*, *12*(5). https://doi.org/10.3390/su12051956

Dar, R. I. (2005). *Master's Thesis How Banks Manage CRM*.

Darko, A., Chan, A. P. C., Yang, Y., Shan, M., He, B. J., & Gou, Z. (2018). Influences of barriers, drivers, and promotion strategies on green building technologies adoption in developing countries: The Ghanaian case. *Journal of Cleaner Production*, *200*, 687–703. https://doi.org/10.1016/j.jclepro.2018.07.318

Dekker, M., & Hollander, S. (2017). Boosting youth employment in Africa: what works and why? Synthesis report for the INCLUDE/MFA conference Boosting youth employment in Africa: what works and why? *Global Foresight Africa*, *May*. https://doi.org/10.1163/15685306-12341424.

Ekins, P. (2002). Economic Growth and Environmental Sustainability. In *Economic Growth and Environmental Sustainability*. Routledge. https://doi.org/10.4324/9780203011751

El Bilali, H. (2019). The multi-level perspective in research on sustainability transitions in agriculture and food systems: A systematic review. *Agriculture (Switzerland)*, *9*(4).

https://doi.org/10.3390/agriculture9040074

Elias. T. Ayuk, Effiom E. Oku, Kwabena O. Asubonteng and Praise Nutakor. (2016). Promoting Green Economy: Implication for Natural Resources Development, Food Security and Poverty Reduction Ghana. *DOI: 10.2307/j.ctvh9vtc7*
*Published by:* *United Nations University Institute for Natural Resources in Africa*
*https://www.jstor.org/stable/j.ctvh9vtc7*

European Energy Agency. (2019). *Trends and projections in Europe 2019* (Issue 15). https://doi.org/10.2800/51114

Faisal Karim Shaikh, Sherali Zeadally &Ernesto Exposito. (2015). *Enabling Technologies for Green Internet* of *Things IEEE Systems Journal.*

Forestry Development Master Plan. (2016). *Forestry Commission. Republic of Ghana (2016-2036 ).*

Gaberial Gordon-Harper, (2017). The Transition to Green Economy: Sustainable Future *http://www.saisjournal.org*.

Geels, F.W. (2002). Technological transitions as evolutionary reconfiguration processes: a Multi-level perspective and a case-study. *Research Policy* 31: 1257-1274

Geels, F.W., (2005). The dynamics of transitions in socio-technical systems: A multi-level analysis of the transition pathway from horse-drawn carriages to automobiles (1860-1930), *Technology Analysis and Strategic Management*. 17: 445-476.

Geels, F.W., and J. Schot, (2007). Typology of sociotechnical transition pathways. *Research Policy* 36, 399 - 417.

Geels, F. W., (2010): 'Ontologies, Socio-Technical Transitions (To Sustainability), and the Multi-Level Perspective', *Research Policy* 39 (4): 495–510

Geels, F. W. (2011). The multi-level perspective on sustainability transitions: Responses to seven criticisms. *Environmental Innovation and Societal Transitions*, *1*(1), 24–40. https://doi.org/10.1016/j.eist.2011.02.002

Geels, F. W. (2012). A socio-technical analysis of low-carbon transitions: introducing the multi-level perspective into transport studies. *Journal of Transport Geography*, *24*, 471–482. https://doi.org/10.1016/j.jtrangeo.2012.01.021

Geels, F. W. (2018). Disruption and low-carbon system transformation: Progress and new challenges in socio-technical transitions research and the Multi-Level Perspective. *Energy Research and Social Science*, *37*(September 2017), 224–231. https://doi.org/10.1016/j.erss.2017.10.010

Genus, A., & Coles, A. M. (2008). Rethinking the multi-level perspective of technological transitions. *Research Policy*, *37*(9), 1436–1445. https://doi.org/10.1016/j.respol.2008.05.006

Ghana Environmental Analysis Report, (2006). *Environmentally and Socially Sustainable Development Department (AFTSD) Africa Region*.

Ghana Goes for Green Growth National Engagement on Climate Change Discussion Document. (2010). Ministry of Environment, Science, Technology and innovation.

Ghana Forest and Wildlife Policy, (2012). Ministry of Environment, Science, Technology and Innovation 1–31. https://doi.org/http://gh.chm-cbd.net/convention/2012-ghana-forest-and-wildlife-policy.

Gibbs, D., & O'Neill, K. (2014). The green economy, sustainability transitions and transition regions: A case study of boston. *Geografiska Annaler, Series B: Human Geography*, *96*(3), 201–216. https://doi.org/10.1111/geob.12046

GIZ, (2012). Green Economy in Sub-Saharan Africa – Lessons from Benin, Ethiopia, Ghana, Namibia and Nigeria.

Green Growth and Developing Countries. (2012). *A Summary for Policy Makers*

Gyasi-Mensah, W., & Hu, X. (2018). Towards Developing a Green Manufacturing Environment: What is Ghana doing? *Environmental Management and Sustainable Development*, *7*(2), 170. https://doi.org/10.5296/emsd.v7i2.12814

Hal Hill and Siwage Dharma Negara, (2018). Introduction: The Indonesian Economy in Transition

Policy Challenges in the Jokowi Era and Beyond. *Journal of Southeast Asian Economies. pp. 121-124 Published by: ISEAS - Yusof Ishak Institute*. URL: https://www.jstor.org/stable/10.2307/26539209.

Hsieh, H. F., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qualitative Health Research*, *15*(9), 1277–1288. https://doi.org/10.1177/1049732305276687

Ishtiaq, M. (2019). Book Review Creswell, J. W. (2014). Research Design: Qualitative, Quantitative and Mixed Methods Approaches (4th ed.). Thousand Oaks, CA: Sage. *English Language Teaching*, *12*(5), 40. https://doi.org/10.5539/elt.v12n5p40

Jacobs, M. (2012). Green Growth : Economic Theory and Political Discourse. *Centre for Climate Change Economics and Policy. Working Paper*, *108*, 1–24.

Jean-Louis Martin, Virginie Maris and Daniel S. Simberloff. (2016). The need to respect nature and its limits challenges society and conservation science. pp. 6105-6112 Published by: *National Academy of Sciences Stable* URL:https://www.jstor.org/stable/10.2307/26470035.

Jonathan Grix. (2004). The Foundations of Research. Palgrave Study Skills. Publisher: *Palgrave Macmillan. ISBN 1403921458, 9781403921 451*.

Josephine K. Musango, Alan C. Brent, Andrea M. Bassi. (2014). Modeling the transition

towards a green economy in South Africa. Available at ScienceDirect.

Jonker, J. & Pennink, B. (2010). *The Essence of Research Methodology: A Concise Guide for Master and Ph.D. Students in Management Science*, *Springer, Heidelberg*.

Kadekodi, G., & For, C. (2017). *Is a "green economy" possible? September*.

Kadekodi, G. K. (2013). *CMDR Monograph Series No. 71 Possibilities of Going on Green*. 1–21.

Kaggwa, M., Savious, S., & Nhamo, G. (2013). *South Africa's Green Economy Transition : Implications for Reorienting the Economy Towards a Low-Carbon Growth Trajectory*. 1–20.

Kaufmann, R. K. (1993). Blueprint for a green economy: David Pearce, Anil Markandya and Edward B. Barbier. Earthscan, London, Great Britain, 1989. 192 pp., £6.95. ISBN 1 85383 066 6. *Ecological Economics*, *7*(1), 75–78. https://doi.org/10.1016/0921-8009(93)90022-X

Kirsti Malterud, Volkert Dirk Siersma, Ann Dorrit Guassora, (2016). *Sample size in Qualitative Interview Studies: Guided by Information Power*.

Khor, M. (2011). Risks and uses of the green economy concept in the context of sustainable development, poverty and equity. *Research Papers*, *SV*(July), 1–51.

Koirala, S. (2018). *Issue Paper SMEs : Key Drivers of Green and Inclusive Growth*.

Korableva, O.N., Razumova, I.A., & Kalimullina, O.V. (2017). *Research of innovation cycles and the peculiarities associated with the innovation's life cycle stages*. Paper presented at the Proceedings of the 29th International Business Information Management Association Conference. 1853-1862.

Kothari, C. R. (2004). *Research methodology: Methods and Techniques*. New Delhi: New Ge International.

Leila Mead, (2019). *Renewable Energy Investment to Surpass USD 2.5 Trillion for 2010-United Nations Report.* Sustainable Development Knowledge Hub. Retrieved from https://sdg.iisd.org.

Lorraine Elliott. (2001). Environmental Challenges. PP. 68-81. Published By: ISEAS. URL: Https://Www.Jstor.Org/Stable/27912268.

Lin, J. Y., & Xu, J. (2014). The potential for green growth and structural transformation in China. *Oxford Review of Economic Policy*, *30*(3), 550–568. https://doi.org/10.1093/oxrep/gru030

Lutz, C., Zieschank, R. and Drosdowski, T. (2017). Measuring Germany's Transition to a Green Economy. Low Carbon Economy, 8, 1-19. https://doi.org/10.4236/lce.2017.81001. Retrieved from https://doi.org/101177/1049732315617444.

Makufwe, W. M. (2014). *Prospects and Challenges of Greening the Kumasi Metropolis*. *June*.

Mason, M. (2010). Sample size and saturation in Ph.D. studies using qualitative interviews. *Forum Qualitative Sozialforschung*, *11*(3). https://doi.org/10.17169/fqs-11.3.1428

Multi-Sectoral Implementation Plan for Ghana Nationally Determined Contributions for the Paris Climate Agreement. (2018). Ministry of Environment, Science, Technology, and Innovation. The Republic of Ghana.

Mark Swilling, Josephine Musango & Jeremy Wakeford. (2016). Developmental States and Sustainability Transitions: Prospects of a Just Transition in South Africa, *Journal of Environmental Policy & Planning, 18:5, 650-672, DOI: 10.1080/1523908X.2015.1107716.*

Markus Lederer, Linda Wallbott, and Steffen Bauer. (2018). Tracing Sustainability Transformations and Drivers of Green Economy Approaches in the Global South *Journal of Environment & Development. Vol. 27(1) 3–25. DOI: 10.1177/1070496517747661.*

Mohiuddin, M., Regnière, M. H., Su, A., & Su, Z. (2014). The special economic zone as a locomotive for green development in China. *Asian Social Science*, *10*(18), 109–121. https://doi.org/10.5539/ass.v10n18p109

Morgan, D. (2007). Paradigms lost and pragmatism regained: Methodological implications of Combining qualitative and quantitative methods. *Journal of Mixed Methods Research, 1(1), 48 76.*

Morse, J. M. (2000). Determining Sample Size. *Qualitative Health Research*, *10*(1), 3–5. https://doi.org/10.1177/104973200129118183

Mulder, P., Reschke, C. H., & Kemp, R. (1999). *Evolutionary Theorising on Technological Change and Sustainable Development Communication to European Meeting on Applied Evolutionary Economics Evolutionary Theorising on Technological Change and Sustainable Development*.

Munyai, A., Wilson, A., Ciaran, C. K., Ecowatch, O., Godoy, E., Lappé, F. M., Clancy, H., Davis, J., De, J., John, V., Shannon, B., Liu, J. D., Hill, J. S., Hedrick, L., Roney, M., Oecd, M. T., Melton, P., Bertazzi, P., Paul, R., … Haindl, S. (2015). *Green Economy in Action: Articles and Excerpts that Illustrate Green Economy and Sustainable Development Efforts*. *August*.

Mutanga, S. S., Quitzow, R., & Steckel, J. C. (2018). Tackling energy, climate and development challenges in Africa. *Economics: The Open-Access, Open-Assessment E-Journal*, *12*, 1–14. https://doi.org/10.5018/economics-ejournal.ja.2018-61

National Assessment Report On Achievement Of Sustainable Development Goals And Targets For Rio+20 Conference. Ministry of Environment, Science, Technology and Innovation. The *Republic of Ghana*.

Neuman, W. L. (2000). *Social Research Methods: Qualitative and Quantitative Approaches*. Boston: Pearson.

Nicholas Harrison, Matthew Smith & Baptiste Chatré Ecofys, Cologne. (2015). Federal Ministry for Economic Cooperation and Development. Benefit of a green economy Transformation in Sub-Sahara Africa. Published by *Deutsche Gesellschaft FürInternationale Zusammenarbeit (GIZ)*.

Nin-Pratt, A., & McBride, L. (2014). Agricultural intensification in Ghana: Evaluating the optimist's case for a Green Revolution. *Food Policy*, *48*, 153–167. https://doi.org/10.1016/j.foodpol.2014.05.004.

Towards Green Growth: A summary for policymakers (2011). In Organised Economic CD (Issue May 2011). https://doi.org/10.1787/9789264111318-en

Organisation for Economic Cooperation and Development. (2012). Green Growth and Developing Countries. *Oecd*, *CONSULTATI*(June), 145.

Onwuegbuzie, A. J., & Collins, K. M. . (2007). A typology of mixed methods sampling designs in social science research. *The Qualitative Report*, *12*(2), 474–498.

Osei, J. (2017). *Advancing towards green economy: An assessment of private sector-led initiatives in climate change adaptation in Ghana*. *10396801*. https://doi.org/10.1038/253004b0

Ospanova, S. (2014). Assessing Kazakhstan's policy and institutional framework for a green economy. In *OOED Country Report* (Issue January). http://pubs.iied.org/pdfs/16559IIED.pdf?

Partnership for Action on Green Economy. (2015). *Ghana's Transition to Green Economy: A Stocktaking Report*.

Partnership for Action on Green Economy, Module 4 (2012). *Transitioning to a Green Economy in Key Sectors*. 64–101.

Pauw, W. P., Castro, P., Pickering, J., & Bhasin, S. (2020). Conditional nationally determined contributions in the Paris Agreement: foothold for equity or Achilles heel? *Climate Policy*, *20*(4), 468–484. https://doi.org/10.1080/14693062.2019.1635874

Pervez Ghauri, Kjell Gronhaug, Roger Strange. (2020). Research Method in Business Studies. *Cambridge University Press*

Policy, E., Policy, T., Environmental, T., & Agency, P. (1997). National Environmental Policies. *National Environmental Policies*, 1–30. https://doi.org/10.1007/978-3-642-60507-9

Poltarykhin, A. L., Alekseev, A. E., Kudryavtsev, V. V, Makhanova, T. A., Voronkova, O. Y., & Aydinov, H. T. (2018). Prospects for the Development of the Green Economy of Russian Federation. In *European Research Studies Journal: Vol. XXI* (Issue 4).

Regional, O., & Working, D. (2012). *Yesil sehir finansmanı raporu OECD.pdf*.

Renewable Energy Master Plan. (2019). *Ministry of Energy. The Republic of Ghana*.

Remenyi, D., & Williams, B. (1998). *Doing research in business and management: an Introduction to process and method*. Sage Publication.

Rip, A. and Kemp, R. (1998). 'Technological Change; In Rayner, S. And Malone, E. (Eds): *Human Choices and Climate Change*, Vol. 2. Batelle, Columbus, Oh, Pp. 327–399

Saunders, M., Lewis, P., & Thornhill, A. (2000). Research Methods for Business Students: Lecturers' Guide: FT Prentice Hall.

Scott Cato, M. (2012). Green Economics. An introduction to theory, policy and practice. https://doi.org/10.4324/9781849771528.

Scott M. Smith & Gerald S. Albaum. (2012). *Basic Marketing Research: Official Training Guide from Qualtrics*. Books.google.com.gh

Schot, J. And Geels, F. W. (2008). 'Strategic Niche Management and Sustainable Innovation Journeys: Theory, Findings, Research Agenda, and Policy', *Technology Analysis and Strategic Management* 20 (5): 537–554.

Schutt, R. K. (2014). *Investigating the social world: The process and practice of research*. Sage Publications.

Shi, Q., & Lai, X. (2013). Identifying the underpin of green and low carbon technology innovation research: A literature review from 1994 to 2010. *Technological Forecasting and Social Change*, *80*(5), 839–864. https://doi.org/10.1016/j.techfore.2012.09.002

Sperling, F, Granoff, I. & Vyas, Y, (2012). Facilitating Green Growth in Africa: Perspectives from the African Development Bank. *Discussion Paper. African Development Bank*

Steward, T. (2012). *A Brief Introduction to the Multi-Level Perspective*. http://projects.exeter.ac.uk/igov/wp-content/uploads/2012/12/DOWNLOAD-Multi-Level-Perspectives.pdf

Stephanie Glen, (2014). Snow Ball Sampling: Definition, Advantages and Disadvantages. Statistics for the rest of us. *https://ww.statisticshowto.datasciencecentral.com.*

Stefan Speck & Roberto Zoboli. (2014). The Green Economy in Europe: In Search for a Successful Transition. *DOI 10.1007/978-3-319-38919-6-7*

Swilling, M., Musango, J., & Wakeford, J. (2016). Developmental states and sustainability transitions: Prospects of a Just Transition in South Africa. *Journal of Environmental Policy and Planning*, *18*(5), 650–672. https://doi.org/10.1080/1523908X.2015.1107716

The Donor Committee for Enterprise Development. (2012). Economic Policy for Green Growth. *www.Enterprise-Development.org/page/ggwg*.

Timothy Afful-Komson. (2012). *Governance Challenges for a Green Economy in Africa.*

*United Nations University.* Short-form, researched-based analysis and commentary. United Nation University. Publication. Repository.

T. Steward – November, (2012). A Brief Introduction to the Multi-Level Perspective (MLP).

Twomey, P., & Gaziulusoy, A. I. (2014). *Review of system innovation and transitions theories: Concepts and frameworks for understanding and enabling transitions to a low carbon built environment*. http://www.visionsandpathways.com/wp-content/uploads/2014/06/

UNECA. (2015). Inclusive green growth in Ghana : Selected case studies. In *European Commission-Joint Research Centre-Institute for Energy and Transport*.

UNEP. (2011). Pathways to Sustainable Development and Poverty Eradication - A Synthesis for Policy Makers. *Towards A Green Economy*.

UNEP. (2015). *Scoping Study Assessment Report, Ghana*. 92. https://www.un-page.org/files/public/ge_ghana_assessmentreport_web.pdf

United Nations Development Programme. (2012). *Synthesis Of National Reports for Rio+20*.

Unruh, G. C. (2002). Escaping carbon lock-in. *Energy Policy*, *30*(4), 317–325. https://doi.org/10.1016/S0301-4215(01)00098-2

United Nation Environment Programme (2015). *Green Economy Assessment Report for Ghana*. Retrieved from www.un-page.org Page 6.

United Nation Economic Commission for Africa, (2016). Inclusive Green Growth in Ghana. *Edited, designed and printed by the ECA Publications. ISBN: 978-99944-61-90-5 EISBN: 978-99944-62-90-2.*

United Nations Development Programme (UNDP). (2016). "Promoting Sustainable Development Through More Effective Civil Society Participation in Environmental Governance." A Selection of Country Case Studies from the EU-NGOs Project, UNDP, New York.

United Nations Department of Economic and Social Affairs, (2012). Advancing an Inclusive Green Economy: Rationale and Context. Section1. http://www.unep.org/greeneconomy/

United Nations Environmental Programme, (2011). Towards a Green Economy – Pathways to Sustainable Development and Poverty Eradication, p. 16.

Van Den Bergh, J. C. J. M., Truffer, B., & Kallis, G. (2011). Environmental innovation and societal transitions: Introduction and overview. *Environmental Innovation and Societal Transitions*, *1*(1), 1–23. https://doi.org/10.1016/j.eist.2011.04.010

Wanner, T. (2015). The New 'Passive Revolution' of the Green Economy and Growth Discourse: Maintaining the 'Sustainable Development of Neoliberal Capitalism. *New Political Economy*, *20*(1), 21–41. https://doi.org/10.1080/13563467.2013.866081

Wilson, J. (2010). *Essentials of Business Research: A guide to doing your research project*. Sage Publications, London.

World-Bank. (2011). *Supporting Report 3 Seizing the Opportunity of Green Development in China*. 229–292.

WorldBank. (2012). Inclusive Green Growth: the pathway to sustainable development. In *The World Bank* (Issue 6 B). https://doi.org/10.1596/978-0-8213-9551-6

Xing, X., Wang, Y., & Wang, J. (2011). The problems and strategies of the low carbon economy development. *Energy Procedia*, *5*, 1831–1836. https://doi.org/10.1016/j.egypro.2011.03.312

Xiaodong. (2012). Identifying the Underpin of Green and Low Carbon Technology Innovation

Research: A Literature Review from 1994- 2010. Available on Sciverse Science Direct. Pg1.

Yeyanran Ge and Qiang Zhi. (2015). Literature Review: The Green Economy, Clean Energy Policy and Employment. CUE2015-Applied Energy Symposium and Summit 2015: Low carbon cities and urban energy systems. *Available online atwww.sciencedirect.com.*

Yin, Robert. K. (2003). *Case study research: Design and methods* (3rd ed.). Thousand Oaks CA: Sage.

Yin, R. K. (2017). *Case study research and applications: Design and methods*: Sage publications.

Yin, R. K. (2014). Case Study Research Design Methods (5thed). Thousand Oaks, CA: Sage.282 Pages. DO- 10.3138/CJPE.30.1.108. *JO the Canadian Journal of Program Evaluation.*

Yong Geng & Brent Doberstein, (2008) Developing the circular economy in China: Challenges and opportunities for achieving 'leapfrog development', *The International Journal of Sustainable Development and World Ecology, 15:3, 231-239, DOI: 10.3843/SusDev.15.3:6. Retrieved fromhttps://doi.org/10.3843/SusDev.15.3:6.*

Zabbey, N., Vincent-akpu, I. F., & Etela, I. (2014). Green economy : Challenges and prospects for improved aquatic agricultural system ( AAS ) in Niger delta communities. *Agriculture, Forestry and Fisheries*, *3*(1), 28–35. https://doi.org/10.11648/j.aff.s.20140301.15

Zhang, Y. X., Chao, Q. C., Zheng, Q. H., & Huang, L. (2017). The withdrawal of the U.S. from the Paris Agreement and its impact on global climate change governance. *Advances in Climate Change Research*, *8*(4), 213–219. https://doi.org/10.1016/j.accre.2017.08.005

Appendix 1

**Introductory letter for data collection**

**UNIVERSITY OF GHANA**
**BUSINESS SCHOOL**
DEPARTMENT OF PUBLIC ADMINISTRATION
AND HEALTH SERVICES MANAGEMENT

UGBS
University of Ghana Business School

Ref. No.: .....
**PAHS/26**

27th November, 2019

**TO WHOM IT MAY CONCERN**

Dear Sir/Madam,

**LETTER OF INTRODUCTION**

The bearer of this note, Ms. Scholastica Akalibey (0247716995) is a final year student of the University of Ghana Business School, Legon. She is undertaking a course of study leading to the award of MPhil in Public Administration. As part of the requirements of the programme, she has chosen to research on the topic; ***"Ghana's Transition to Green Economy: Prospects and Challenges."***

I would be most grateful if you could give her the necessary assistance to facilitate her data collection.

Thanks for your cooperation.

Yours faithfully,

Dr. Theophilus Mallorch-Nyamekye
Lecturer/Supervisor

COLLEGE OF HUMANITIES
P. O. Box LG 78, Legon, Accra, Ghana.
• Telephone: +233 (0) 303 963 739 • Email: [illegible] • Website: ugbs.ug.edu.gh

**Appendix 2 Interview Guide (Questions)**

# UNIVERSITY OF GHANA BUSINESS SCHOOL

## Department of Public Administration and Health Services Management

## Semi-Structured Interview guide for Energy, Transport, Forestry, waste and Agriculture sectors.

**Introduction**

This interview guide seeks your opinion on **Ghana's Transition to Green Economy: Prospects and Challenges**. The study is part of the requirement for an MPhil Degree in the University of Ghana. The responses seek by this interview guide is to help achieve the study objectives and nothing else. Confidentiality of information is assured. The research questions are set in accordance with the research objectives.

**Questions**

**Demography of Respondents**

1. Sex.…….
2. Sector …….....
3. Department……...
4. Position ……

**Research Objective One: To examine the drivers (factors necessitating) of green transition in Ghana.**

5. What is compelling or driving Ghana to transition from carbon-based economy to green economy (Problems of the current economy)?
6. Do you have any idea about the key sectors that are to transition in the green agenda in Ghana?

7. What role are you playing as a sector to help make the transition possible or successful?
8. So far what effort have you made as a sector towards the green agenda transition in Ghana?

**Objective Two: To examine the policy framework for transition to green economy**

9. Are there any policies in place to enable the green transition agenda?
10. Do you have any sector specific policy or strategy that is driving the green agenda in your sector?
11. How are these policies supporting the transition to green economy?
12. To what extent has the implementation of these policies been successful?

**Objective three: To examine the challenges and prospects of Ghana's transition to green economy.**

13. What challenges (general) are associated with going green in this sector?
14. What are the future expectations (prospects) of this sector having transitions to green?

**Objective Four: To identify the enabling factors capable of influencing Ghana's transition to green economy.**

15. What enabling factors do you think can influence the transition of Ghana to green economy? (key issues)

I. Capacity building
II. Technology
III. Finance
IV. Governance
V. Private sector participation

VI. Policy

## Appendix 3. Field images

Researcher interviewing a respondent at the energy commission.

Researcher viewing some green products (Bricks) at the energy commission after granted interview

Researcher viewing some green products (Bio diesel) at the energy commission after granted interview

Interview a Director at the forestry commission

The researcher and some workers in the forestry sector after the interview