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**THE AMERICAN  
UNIVERSITY IN CAIRO**

**SCHOOL OF  
GLOBAL AFFAIRS  
AND PUBLIC POLICY**

**The American University in Cairo**

**School of Global Affairs and Public Policy**

**THE EGYPTIAN PRIVATE-CLIMATE NEXUS: PRIVATE SECTOR  
PERCEPTIONS ON THE GREEN TRANSITION**

A Thesis Submitted to the

Public Policy and Administration Department

in partial fulfillment of the requirements for the degree of  
Master of Public Administration

**Submitted by:** Yehia Karim Shaheen

**Supervised by:** Dr. Noura Wahby

**Summer 2023**

The American University in Cairo  
School of Global Affairs and Public Policy

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## **List of Acronyms:**

AP- Associated Press

BMZ- German Ministry for Economic Development and Cooperation

BOO- Build Own Operate

CBA - Cost Benefit Analysis

CBE- Central Bank of Egypt

CEO- Chief Executive Officer

CERES Principles

CIMMYT- International Maize and Wheat Improvement Center

COO- Chief Operating Officer

COP- Conference of the Parties

CSR- Corporate Social Responsibility

DB- Deutsche Bahn

DTMA- Drought Tolerant Maize for Africa

EBRD- European Bank for Reconstruction and Development

EC- European Commission

EEA- European Economic Area

EEAA-Egyptian Environmental Affairs Agency

EETC- Egyptian Electricity Transmission Company

EFF- Extended Fund Facility

EPC - Engineering, procurement, and construction

ESG- Environmental, Social, Governance

ET - Evo Transpiration

EU – European Union

EUR- Euro

EV- Electric Vehicle

F&B- Food and Beverage

FDI- Foreign Direct Investment

FIT- Feed-in Tariff  
FMCG- Fast Moving Consumer Goods  
GCF- Global Climate Fund  
GDP- Gross Domestic Product  
GFANZ- GLASGOW FINANCIAL ALLIANCE FOR NET ZERO  
GHG- Greenhouse Gases  
GI - Green Infrastructure  
GIS- Geographic Information System  
GIZ- German Agency for International Cooperation  
GW- Gigawatt  
ICC- International Criminal Court  
IEA- International Energy Association  
IFAD- International Fund for Agricultural Development  
IMF- International Monetary Fund  
IPCC- Intergovernmental Panel on Climate Change  
IRB- Institutional Review Board  
IS - Industrial Symbiosis  
IT- Information Technology  
KfW- German Bank for Reconstruction  
KMD- Kenya Meteorological Department  
LCA- Life Cycle Assessment  
LCC- Life Cycle Costing  
LEDS- Low Emission Development Strategy  
LIO- Letters of intent  
MCIT- Ministry of Communications and Information Technology  
MDB- Multilateral Development Bank  
MENA- Middle East and North Africa  
MFA- Material Flow Analysis  
MOEE- Ministry of Electricity and Renewable Energy

MOIC- Ministry of International Cooperation  
MRV- Monitoring, Reporting, and Verification  
MSP-multi-stakeholder partnership  
MW- Megawatt  
NCCS- National Climate Change Strategy  
NEAP- National Environmental Action Plan  
NGO- Non-Governmental Organization  
NREA- New and Renewable Energy Authority  
NSWMP- National Solid Waste Management Program  
NWFE- Nexus of Water, Food, and Energy  
OECD- Organization for Economic Co-operation and Development  
PPA- Power purchase agreement  
PREPARED- Planning for Resilience in East Africa through Policy, Adaptation,  
Research and Economic Development  
PSS - Product Service System  
PV- Photovoltaic  
RDF- Refuse-Derived Fuel  
RPET- Recycled Plastic  
S-LCA - Social life cycle assessment  
SCCF- Special Climate Change Fund  
SDG- Sustainable Development Goals  
SDS- Sustainable Development Strategy  
SECO- State Secretariat for Economic Affairs  
SIS- State Information Service  
SLR - sea level rise  
SSA- Sub Saharan Africa  
UAE- United Arab Emirates  
UK- United Kingdom  
UN- United Nations



UNDP- United Nations Development Program

UNEP- United Nations Environment Program

UNFAO- United Nations Food and Agriculture Organization

UNFCCC- United Nations Framework Convention on Climate Change

UNICEF- United Nations Children's Fund

UNIDO- United Nations Industrial Development Organization

US- United States

USAID- United States Agency for International Development

USD- United States Dollar

VP- Vice President

WRI World Resources Institute

WWTP- Wastewater Treatment Plant

## **Abstract:**

The issue of climate change poses the most pressing threat for humanity. This is especially the case amongst developing countries who, while emitting the minority of global emissions, are forecast to bear the most damage. Such is the case with Egypt, who suffers from marked water scarcity and is vulnerable to climate change driven detriments across a number of levels. As climate finance and private sector investments are key towards the green transition; transitioning to a green economy to fight the adverse impacts of climate change, this thesis aims to analyze the perceptions of private sector actors on the issue of the green transition within the Egyptian context. Through the use of semi-structured interviews within the framework of a qualitative analysis relying on the open-coding approach, perceptions of various private sector actor demographics were recorded; including multinationals, Egyptian private sector firms with clear sustainability mandate/positionalities, as well as Egyptian private sector firms with no sustainability mandates. The interview data identified that while there was a universal recognition of the issue of climate change, not all firms operationalized such an understanding within the scope of their business operations- associating it with key challenges such as cost issues, issues with the existing legal and regulatory framework, macroeconomic uncertainty and concerns, as well as lack of awareness and culture-related issues. The participants identified a number of desired incentives towards catalyzing activity in the potential Egyptian green economy, including fiscal incentives and business facilitations, legal and regulatory reform, as well as further government investment in climate based capacity building and awareness. Despite such concerns, there was an almost unanimous positive outlook on the future of the green economy in Egypt. Towards that end, the study recommends the implementation of a newfound comprehensive legal and regulatory framework to operationalize government strategies for the green economy, improve communication with the private sector, increase investments in awareness and capacity building for the general public and business on climate change issues and the green economy, as well as undertake further partnerships with the private sector and multilateral actors to benefit from global best practices and expertise.

# **Chapter One: Introduction**

## **1.1: Background**

### **1.1.1: Climate Change as a Pressing Global Issue**

Climate change represents the “defining issue of our time” (Guetrres, 2018, Twitter). Changes are being observed in the Earth’s climate within all regions and “across the whole climate system”, many of which are unprecedented in thousands (if not hundreds of thousands) of years, with some changes such as the continued sea level rise being irreversible over periods hundreds to thousands of years (IPCC, 2021, <https://www.ipcc.ch/2021/08/09/ar6-wg1-20210809-pr/>). There is currently a broad consensus amongst the international scientific community that greenhouse gas (GHG) emissions from human activity- particularly use of fossil fuels as well as deforestation- have increased the concentration of such gases in the atmosphere (Dervis, 2007).

According to the World Bank, the impacts of climate change adversely affect the developing world disproportionately. While only one-tenth of the world’s greenhouse gases are emitted by the 74 lowest-income countries, such countries will be most affected by the impacts of climate change (World Bank, 2015). When compared to the 1980s, these countries have already experienced approximately eight times as many natural disasters in the past 10 years (World Bank, 2015). There are a number of climate-induced impacts of vulnerable populations within the developing world. For one, the climate crisis compounds the existing burden of diseases amongst developing countries and exacerbates barriers to accessing health services (World Economic Forum, 2023). On a global scale, warming of 2-3°C is expected to increase in over 150 million additional cases of malaria worldwide, along with increased water-related diseases through increased water shortages that will adversely impact water quality and cleanliness (World Economic Forum, 2023). Looking at water scarcity specifically, frequent droughts, increased evaporation, and changes in rainfall patterns and run off would negatively impact water availability in areas such as sub-tropical regions which suffer from water scarcity. By 2025, it is expected that there will be an expected 5 billion people globally who will suffer from water scarcity- up from the current 1.7 billion (World Economic Forum, 2023). Additionally, as a result of climate change, the food security of populations worldwide will be at risk. By 2030, the probability of crop yield

failures is projected to be as much as 4.5 times higher, and up to 25 times higher by 2050 (World Economic Forum, 2023). Such crop yield-induced losses could lead to increases in food prices by 12% on average in sub-Saharan Africa (World Economic Forum, 2023).

### **1.1.2 Financing Climate Efforts and the Role of the Private Sector**

Within the context of combatting climate change, the financial support to enable the transition towards low-carbon development pathways within the context of the developing world is of paramount importance. As defined by the United Nations Framework Convention for Climate Change (UNFCCC), climate finance refers to the “to local, national or transnational financing—drawn from public, private and alternative sources of financing—that seeks to support mitigation and adaptation actions that will address climate change” (UNFCCC, 2018, website). As indicated by the UNFCCC, the Convention, the Kyoto Protocol, as well as the Paris Agreement all call for financial assistance from Parties with more financial resources to those that are “less endowed and more vulnerable” (UNFCCC, 2018). Climate finance is important for both climate adaptation and mitigation measures, as large-scale investments are required for the significant reduction of emissions as well as for the adaptation of the adverse effects and impacts of climate change (UNFCCC, 2018).

According to the IMF, climate change represents one of the most critical macroeconomic and financial policy challenges to countries across the globe, requiring an estimated USD 3-6 trillion in annual global investments until 2050 (Georgieva and Adrian, 2022). While addressing global environmental challenges is key to maintaining stable business outlooks and ensuring long-term investment returns, the financial contribution of private sector actors within climate adaptation and mitigation projects are equally paramount to ensure that governments the world over are endowed with the means to meet climate challenges. The IMF indicates that private sustainable finance in emerging markets and developing economies rose to a record USD 250 billion in 2021, though the multilateral institution indicated that such private finance must at least double by 2030 at a time when investable low-carbon infrastructure projects are “often in short supply and funding of the fossil fuel industry has soared since the Paris Agreement” (Ehlers et al., 2022, website). The IMF critiqued the global lack of effective carbon pricing which reduces the

incentive and ability of investors to channel further funds into climate-conscious projects, along with incomplete climate data, disclosure standards, taxonomies, as well as other “alignment approaches” (Ehlers et al., 2022, website). Moreover, the World Economic Forum reflected that most of climate funding has for climate mitigation not adaptation measures, which poses a significant problem as the cost of adaptation in developing countries, which is expected to reach USD 300 billion per year by 2030, starkly contrasting with the USD 46 billion global adaptation finance flows in 2020 (which only USD 28.6 billion of went to developing countries) (World Economic Forum, 2022). Moreover, the UN puts forth that many investors, companies, and financial institutions continue to underestimate the risks of climate change- making “short-sighted decisions” to expand investments within carbon-intensive assets (UN, 2020, website). The Executive Director of the African Forum and Network on Debt and Development further bolsters this with a grim sentiment, indicating that private actors would not be interested whether a person is starving but rather “how much profit they will make by giving you bread” (UN, 2019).

With USD 210 trillion in assets held by private sector firms across the globe, the IMF argues that there needs to be a major shift to harness such private financing towards climate mitigation and adaptation policies (Georgieva and Adrian, 2022). Such an optimization of resources and improving environmental performance could potentially allow private sector firms to reduce their costs, streamline their operations, as well as increase their efficiency- with climate adaptation and mitigation solutions opening new opportunities for new products, services, and markets that would further spur entrepreneurial activity (OECD, 2016). Meanwhile, the OECD argues that the private sector will be a critical partner in delivering effective development cooperation on environmental issues (OECD, 2016). According to the OECD, the private sector plays an important role in driving green growth within developing countries, as multinational companies can promote greener behavior across supply chains, banks can act as potential sources of investment for clean infrastructure, and businesses and entrepreneurs can provide the skills and knowledge leading to innovation in clean technologies and efficiencies (OECD, 2016). Additionally, the World Economic Forum outlines that the climate adaptation market opportunity is “enormous”- valuing it at USD 2 trillion per year by 2026 and indicating that the need for adaptation solutions will grow as climate impacts become more prevalent (World Economic Forum, 2022).

### **1.1.3: Climate Change and the Egyptian Context**

Looking specifically at the Egyptian context, the World Bank indicates that climate change is expected to increase mean temperatures and heat extremes within an environment that is already dry and arid (World Bank, 2022). Temperatures in Egypt have reportedly already increased over the past decades ( $0.53^{\circ}\text{C}$  per decade over the last 30 years), with such temperatures expected to increase by mid-century between  $1.5^{\circ}\text{C}$  and  $3^{\circ}\text{C}$  (World Bank, 2022). Heat waves are also expected to increase in their duration, frequency, as well as severity- with an average of 40 additional days that are considered to be extremely hot on annual basis projected by mid-century (World Bank, 2022). Such high temperatures will lead to a number of adverse impacts- including an increase in the country's already high evaporation rate, accelerate crop transpiration, leading to a functional increase of soil aridity, as well as increased water requirements for both agricultural requirements as well as for human consumption (World Bank, 2022). Evidence also reflects that temperature increases between  $26^{\circ}\text{C}$  to  $31^{\circ}\text{C}$  can result in a 30% drop in the country's labor productivity (World Bank, 2022).

Additionally, climate change impacts lead to a high level of uncertainty around the timing as well as the volume of Nile River water available in the country. As indicated by the World Bank, the variability of the region's rainfall is projected to increase by 50% by 2100, impacting the flow of the Nile to Egypt. Additionally, the World Bank indicates that climate-induced changes in temperature, precipitation, as well as evotranspiration (ET) in the Nile Basin is expected to significantly affect Egypt's water availability, particularly as the Nile River accounts for 97% of freshwater resources in Egypt (World Bank, 2022). Moreover, the World Bank indicates that densely populated cities and urban areas within the Nile Delta will be significantly impacted by the impacts of sea level rise (SLR), leading to increased flood events and challenges pertaining to water availability challenges (World Bank, 2022). The World Bank's assessments further highlight that Alexandria is at particular risk from saltwater intrusion, inundation, as well as erosion (World Bank, 2022).

Climate change would therefore be expected to deepen current social and economic challenges in the country, with the population living on less than USD 4 per day to increase by 0.8% by 2030 as a result of the adverse impacts of climate change on agriculture, health, temperature, and natural disaster increases (World Bank, 2022). Additionally, as climate change will also affect Egypt's biodiversity and critical ecosystems, multiplier effects on the rest of the economy will be expected as 10% of Egypt's revenues come from natural resources (World Bank, 2022). It should be noted that the cost of the country's environmental degradation was estimated at over 3% of GDP in 2018, with the combined impact of climate change on water resources, agriculture, tourism revenue, coastal resources, as well as human health represent between 2% and 6% of Egypt's GDP by 2060 (Smith et al., 2014).

In this vein, the World Bank indicates that Egypt will require annual financing needs of approximately USD 11.7 billion, with “annual economic benefits—considering economic costs avoided—reaching 4.3 times the financing needs” (World Bank, 2022, p.56). The World Bank also indicates there is room to expand FDI inflows both in size and scope within the country, as inflows have been historically concentrated in the petroleum sector (74.3% of the total FDI as of 2018) and that significant opportunities are present within the energy sector value chain (World Bank, 2022). Such indications reflect the adverse impacts of climate change on the developing world at large and within the Egyptian case in specific- further emphasizing the importance of expediting the green transition within the Egyptian context.

## 1.2: Problem Statement

To achieve a just and complete green transition, the intensive involvement of the private sector within climate action cannot be understated. How the private sector sees the current green transition advocated by governments will be key to determining the scale and modality of climate-based business practices, which would ultimately drive the transition towards the green economy. Thus, there is a clear need to understand private investors' challenges and opportunities when engaging with the green economy. The issue of implementing the green transition is lacking clarity, with contestations on the role of private sector actors within the development process as well as the various enablers and potential challenges that could either catalyze or hinder their contribution towards a green economy.

The Egyptian Government argues that it has “increased the private sector's participation in the environmental sphere” through several efforts and initiatives including issuing regulations for the waste management industry, issuing the first green sovereign bonds in the Middle East and North Africa (MENA), and applying a plan to reach a 100% green investment budget by 2030 among other key initiatives (SIS, 2022). Within the COP27 Sharm El Sheikh Implementation Plan, there is also a recognition of the importance of private sector involvement and financing towards the green transition (Sharm El Sheikh Implementation Plan, 2022). Additionally, the UNEP recognizes Egypt as a UNEP Green Economy “flagship country”- a title meant to include the country as part of a critical number of green economy “champions” with “readiness to pro-actively and constructively engage in moving forward a positive agenda on green economy in the run-up to the Rio+20 Conference” (UNEP, n.d.).

Given that the Egypt is of the most vulnerable countries to climate change, as well as the prominent role that the country has assumed in combatting climate change as the incumbent President of COP27, it will be valuable to map the perceptions of private sector companies operating within the country on the issue of the green transition. While one cannot assume that the aims of private sector actors will consistently harmonize with climate-conscious goals, there needs to be a clear understanding of the opportunities, challenges, and perspectives of private sector actors to maximize their positive influence within the green transition. In this respect, this study will aim to bridge possible disconnects between the Government’s macro policy aims for the green transition as well as the on-ground perceptions, concerns, and experiences of private sector actors to help guide Egyptian policymaking towards an optimized and conducive transition towards the green economy.

#### 1.4: Research Question

**The research question this study aims to answer is:**

**How does the Egyptian private sector perceive recent policies toward the green transition in the economic sector** As Egypt is one of the most vulnerable countries to the adverse impacts of climate change (UNDP, 2021) and is uniquely situated within the current period as the COP27 Presidency, the perceptions of the private sector on governmental policies for the green



transition within Egypt will shed a unique light unto the challenges and opportunities facing firms within the developing world at large. As the Government expresses its clear intent towards catalyzing private sector activity for the green transition, this study aims to gauge the private sector's perceptions within the Egyptian context to identify incumbent challenges as well as potential opportunities and threats for the business environment vis-a-vis the green transition. It will aim to explore the outlooks of businesses on climate-friendly policies, outline their specific business needs to facilitate the green transition, as well as identify potential threats perceived against moving forward.

In addressing the main over-arching question mentioned above, the following main sub-questions have been identified:

- 1. How aware are private sector actors in Egypt on issues of climate change and the green transition?** This question aims to scope on how heavily climate considerations are perceived and prioritized within business operations.
- 2. What are the potential green incentives and market opportunities that would attract private sector activity within the Egyptian green economy?** To incentivize transitioning towards the green transition, this sub-question will gage what types of government incentives and market opportunities private sector actors would like to see.
- 3. What constitutes a green business enabling environment and governance?** As the green transition materializes, there needs to be clear regulations and governance mechanisms regulating green business operations. To that end, the study will shed light on the perceptions of the private sector on the form and function of a green business enabling environment.
- 4. What are current perceptions on risks and opportunities towards the green transition in Egypt?** With a relatively novel surge in momentum against the climate crisis, there needs to be a competent understanding of the business risks involved due to climate change as well as ways to mitigate them. Additionally, and as reflected within the literature, there also needs to be a potent grasp of the potential business opportunities that businesses can solicit from penetrating into the green economy in Egypt. To that end, the study will attempt to understand what business risks private sector firms perceive to threaten their green transition in addition to the potential market opportunities attracting them towards it.

## 1.5: Thesis Outline

In an attempt to answer the abovementioned question, the thesis is divided into six main chapters as follows:

- Chapter one provides an introduction and background to the issues of climate change and the private sector's role in financing climate change action, the main problem statement and research question of the study, as well as the study's main objectives.
- Chapter two provides the literature review of the existing scholarship on issues relating to concepts of the green economy, the intersection between development objectives and private sector activities, as well as the different facets of the private sector's involvement in the green economy.
- Chapter three provides a detailed overview on the Egyptian Government's efforts towards advancing the Egyptian green economy- including the relevant national strategies, laws and regulations, as well as initiatives. This chapter serves to contextualize the reader with the existing landscape of the Egyptian green transition.
- Chapter four provides an overview on the study's conceptual framework and the adopted research design. Specifically, the study sheds light on the implemented research methods, sampling techniques, as well as the ethical considerations and limitations of the research.
- Chapter five presents the findings and discussion of the interview data coupled with secondary analysis. It is divided into three main sections. The first section provides insights on the interviewees awareness and visibility on the current state of the green transition in Egypt. The second section looks at the challenges and gaps for implementation for mobilizing private activity within the Egyptian green transition. Finally, the third section looks at the desired incentives and initiatives and market outcomes for the coming period.
- Finally, chapter six presents concluding remarks on the perceptions of the private sector on the green transition in Egypt along with the study's policy recommendations.

## **Chapter Two: Literature Review**

Climate change (and subsequent policy measures towards the green transition) have a marked and distinct impact upon the business operations and practices of private sector actors. In examining the relationship between climate change and the green transition vis-a-vis the operations and business practices of private sector actors, the works of Loiseau et al. (2016), Agrawala et al. (2011), Crick et al. (2018), Pauw and Pegels (2013), among others, was utilized to attain a deeper understanding on the literature's take on the subject-matter. The literature review first begins by tackling the definitions and contributing paradigms to an understanding of the notion of the green economy as a whole. It then tackles existing literature on the history and critiques of the role of the private sector within the developmental agenda, including possible risks of soliciting the developmental agenda for profit-maximizing purposes. Afterwards, the nexus of private sector activity vis a vis the green transition will be examined in lieu of its various enablers and challenges.

### **2.1: The Green Economy**

#### **2.1.1: Defining the Green Economy**

The notion of the green economy was first introduced by Pearce et al., 1989 in response to “the undervaluation of environmental and social costs in the current price system” (Le Blanc, 2011). In 2011 the UNEP has defined the green economy as one that results in improved “well-being and social equity, while significantly reducing environmental risks and ecological scarcities” (UNEP, 2011). The term is now interchangeably used with “green growth” (EEA, 2014), which in the past would only apply to the growth of the eco-industry but has come to refer to the growth of the economy in its entirety (Jänicke, 2012). As per the OECD, green growth entails “fostering economic growth and development while ensuring that the natural assets continue to provide the resources and the environmental services on which our well-being relies. To achieve this, it must catalyze investment and innovation which will underpin sustained growth and give rise to new economic opportunities” (OECD, 2011). Additionally, the World Bank defines green growth as “qualitative growth that is efficient in its use of natural resources, clean in that it minimizes

pollution and environmental damages and resilient in that it explains natural hazards” (World Bank, 2012). The multiplicity of definitions of the green economy would indicate that as it stands the notion is currently an “umbrella” concept that covers various implications on growth, well-being, efficiency, as well as risk reduction in the use of natural resources (Loiseau et al., 2016, p.362).

As result of the “conceptual dissonance” characterizing the green economy/green growth, scholars have opted towards utilizing various typologies to differentiate between different coexisting views on its nature (Merino-Saum et al, 2020). Jacobs (2013), for example, distinguishes between *standard* green growth and *strong* green growth. As per Jacobs (2013), standard green growth “asserts the long-run compatibility between continued economic growth and environmental protection”, while strong green growth “conceives environmental policy as a driver for economic growth” – effectively promoting economic gains even in the short term (Merino-Saum et al, 2020). Similarly, Facer et al. (2014) distinguish between three interpretations of the green economy: the incrementalist perspective, the reformist perspective, as well as the transformative perspective (Facer et al., 2014). According to Facer et al. (2014), the incrementalist perspective relies on a pro-growth focused paradigm and pays particular attention to technological improvements as well as emphasizing market-based tools (Facer et al., 2014). Moreover, these perspective does not consider environmental limits (Facer et al.,2014).

The reformist perspective, meanwhile, perceives economic growth in a cornerstone fashion and assigns a key role to technology (Facer et al.,2014). In contrast to the incrementalist perspective, the reformist perspective considers “relative (rather than absolute) decoupling” and emphasizes “a broader conception of development and societal progress” (Facer et al.,2014, 650). Finally, the transformative perspective provides a special focus on absolute decoupling and relies on a strong critique of pro-growth paradigm (Facer et al.,2014). The transformative perspective also does not recognize technology to be an absolute panacea for issues pertaining to the economy and the environment at large (Facer et al.,2014). According to Merino-Saum et al., 2020, additional typologies have been suggested by other scholars such as Tienhaara (2014), Vazquez-Brust et al. (2014), Ferguson (2015), as well as Death (2015) among others (Merino-Saum et al., 2020). Such potentially contradictory implications would in turn necessitate clarification on the modalities of green economy implementation towards a sustainable transition (Loiseau et al., 2016).

## 2.1.2: Concepts and Theories of the Green Economy

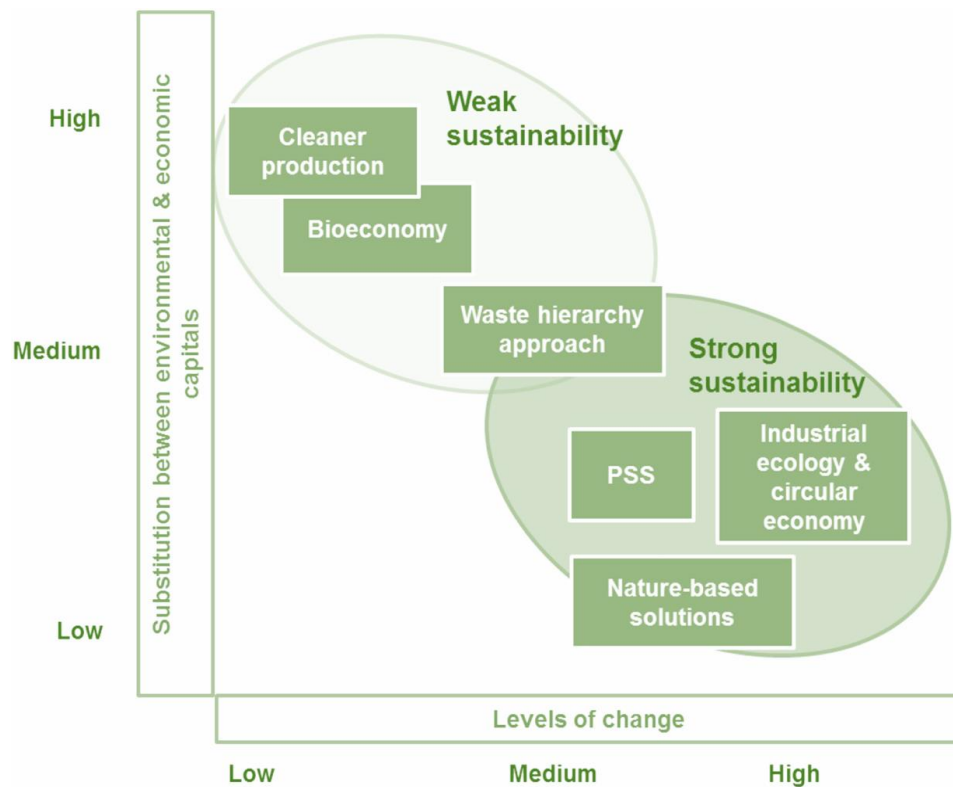
### *2.1.2.1: Relationship of the Green Economy with Weak and Strong Sustainability*

While different concepts and approaches present within the generic framework of the green economy can be used to support the transition towards sustainability there have been doubts expressed regarding the ability of a green economy to support the sustainable transition (Bina and La Camera, 2011 and Lorek and Spangenberg, 2014). Such concerns can partially be explained in light of two versions of sustainability present within the existing literature: weak and strong sustainability (Dietz and Neumayer, 2007, Neumayer, 2003, and Pearce and Atkinson, 1993). According to the literature, weak sustainability indicates that human and natural capital are substitutable, indicating that no complete change of the existing economic system is required (Loiseau et al., 2016). As a result, certain concepts and paradigms related to environmental economics (such as the above-mentioned cleaner production, bioeconomy or waste hierarchy approaches) assume that natural capital can be substituted for man-made capital (Loiseau et al., 2016). For example, the use of biotechnology and strides towards efficiency are based on the theory that new technologies will consistently be invented to meet increasing needs of individuals within a resource-scarce world. In the same vein, assessment tools developed in environmental economics such as CBA assume complete substitutability between natural and human-made capital (Loiseau et al., 2016). As a counterargument, recent theoretical developments (such as the case of upcycling in the waste hierarchy approach) have been observed to consider the vulnerability of the environment and the need to preserve it (Loiseau et al., 2016).

On the other hand, strong sustainability assumes that man-made capital and natural capital are complementary in nature but do not provide seamless interchangeability for one another (Loiseau et al., 2016). As per the strong sustainability perspective, approaches would aim to find solutions to preserve human life on Earth via “closing the loop of material throughput” along with “respecting critical thresholds of natural capital stocks” and facilitating investment into them (Loiseau et al., 2016, 368). The circular economy and industrial ecology approaches can be observed to comply with the first tenet of strong sustainability, while the nature-based solutions approach can be observed to comply with the second and third tenets respectively (Loiseau et al., 2016). In this light, approaches complying with the strong sustainability perspective can be

observed to be based on more macro-perspectives, and require substantial and long-term structural changes in humanity's modes of living and society (Loiseau et al., 2016).

Figure 1: Mapping Green Economy Concepts in Relation to Strong and Weak Sustainability



Source: Loiseau et al., 2016, p. 369

Figure 1 as put forth by Loiseau et al. (2016) maps the various concepts within the generic green economy framework vs a vis the perspectives of strong and weak sustainability. Figure 1 reflects that depending on the approaches' required level of change and substitution between environmental and social capital, its link to either of the sustainability visions mentioned will differ. As per Figure 1, the approaches of cleaner production and bioeconomy are linked closely to weak sustainability, as the approaches require low and low-medium levels of change respectively and entail high and medium-high substitution between man-made and natural capital. On the other end of the spectrum, Figure 1 reflects that PSS, nature-based solutions, as well as

industrial ecology and circular economy fall within the purview of strong sustainability. This is indicative of the fact that such approaches require between medium-high levels of change, and entail low to low-medium levels of substitution between man-made capital and natural capital. An outlier of sorts to the aforementioned approaches, the waste hierarchy approach can be observed within Figure 1 to fall between both weak and strong sustainabilities. This is because the waste hierarchy approach requires a medium level of structural and societal change and entails medium substitution between man-made and natural capital. Towards that end, the aforementioned concepts will be expounded upon in further detail.

#### *2.1.2.2: Environmental and Ecological Economics*

The theories of environmental economics as well as ecological economics are considered the main underlying theories behind the green economy (Loiseau et al., 2016). Environmental economics primarily concerns itself with the idea of externalities, or external effects (Pigou, 1920). It aims to provide an accurate pricing of natural capital through estimating their externalities utilizing a number of methods and suggestions (Rennings and Wiggering, 1997). Externalities can come in a number of forms: including local negative externalities (such as noise from an airport), global negative externalities (such as long-range transboundary air pollution), and positive externalities (such as regional spill-over benefits from watershed protection areas) (Loiseau et al., 2016). Environmental economics takes such externalities into account when accounting for the costs and benefits private behavioral incentives incur, indicating that if said incentives do not reflect such externalities, the economic decisions taken will not lead to a social optimum and could even lead to decreased welfare (Loiseau et al., 2016). To avoid this, environmental economics puts forth a number of policy instruments, including command and control policies, taxes, subsidies, and tradable emission permits among others (Loiseau et al., 2016).

In a similar light, ecological economics defines the economy as a sub-system of the natural environment, which sets limits on the physical growth of the economy (Loiseau et al., 2016). This would ultimately entail that as economic systems are constrained by the Earth's natural constraints, societies must accordingly adapt their economic systems accordingly (Bina and La Camera, 2011; Kennet and Heinemann, 2006). Ecological economics places great emphasis on structural socio-

economic changes, such as creating a smaller-scale, more decentralized mode of living that have less detrimental effects on the environment (Williams and Millington, 2004). In this respect, physical and ecological indicators (such as material input per service unit, the ecological footprint, and the critical natural capital) have been developed by ecological economists to gage socio-economic environmental effects.

Ecological economics can be observed to related to the notion of the Anthropocene. The Anthropocene is a proposed paradigm which describes the “very recent rupture in the functioning of the Earth System as a whole arising from the impact of human activity” (Hamilton, 2019). Brown and Timmerman (2015) argue for a specific modality of ecological economics that aims to recenter the field of economics on the fact of the Earth’s limitations, requiring a total reconfiguration of the goals of the economy, how the fundamentals of human prosperity are understood, as well as how “humanity’s place in the community of beings” is ultimately assessed (Brown and Timmerman, 2015). On the other hand, Wironen and Erickson (2019) argue that attempts by paradigms of ecological economics to address the challenges of balancing between the “biophysical reality and plural constructed social realities” to create legitimate rationale for a “sustainability transition” as well as account for “multi-level, multi-scale social and political action” have been “inconsistent and relatively scarce” (Wironen and Erickson, 2020, 62). According to Wironen and Erickson (2019), this inability to address the aforementioned challenges reflects an unresolved tension regarding both modern as well as postmodern social theory, demonstrating that a critically modern ecological economics could “draw on aligned social movements and build on deliberative theory as a foundation for social and political change fit for navigating the Anthropocene” (Wironen and Erickson, 2019).

#### *2.1.2.3: Cleaner Production and Resource Efficiency*

In addition to the aforementioned theories, there are a number of concepts associated with the green economy: namely the concept of cleaner production and resource efficiency. The concept of cleaner production and resource efficiency aims at improving the use of natural resources within the production value chain, focusing on firms and their behavior through the lens of reducing environmental emissions and waste via technological developments (Loiseau et al., 2016). Roy



(2000) indicates that within the 1990s, systematic approaches to environmental-focused tech design emerged (dubbed as eco-design) (Roy, 2000). The term “cleaner production” was defined by UNEP in 1990 as “the continuous application of an integrated environmental strategy to processes, products, and services to increase efficiency and reduce risks to humans and the environment” (UNEP, 1990). Such an approach reportedly represented a shift in paradigm, as it argued towards preventing pollution directly rather than treating pollution using methods that are used to remove existing contaminants from a given medium (El Kholy, 2002).

In 2016, UNEP further broadened the definition of cleaner production to include resource efficiency, which Loiseau et al. (2016) argue that represents a key element towards the transition towards the green economy (UNEP, 2016). In this respect, a greater emphasis was allotted towards the development of cleaner technologies that would generate less pollution and utilize resources and materials in a more efficient manner (Loiseau et al., 2016). At the outset, there was a focus on the development of “green products” (products that for the most part focused on a single environmental issue), but soon after approaches that were more systematic in nature to environmental design emerged known as eco-design (Roy, 2000), design related to environment, or green design (Loiseau et al., 2016). As per Pfeiffer and Rennings (2001), the role of environmentally conscious design was found to have positive environmental impacts (as it is the main phase affecting key factors such as product material, durability, and disassembly potential) along with new job creation; though such findings were only valid for highly skilled labor and specific policy programs that identified the types of environmentally friendly innovations to be designed (Pfeiffer and Rennings, 2001).

With regards to the waste hierarchy approach, the approach alongside the waste prevention approach advocated by EC (2008) arguably constitutes important elements of the green economy. The importance of such elements within the scope of the green economy lies primarily within the scope of improving resource efficiency, reducing the need for raw materials, as well as “aiming at closing the material flows” (Loiseau et al., 2016, 365). The waste hierarchy approach concerns itself on reducing the amount of materials passing through a production and thus the environmental pollution of such a processes (Loiseau et al., 2016). While this may seem similar to the cleaner production approach, it differs from said approach as it provides a stronger emphasis on waste

reduction as well as control of harmful substances (Loiseau et al., 2016). Waste hierarchy starts with prevention, then moving to reuse, recycling, recovery, before finally ending at disposal (Loiseau et al., 2016). As one moves towards the bottom of the hierarchy, the energy and resources needed for waste management as well as those lost in both material and energy terms increase; a matter which can effectively be avoided via waste prevention (Loiseau et al., 2016). Waste prevention finds its beginnings within the processing and designing of products; as the reuse of goods aims at the use of a product in a repeated fashion for the same purpose within its original form or with minute upgrades (Loiseau et al., 2016).

Despite of the environmental benefits of implementing the waste hierarchy, waste generates economic activities, and sophisticated incentives are required to decouple economic growth from waste generation While the implementation of waste hierarchy pertains a number of environmental benefits, a multiplicity of incentives would be needed to separate economic growth from waste generation; particularly as waste generates economic activities (Bartl, 2014).

#### *2.1.2.4: Industrial Ecology and Circular Economy*

Looking at industrial ecology and circular economy, the research field concerns itself with integrating the sustainability narrative within the environmental and economic systems (Loiseau et al., 2016). The main tenets of industrial ecology are the use of biological analogy, systems perspective, technological change, and dematerialization and eco-efficiency (Lifset and Graedel, 2002). From this stems industrial symbiosis (IS), which has been identified as a path to green growth as it engages organizations in a network to develop eco-innovations as well as encourages new investments, change business practices, as well as research and development among other positive contributors (Lombardi and Laybourn, 2012). In this respect comes the circular economy, which is defined as a restorative industrial economy that mimics nature through the enhancement and optimization of the systems that it operates within (The Ellen MacArthur Foundation, 2012). The concept of the circular economy builds on the concepts of waste prevention and resource efficiency by highlighting where the greatest benefits are to be realized as well as via emphasizing the need to consider the sustainability of both sources of raw materials as well as their final outsets (Hill, 2015). This justifies the existing synergies between the two concepts towards supporting an

upwards transition in the waste hierarchy (which entails transforming the waste of a given industry into valuable inputs for one or more industries) (Loiseau et al., 2016). The industrial economy and circular economy approaches also move beyond firm-level foundations of resource efficiency and waste hierarchy approaches, broadening their focus towards inter-firm cooperation and the design of economy-wide circular resource flows at both the regional as well as the global levels (Lifset and Graedel, 2002).

To assess the sustainability of a green economy, there exist a number of life cycle and material flow-based tools. Material Flow Analysis (or MFA) refers to the analysis of the “throughput of process chains comprising extraction or harvest, chemical transformation, manufacturing, consumption, recycling, and disposal of materials” (Bringezu and Moriguchi, 2002). MFA is based on accounts in physical units and quantifies both inputs and outputs of such aforementioned processes. Additionally, MFA can be practiced on the substance-level (substance flow analysis), the material-level, or on the product level across firms, regions, or sectors (Loiseau et al., 2016). For the product level MFA specifically, the concept would denote the “life cycle inventory phase” of Life Cycle Assessment (LCA). LCA is a “cradle-to-grave” or “cradle-to-cradle” analysis technique that is utilized to assess the environmental impacts associated with all product life stages, starting from raw material extraction, material processing, manufacture, distribution, and finally use (Environmental Management, 2017).

When observing the economic dimension of the green economy, Life Cycle Costing (LCC) as well as Social Life Cycle Assessment (S-LCA) are employed. LCC measures the “total cost of an asset over its life cycle including capital costs, maintenance costs, operating costs, and the asset’s residual value at the end of its life” (Sesana and Salvalai, 2013). On the other hand, S-LCA evaluates the social dimension of the green economy using indicators such as equity, employment, and workplace health (Benoit Norris, 2012 and Macombe et al., 2013).

#### *2.1.2.5: Emerging Approaches (Nature Based Solutions, Bioeconomy, Product Service System)*

Building on the concepts aforementioned, there are a number of emerging concepts and approaches that of significance to the green economy and associated environmental policy. This

includes green infrastructure and nature-based solutions, bioeconomy, as well as the product-service system.

The concept of nature-based solutions entails designing “multifunctional landscapes” that serve towards sustainable resource management systems and ultimately contributing towards the development of the green economy at large (Loiseau et al., 2016). Nature-based solutions can thus contribute to a number of key benefits; including flood control, provision of raw materials, carbon storage, as well as towards the betterment of human health and biodiversity (provided that such ecosystems are healthy) (Mazza et al., 2011). An example of a nature-based solution is Green Infrastructure (GI), of which has been developed to upgrade urban and peri-urban green spaces in quality and quantity and to emphasize the importance of their multifunctionality and their role in the interconnection between habitats (Tzoulas et al., 2007). GI are designed and managed to provide a wide range of environmental services, often yielding high economic returns on investments via tourism, climate and air quality regulation, as well as provisioning services such as biomass production (European Commission, 2013b and Nellemann and Corcoran, 2010). Essentially, the concept of nature-based solutions is focused on natural capital investments that enhance the supply of “multibenefit ecosystems” (Loiseau et al., 2016, 366). Such an approach aims at both environmental protection through pollution reduction as well as an increase in the stock of natural capital, including within its scope the contributions of both public and private sectors to “facilitate nature-based solutions in urban and rural landscapes” (Loiseau et al., 2016, 366).

According to the OECD, the bioeconomy includes all economic activities that are related to the development as well as the use of biological products and processes (OECD, 2009). The OECD approach indicates that bioeconomy relies on the development of biotechnologies that serve to “apply science and technology to living organisms, as well as parts, products and models thereof, to alter living and non-living materials for the production of knowledge, goods and services” (OECD, 2009). The paradigm of biotechnology can be observed to provide several perspectives for progress within primary production (such as in plant and animal breeding), health (such as in pharmacogenetics), as well as industries (such as in bioremediation and biosensors) (Loiseau et al., 2016). Additionally, biotechnology serves to decrease the dependence on non-renewable

resources along with ensuring food, environmental, social and economic security via creating new job opportunities as well as competitive positionalities (Loiseau et al., 2016). On the other hand, the European Commission defined bioeconomy as “an economy using biological resources from the land and sea as well as waste, including food wastes, as inputs to industry and energy production. It also covers the use of bio-based processes to green industries” (European Commission, 2012). Said definition, however, remains contested as per Schmid et al. (2012), who argues that the EU policy framework is dominated by an agro-industry perspective and that further emphasis should be placed on a public good- oriented concept that over-arches concepts of local knowledge as well as agro-ecology (Schmid et al., 2012).

The product-service system (PSS) has been defined in Europe during the 1990s as “a mix of tangible products and intangible services designed and combined so that they jointly are capable of fulfilling final customer needs” (Tukker and Tischner, 2006, p.1552). As indicated by Hinton (2008), products within the PSS are owned by companies along their entire lifecycles, and the use of service of the product is what is paid for by the consumer. In this context, companies would have a strong economic incentive to extend the lifespan on their products to ensure that they are intensively used, that they are as cost and material efficient as possible, and to re-use parts as much as possible (Hinton, 2008; Loiseau et al., 2016). While the implementation of the PSS may entail resource-efficient or circular practices, it does not by definition adhere to said principles (Loiseau et al., 2016). According to Tukker (2013), there are a number of different categories of PSS, including use-oriented PSS and results-oriented PSS. In the former, the product continues to play a central role within the system, such as within product renting, sharing, or pooling. In the latter, there is no pre-determined product (such as within pay per service units) (Tukker, 2013). Both categories aforementioned pertain their distinct advantages and drawbacks. For one, the use-oriented PSS would potentially increase the use-stage of products and thus reduce the need for material consumption within the production process (Tukker, 2013). However, this may lead to the end-user being less careful in their usage of the product, which may have the likely impact of reducing the products’ lifespan.

With respect to result-oriented PSS, they arguably have the greatest potential to increase eco-design and resource efficiency. However, to achieve this, “radical changes” must be made to as

firms would be required to alter their business model along with their infrastructure and invest in the development of new skills (Tukker, 2013). The concept of PSS can be seen to be closely related to the concept of the functional economy as was proposed by Stahel (1989) towards achieve sustainability (Stahel, 1989). As per Stahel, the objective of functional economy is “to create the highest possible use of value for the longest time while consuming a few material resources and energy as possible” (Stahel, 1997). Such concepts aforementioned provide potential solutions to dematerialize the economy and ultimately contribute to a resource-efficient and circular economy (Mont, 2002; Tukker, 2013). However, while PSS specifically provide green economy benefits, they “remain mainly on incremental and micro level and do not aim at systematic changes in overall resource consumption patterns” (Loiseau et al., 2016, p.367).

### 2.1.3: The Green Economy and Public Policy

There is a marked intersection between the notion of the green economy and literature within the scope of public policy. Zhirkonin and Cehl  r (2012) indicate that the green economy is a byproduct of the Fourth Industrial Revolution and agglomerates many of its achievements, reflecting that the structural shifts it would entail are caused by the emergence of a number of new industries including waste recycling, production of zero-emission energies, green urbanism, as well as the absorption of GHG emissions amongst others (Zhirkonin and Cehl  r, 2012). According to Zhirkonin and Cehl  r (2012), the transition to a green economy would only be possible through the sustainable development of all industries as well as ensuring that production and consumption are fully saturated with green technologies (Zhirkonin and Cehl  r, 2012). Towards the transition to a green economy, Zhou and Segerson (2012) argue that "environmental taxes are effective policy instruments for correcting negative externalities" (Zhou and Segerson, 2012, 1347), though lack the potential to raise revenues for state government budgets or reduce distortive taxes as a result of their small tax base (Zhou and Segerson, 2012). Additionally, Xu et al (2022) proposed the use of a planning method to achieve a net zero carbon dioxide emissions through an integration energy-planning scheme (Xu et al, 2022). According to the authors, countries should set a goal towards setting regional integrated energy planning with a number of key indicators including the share of renewable energy in primary energy, total consumption, as well as the reduction of carbon dioxide emissions (Xu et al, 2022).

On the other hand, Rao and Baer (2012) tackle the issue of climate change and sustainable development versus the issue of equity and inclusion. According to Rao and Baer (2012), there is “very little elaboration” in the literature on the phrase equitable access to sustainable development referenced within the Cancun Agreement. For Rao and Baer (2012), it is interpreted as the people’s right to a decent standard of living- which paves the way for countries to claim exemption from emission mitigation to be able to provide such a standard of living (Rao and Baer, 2012, 656). Towards that end, the authors recommend for a number of policy interventions-including the estimation of a country specific bottom-up energy and emission requirements, the incorporation of a minimum methane emission threshold, as well as utilizing international sectoral benchmarks to incentivize the reduction of countries’ energy emissions (Rao and Baer, 2012).

## 2.2: Private Finance for Development

### 2.2.1: Private Sector as a Development Actor

According to Scheyvens et al. (2016), there has been a surge of enthusiasm since the advent of the new millennium to find ways to integrate private sector contributions to achieving goals pertaining to sustainable development. The three major United Nations conferences on Sustainable Development (Rio de Janeiro, Johannesburg, and Rio+20) highlighted the expanded role of the private sector as an actor for development (Scheyvens et al., 2016). For example, the Johannesburg Declaration stated that “the private sector, including both large and small companies, has a duty to contribute to the evolution of equitable and sustainable communities and societies” (UN, 2002, paragraph 27). Additionally, the outcome document of Rio+20 emphasized the importance of the private sector as a development partner:

*We acknowledge that the implementation of sustainable development will depend on active engagement of both the public and private sectors.... We support national regulatory and policy frameworks that enable business and industry to advance sustainable development initiatives taking into account the importance of corporate social responsibility. We call*

*on the private sector to engage in responsible business practices, such as those promoted by the UN Global Compact*  
(UN, 2012, paragraph 46).

A number of global movements contained initiatives to encourage private sector players to promote sustainable development. This included the Global Compact, the CERES Principles (devised by a coalition of 15 major US environmental groups in response to the 1989 Exxon Valdez oil spill), the 1991 ICC Business Charter for Sustainable Development (with over 2300 companies signing up to such a voluntary charter), as well as the OECD Guidelines for Multinational Enterprises (which was revised in 2000) (Scheyvens et al., 2016). While businesses have been involved in discussions around policies for sustainable development since the 1987 Brundtland Report as well as the UN Conference on Environment and Development at Rio de Janeiro in 1992, the new Sustainable Development Goals (SDG) agenda called upon the private sector equally alongside governments and civil society actors to pursue a more sustainable path forward (Kolk, 2005; Scheyvens et al., 2016).

This renewed focus on the private sector as a partner for development has been considered one of the most significant shifts of the SDGs (Scheyvens et al., 2016). Such attention towards the private sector was, according to the literature, largely driven to boost the funds available and bring the relevant know-how to address development issues because of the implications of the global financial crisis, the tightening up of public development budgets, and the scale of development challenges (Cléménçon, 2012; Eyben and Savage, 2012; UN, 2012). In this regard, a 2014 UN Global Compact White Paper “asserts” that “a new paradigm in development thinking is recognizing the centrality of private enterprise in pursuit of the development agenda- and vice versa” (UN Global Compact, 2014, p.3). As the Sustainable Development Goals provides particular prominence toward environmental sustainability, economic development with a focus on inclusive growth, proposed universal application, as well as in increasing concern over the non-physical dimensions of development, the private sector is uniquely posited by the current Sustainable Agenda to address goals of prosperity and inclusive economic growth (UN, 2014).



This interplay between traditional development actors as well as private sector players was further reflected within the 27<sup>th</sup> UNFCCC Conference of the Parties (COP27) held in Sharm El Sheikh, Egypt. As per Article 38 of the Sharm El Sheikh Implementation Plan, the Plan “calls on multilateral development banks to contribute to significantly increasing climate ambition using the breadth of their policy and financial instruments for greater results, including on private capital mobilization”. (Sharm El Sheikh Implementation Plan, Article 38). There has also been a number of major private sector led coalitions aiming to tackle climate change. One such example is the Glasgow Financial Alliance for Net Zero (GFANZ), which is comprised of “the world’s largest coalition of financial institutions committed to transitioning the global economy to net-zero greenhouse gas emissions” (GFANZ, n.d.).

### 2.2.2: Business Incentives for Development

Adhering to sustainable practices can reap benefits for private sector actors’ business-centric to further incentivize their adoption. Porter and van der Linde (1995a, 1995b) discuss changes in the competitiveness of industrial organizations that are spurred by environmental regulations. It was found that innovative solutions from the regulatory pressure decreased environmental detriments as well as resulted in more eco-efficient products as well as increased competitiveness. The studies further stressed that legislation should be based on long-term governmental policy to allow private sector actors to adapt such requirements within their business strategies in an orderly fashion (Porter and van der Linde, 1995a, 1995b). In this regard, Porter and van der Linde call for the adoption of a dynamic perspective to promote innovations (in contrast to static regulations and policies), as well as company environment strategies that must be developed to live up to notions of sustainability and competitiveness (Porter and van der Linde, 1995a, 1995b). Similarly, the findings of von Weizsäcker et al. (1997) has been observed to comply with the findings of Porter and van der Linde, as 50 case studies were presented whereby higher resource efficiency led to the improvement of both “the technical as well as the economic performance of the product” (von Weizsäcker et al., 1997, 17).

However, the above-mentioned findings have been debated on the basis that asymmetric information amongst actors within the product value chain makes it difficult for consumers to obtain a clear understanding of product characteristics (including its environmental impact

characteristics) that are set by product designers (Barney and Ouchi, 1986; Williamson, 1975; and Eisenhardt, 1989). In this respect, it is argued that private sector actors who can use environmental impact property rights in the most efficient manner should be given such rights along with the possibility to decrease overall transaction costs through internalization (Coase, 1991 and Joskow, 1990).

In addition, Frey and Sabbatino (2017) highlight four main business opportunities for private sector actors through adopting the SDGs: innovation and market development, efficiency and cost savings, reputation management, as well as risk reduction (Frey and Sabbatino, 2017).

In terms of innovation and market development, Frey and Sabbatino (2017) indicate that as the SDGs highlight and address significant developmental gaps that exist globally (such as lack of access to finance, food, clean water, or education), such gaps in development would effectively represent unmet market needs. With governments directing their policies and resources towards filling such development gaps, private sector actors would have the opportunity to innovate new products, services, and business models that would serve towards their business development and economic growth (Frey and Sabbatino, 2017).

On efficiency and cost savings, Frey and Sabbatino (2017) argue that with increasing scarcity of natural resources exacerbated by climate change induced conditions, businesses will be detrimentally impacted via rising material costs and volatile supplies. To that end, businesses will imperatively need to be “doing more with less”, which would aid in saving short-term costs and reduce long-term risks (Frey and Sabbatino, 2017, p.199).

With respect to reputation management, the authors indicate that a number of SDGs aim at the elimination of the negative externalities and vices that result from private sector activities; be it environmental degradation, pollution, corruption, bribery, or forced and child labor among others. As tackling such issues would be of vital importance to build and maintain trust with key stakeholders and maintaining a company’s license to operate, companies would need to adhere to the best practices outlined within the scope of the SDGs- lest risking undermining their business viability (Frey and Sabbatino, 2017).

Looking at risk reduction, Frey and Sabbatino (2017) indicate that the SDGs aim to tackle a variety of issues which may pose significant risks to companies' "business as usual" over a longer span of time. Such risks may include supply chain risks, financial risks, regulatory risks, or technological risks amongst others. In this regard, private sector actors can minimize their vulnerabilities via understanding the impact the SDGs would have on their sector and supply chain, and subsequently increase their resilience towards challenging operational and regulatory contexts given the increasing influence the SDGs would have on the regulatory environment at large (Frey and Sabbatino, 2017).

### 2.2.3: Critiques of the Private Sector as a Development Actor

While the private sector is heavily positioned by development institutions to contribute towards global development, there are a number of critiques within the literature. For one, Scheyvens et al. (2016) indicates that there is a conflict between the dominant business model that is based on short-term planning and finances as well as the longer-term sustainable development agenda (Scheyvens et al., 2016). This dominance of the neo-liberal agenda, including "corporate time horizons, the persistence of a bottom-line focus and cooption of the language of sustainability and partnership" strengthen the critique that "carving out" a space and role for the private sector in working towards the SDGs "does not sufficiently challenge the neoliberal mechanisms that have created many inequalities and poor development results in the first place" (Scheyvens et al., 2016, 376). As neo-liberal mechanisms are prominently argued to have led to social inequalities and exacerbated the imbalance of power between countries in the Global North and the Global South, it is argued that the same mechanisms should not be relied on to mend said inequalities (Murray and Overton, 2011; Fletcher, 2012; Ghosh, 2015; Kumi et al., 2014)

Moreover, a number of private actors appear to be only interested in the business returns for sustainable practices and not its social returns (Scheyvens et al., 2016). According to Pingeot (2014), proposals put forth by private sector actors for contributions to the sustainable development agenda reflect clear drivers of self-interest. This explains the focus on voluntary change rather than rigid regulations, as well as "soft measures" to mitigate environmental impacts

rather than “fundamental changes in production and consumption” (Pingeot, 2014, p.29). Within Chakravorti et al. (2014), the motivation of 40 large corporations to pursue sustainable business practices ‘ranged from “maintaining competitive position” as the leading motivator, followed by “avoiding reputational damage,” “avoiding future supply disruptions,” and “capturing revenues and building loyalty”’ (Chakravorti et al., 2014, pp. 2–3). In this light, Scheyvens et al. (2016) puts forth that it is challenging to build a palpable link on how private sector actors might contribute to some of the social development objectives- such as inclusive development, human dignity, and overcoming inequalities (Scheyvens et al., 2016). Within the Global Compact, the CERES Principles, the 1991 ICC Business Charter for Sustainable Development, and the OECD Guidelines for Multinational Enterprises. it was found that business groups had interpreted the principles of sustainable development that were set out within the Brundtland Report in a narrow fashion as they assumed a business-minded focus towards seeking the pursuit of situations of mutual gain while showing little interest in issues pertaining to social sustainability like meeting the needs of the poor (Barkemeyer et al., 2014). Kolk (2005) observed that international business associations responded to increased policies related to the environment through emphasizing that firms should not be forced to pursue environmentally responsible practices through stronger regulations but should rather take the lead in demonstrating such practices through means such as voluntary codes of conduct (Kolk, 2005).

Furthermore, critiques of private sector actors as actors for development indicate that the rhetoric of partnership is problematic. According to Brinkerhoff and Brinkerhoff (2011), partnerships between diverse stakeholders of private sector actors, government, donors, financial institutions, as well as civil society tend to be difficult due to competing modalities of operation, values, as well as goals (Brinkerhoff and Brinkerhoff, 2011). While from the developmental perspective human wellbeing is the end goal and is of central importance, the private sector perspective would more likely prioritize business growth and economic development rather than wellbeing of community stakeholders (Scheyvens et al., 2016). In this vein, Pogge and Sengupta (2015) argue that if SDG-17 fails to hold the world’s most prominent and influential stakeholders accountable towards giving their due contribution for sustainable development, the “concepts of partnership and universalism will remain a smokescreen for extreme global inequalities, thus weakening confidence in the goals” (Pogge and Sengupta, 2015, p.62).

## 2.3: The Private-Climate Nexus

### 2.3.1: Green Incentives and Market Opportunities

Climate change, as per the literature, represents a number of market opportunities for private sector actors, which should ideally be coupled with government incentives to unlock the adoption of green projects by private investors and businesses alike. Agrawala et al. (2011) indicates that while the climate crisis poses risks to the business community, it also poses a number of opportunities that could be solicited by firms. For Agrawala et al. (2011), such opportunities can be observed in several sectors, including climate environmental consulting, water management, new resistant agricultural products, insurance, disaster preparedness, and coastal resource management (Agrawala et al., 2011,36).

In the same vein, Pauw and Pegels (2013) indicate that climate adaptation measures offer business opportunities within two main ways. The first way, according to Pauw and Pegels (2013), is the opening of new markets for novel and innovative products that are to be demanded under changing climate conditions or for disaster risk reduction, particularly within sectors such as “agriculture (e.g. pest control, drip-irrigation); communication (e.g. technology and information services); energy (e.g. off-grid renewables, efficient cooking stoves) and water management (e.g. water saving and desalination)”, as well as a further vitilization of the insurance sector (Pauw and Pegels, 2013, 4). The second way as per Pauw and Pegels (2013) is that publicly funded adaptation projects create newfound opportunities for the involvement of private sector actors, with examples including climate resilient roads as well as flood protection barriers (Pauw and Pegels, 2013). While such projects would reportedly enlarge existing markets, Pauw and Pegels (2013) note that specialized business that “understand and mainstream climate risks” within a given project design and implementation will be required (Pauw and Pegels, 2013,4). Having said that, while most climate adaptation measures require investments now (with the benefits to be realized later), short-term costs and cash flows are likely to dominate many businesses’ priorities instead (Ansah and Sorooshian, 2019,66).

While newfound markets are expected to be borne with the rising tide of climate action and increased appetites for “green” services, the role government is of paramount importance to steer and facilitate such a transition forward. Pauw (2015) puts forth that more specific policy tools to incentivize private sector activity within the green transition need to be utilized by governments the world over- both monetary and non-monetary in nature. For monetary tools, Pauw (2015) indicates that foreign exchange liquidity facilities, loan guarantees, and public-private partnerships (PPPs) through tools such as risk mitigation instruments, insurance, and equities can be leveraged to catalyze private adoption of climate adaptation projects (Pauw, 2015). On non-monetary tools, Pauw (2015) states that governments must establish roadmaps for developing and disseminating key technologies and services; enhanced communication systems between public and private actors; as well as to sensitize, provide information, and build capacities of both private and public actors to “stimulate integrated policy making” in tackling climate change (Pauw, 2015, 597). Pauw (2015) also puts forth land reform amongst developing nations as a possible policy measure to increase investments in agriculture (contributing to the green economy) (Pauw, 2015, Section 4.2.4). Similarly, Crick et al. (2018) argues that incentives are needed for private sector actors to penetrate markets and provide the necessary green goods and services (Crick et al., 2018, Section 2.2). Specifically, Crick et al. (2018) indicates that economic incentives (such as subsidies and tax breaks) can encourage SMEs to invest in climate resilience and adopt strategic climate adaptation measures (Crick et al., 2018).

In this respect, a number of policy incentive examples from the Global South can be observed. Crick et al. (2018) sheds light on the efforts exerted by the Zambian Energy Regulation Board in 2015, as they removed duty charges and fees on solar power products in an effort to increase private sector electricity production following extensive national drought-induced hydroelectric load shedding (Crick et al., 2018). Also in Zimbabwe, Biagini and Miller (2013) highlight that a Special Climate Change Fund (SCCF) project financed the development and implementation of regulatory and fiscal incentives to stimulate climate risk reduction by the private sector and rural households (Biagini and Miller, 2013, 246). Moreover, Biagini and Miller (2013) state that in Liberia, regulations were introduced on coastal development activities considering climate change considerations (Biagini and Miller, 2013, 246).

### 2.3.2: Mitigating Risks Towards the Green Transition

Within the literature, there is significant mention on how climate change can pose business risks for private sector actors. While private sector actors are characterized by a high level of heterogeneity, the main constraints affecting their business decision making are similar as indicated by the literature (Lemma et al. 2015). Agrawala et al. (2011) mentions how climate change would affect private sector companies- stating that businesses may be exposed to different risks because of climate change, including systemic risks across the entire economy and specific risks at the sector, industry and company levels. Such risks, as per Agrawala et al. (2011), can be both direct and indirect, and might include physical risks, supply chain and raw material risks, reputational risks, financial risks, product demand risks, regulatory risks, and litigation risks (Agrawala et al., 2011, 13). Ansah and Sorooshian (2019) also state that climate change can lead to the disruption of business operations escalation of insurance prices, changes in the patterns of market demands, supply chain disruptions, as well as the increased costs of materials, maintenance, and inputs (Ansah and Sorooshian, 2019). Surminski (2013) further indicates that how a given company copes with the risks posed by climate change does not solely depend on its singular actions, but also on the resilience of suppliers, employees, and customers alike- not to mention on a functioning infrastructure (Surminski, 2013, 944).

To mitigate the risks posed by climate change, the literature offers a number of potential avenues and ways forward. Agrawala et al. (2011) differentiates between “soft” and “hard” measures to mitigate climate change risks. Soft measures as per Agrawala et al. (2011) include “commercial changes in products and services; strategic changes such as relocating facilities; diversifying the supplier base; outsourcing production across many facilities; providing additional storage facilities in flood affected areas; or financial strategies to protect the business” (Agrawala et al., 2011, 28), while “hard” measures essentially entail specific climate-conscious technological and infrastructural changes involving capital goods (Agrawala et al., 2011, 28). Crick et al. (2018) also indicates that measures to adapt to climate risks from the private sector can include instating flood protection measures, investing in infrastructure and supply chains, integrating climate risk management within their respective business management practices, along with moving locations and selecting suppliers based on their “resilience profiles” (Crick et al., 2018, 2). Moreover, the very existence of climate risks for Biagini and Miller (2013) presents business opportunities,

arguing that the increasing awareness of climate risks represents market opportunities to develop products and services that work towards increasing climate resilience (Biagini and Miller, 2013, 243). In this regard, Biagini and Miller (2013) state that the role of the private sector may vary from sector to sector and country to country and could be in a myriad of forms: “from simply serving as a provider of technology to working in partnership with governments to the assumption of primary responsibility for delivery of adaptation services” (Biagini and Miller, 2013, 248).

### 2.3.3: Business Enabling Environment and Governance

Within the scope of attracting businesses to operate and invest within green projects, the creation of an enabling business environment and competent governance mechanism has been highlighted as a significant determining factor. As per Agrawala et al. (2011), the policy and regulatory environment in which companies operate influences corporate decision making to a large extent, as regulation can explicitly “compel” companies to take climate adaptation into account (Agrawala et al., 2011, 43). Additionally, Crick et al. (2018) indicates that government policies along with regulatory and legal frameworks represent significant external drivers that can lead to the stimulation or constraint of the private sector’s engagement at large.

Crick et al. (2018) states that understanding the main drivers and motivators of the private sector to adapt to climate change is of critical importance to empower policymakers in providing and supporting a favorable enabling environment for private sector climate adaptation. Agrawala et al. (2011) indicates that while regulation can promote the adoption of climate adaptation practices, regulatory inconsistencies and uncertainties can present a barrier to the implementation of climate adaptation projects (Agrawala et al., 2011, 43). Additionally, low institutional capacities, along with poor business environments, policies, and incentive structures can constrain the ability of the private sector to respond to the various climate risks (including distortive policies on certain types of seeds, fertilizers, as well as irrigation water (Crick et al., 2018). This is echoed by Bowman and Minas (2019), which argues that the main challenge faced by developing countries in accessing private finance for the green transition is creating an enabling legal and policy environment that can attract such funds (Bowman and Minas, 2019). Gaps in regulations can be detrimental to efforts towards climate action as highlighted by Walenta (2018), which puts forth that the carbon footprint tool as a means to govern greenhouse gas (GHG) emissions contributes



to the spatializing of a corporate response climate change, as corporations reduce their owned emissions, while their value chain emissions grow (Walenta, 2018). In this regard, Pauw and Pegels (2013) indicate that barriers to the implementation of climate adaptation projects related to an enabling environment are the inadequacies of (1) financial resources, (2) human resources and technical capacity, and (3) the institutional system (Pauw and Pegels, 2013).

In creating such an enabling environment, Crick et al. (2018) argues for a framework to be developed that would chart the way forward to pursue a holistic, systematic and detailed evaluation of enabling environments for private sector adaptation within and across countries and to identify general strengths and weaknesses within business environments (Crick et al., 2018). Said framework, as per Crick et al. (2018), could also serve as a guide to examine opportunities for developing country governments, international agencies, as well as donors to focus strategies for enhancing private sector adaptation and to identify structural deficits and policy priorities (Crick et al., 2018). Crick et al. (2018) also argues heavily for the role of multi-stakeholder partnerships (MSPs) towards facilitating private sector climate adaptation. Such MSPs— which would bring together the public sector, the private sector, as well as civil society actors- can facilitate coordinative action on a number of scales and towards the development of “more integrated and holistic approaches to addressing barriers within enabling environments” (Crick et al., 2018, 8).

One example of such an MSP was the Planning for Resilience in East Africa through Policy, Adaptation, Research, and Economic Development (PREPARED) Project, - which included the United States Agency for International Development (USAID), Jubilee Insurance, Kenya Meteorological Department (KMD), the United Nations Food and Agriculture Organisation (UNFAO), as well as Rabobank (Crick et al., 2018). One of the Project’s main activities was the pilot of weather index insurance amongst SMEs, of whom otherwise may lack safety nets in the case of climate shocks. The PREPARED Project provided a platform for users to identify and articulate their needs- allowing Project partners to identify climate data quality issues as a cornerstone challenge for insurance companies who would otherwise struggle to access a reliable index to determine commercially viable premiums for crop insurance. Additionally, Project partners leveraged expertise within the partnership for capacity building purposes- ultimately

contributing to mitigating the data resource gap within the Kenyan business environment (Crick et al., 2018).

On the fiscal front, Bowman and Minas (2019) state that there needs to be a “conscientious legal design” of guarantees for de-risking instruments to mitigate risks to government balance sheets (Bowman and Minas, 2019, 350). Additionally, Klien et al (2018) speaks to the involvement of citizens and the private sector within climate adaptation, stating that addressing citizens and the private sector could mean an involvement in adaptation by following legislation (Klien et al., 2018, 129).

#### 2.3.4: Conflicts of Interest Within the Green Agenda

While there are a number of opportunities for the involvement of the private sector within the fight against climate change, the literature reflects a number of conflicting interests between private actors and policymakers when it comes to the issue of climate change. As indicated within the literature, in 2018 and 2019 a number of multinational oil companies spend approximately USD 200 million annually on global lobbying efforts to hinder and deter policies related to climate change (Transparency International, 2021). Additionally, it was indicated that in 2010, the agribusiness industry in Brazil contributed to approximately USD 3.6 million towards the electoral campaigns of a number of public servants who managed to effectively numb the Brazilian Forest Code-leading to a 58 percent reduction in areas identified for reforestation as well as amnesty for 90 of actors practicing illegal deforestation activities (Transparency International, 2021). While this doesn't reflect the entirety of the involvement of the private sector within the issue of climate change, it is important to reflect on such incidents when engaging with the private sector under developmental aims.

### 2.4: The Egyptian Green Economy

#### 2.4.1: Sectoral Outlooks

Looking at the case of specific sectoral engagements within the green agenda, a number of examples within the literature can be explored which tackle the cases of the solid waste

management, renewable energy, as well as agricultural sectors respectively. Looking at the solid waste management sector, Ibrahim and Mohamed (2016) indicate how the solid waste management sector can be of drastic importance for many communities within the developing world- including Egypt. As per the authors, less than 60% of the generated waste is operated by public and private sector actors (accumulating on streets and illegal dumping sites), and more than 80% of the generated municipal solid waste in Egypt is simply dumped (Ibrahim and Mohamed, 2016). The situation in Egypt as per Ibrahim and Mohamed (2016) is more challenging, as the authors critiqued the lack of a clearly defined strategy for the efficient management of solid waste, causing serious environmental risks on Egyptian communities and leading to a drainage of a significant portion of the Egyptian economy.

Looking at the agricultural sector, Fawaz and Soliman (2016) indicate that the agricultural sector has decreased in its share of economic contribution to the country as a result of loss of agricultural biodiversity, land erosion, as well as the loss of soil fertility. In this light, the authors argue that converting 20% of the total agricultural land from conventional farming methods to sustainable and organic cultivation methods could result in savings of 700,000 tons of chemical fertilizers annually (amounting at the time to EGP 1 billion per annum). Additionally, the authors indicate that the potential of producing compost from agricultural residues could lead to the provision of over 22 million tons of organic waste annually (valued at EGP 9 billion/annum at time of publication). Moreover, the authors reflect that reducing the area cultivated for rice and sugar cane could lead to water savings of between EGP 4-7 billion (at time of publication), and that drip irrigation could save up to 40% of water as compared to flood irrigation (Fawaz and Soliman, 2016).

With regards to the renewable energy sector, Salman and Ismael (2022) indicate that the renewable energy sector has a paramount role to play in the reduction of the country's emissions. However, El Zalat (2022) reflects that there are several challenges facing the renewable energy sector in Egypt- including the lack of regulatory and financial incentives to sustainably generate clean energy as well as the high cost of research and development for green environmental technologies (El Zalat, 2022). In response, the author indicates that the sector requires support from the

government through the coordination of stimulus policies as well as the imposition of a carbon tariff on imported products.

#### 2.4.2: Corporate CSR and Sustainable Development

Post the Rio de Janeiro Summit of 2002, the role of corporate social responsibility (CSR) became intertwined towards the achievement of the sustainable development agenda (Dyllick and Hockerts, 2002). In this regard, Abdelhalim and Gamal Eldin (2019) reflect on the role of corporate social responsibility (CSR) in promoting sustainable development in Egypt, looking at both multinational and national company examples. The authors reflect that there is a clear regulatory vacuum of CSR work in Egypt, in addition to “any guiding planning framework for CSR interventions per sectors or regions” (Abdelhalim and Gamal Eldin, 2019, 791). In this regard, the authors recommend for private sector actors to design CSR strategies that link the financial performance of the company to social and environmental performance, that such strategies be linked to the SDGs, and that the outcomes of the CSR be assessed on both a quantitative and qualitative basis. For the Government, the authors recommend for the creation of a CSR national map corresponding to “the spatial distribution of poverty” along with the creation of a CSR national policy with “clear legislative, institutional and resource allocation frameworks (Abdelhalim and Gamal Eldin, 2019, 792).

#### 2.5: Research Gaps

Throughout this literature review, it is clear that private sector businesses are particularly impacted by both climate change and policies to deter it. The literature indicated that the green transition could impact businesses positively through opening up new market opportunities as well as paving the way for government incentives. It has also indicated that businesses are vulnerable to risks stemming from the climate crisis, detrimentally impacting their operations as well as potentially increasing their costs. However, the literature lacks a clear indication on the specific realities, challenges, and opportunities facing the private sector in Egypt within the current period. In this respect, this study would attempt to fill this gap by analyzing the perceptions of private sector actors in Egypt on the issue of climate change and the transition to a green economy, along with the potential challenges and opportunities associated with it.

### **Chapter Three: Egyptian Initiatives, Laws and Regulations Towards the Green Transition**

To understand the Egyptian private sectors' perceptions on the Egyptian green transition, one must first develop a robust understanding of the current state of the green transition in Egypt. Since the 1970's, the Egyptian Government had exerted serious efforts towards managing Egypt's natural resources and environment (Sowers, 2013). In 1982, the Egyptian Environmental Affairs Agency (EEAA) was established by Presidential Decree No.631 of 1982 (Gomaa, 1997). The Agency's role, however, was quite limited as its role was largely to coordinate between the different line Ministries (save for the issues of land protection, park development, as well as afforestation where the Agency had vested authority) (Gomaa, 1997, 8). And while a Ministry of State for Environmental Affairs was established, authority over the state of nature remained fragmented (Wahby, 2018). In 1992, the National Environmental Action Plan (NEAP) was published with a focus on pollution, land degradation, management of solid waste, as well as protection of natural heritage (Gomaa, 1997). Subsequently, in 1994 Environmental Law No. 4 was passed and revised in 2009, albeit with significant contestation from various Ministries "concerned with industry and petrochemicals" amongst others (Wahby, 2018).

As indicated by the literature, international interventions contributed towards the efforts of the Egyptian Government for environmental regulation (Wahby, 2018). Such efforts included the establishment of a technical office within the EEAA as well as passing the aforementioned Environmental Law of 1994 (Wahby, 2018). Towards that end, Egypt began to rank as one of the highest foreign aid recipients within the 1980s and 1990s (Wahby 2018; Sowers, 2013; Barnes 2014).

To that end, this chapter aims to highlight the more contemporary tenets and features of the Government of Egypt's efforts towards the green transition. This includes macro-level country strategies, laws and regulations to streamline sustainable activities, Government-led initiatives, as well as infrastructure developments (further details to be found within the appendix).

Table 1: Contemporary Government Efforts Towards the Green Economy

Date	Type	Initiative	Policy Direction
2012	Government-Led Multistakeholder Initiative	National Solid Waste Management Program	Program launched in partnership with bilateral and development partners towards enhancing the business environment within the Egyptian waste management sector.
2014	Key Legislation and Regulations	Renewable Energy Law	Aims at encouraging private production of renewable energy sources through competitive bids, feed-in tariffs, and independent power production.
2015	Key Legislation and Regulations	Electricity Law	Aims at restructuring the electricity sector to be more competitive- allowing independent power producers to sell electricity to end users as well as outlining the basis for a competitive electricity market ( not yet implemented).
2016	Country Strategy	Egypt Vision 2030	Setting the tone for Egypt's macroeconomic and social development- with one of the main pillars concerned with the environment.
2017	Key Legislation and Regulations	Investment Law	Putting forth a number of investment incentives and measures for investment in the Egyptian economy, including within renewable energy sectors.
2020	Key Legislation and Regulations	Net Metering Scheme Decree	Outlines rules for net metering within the country for a maximum total capacity of 300MW of solar plants.

2020	Government-Led Multistakeholder Initiative	Green Sovereign Bond Issuance	MENA region's first green sovereign bond issuance to meet Egypt's gap in sustainable investments.
2021	Key Legislation and Regulations	Central Bank of Egypt (CBE) Guiding Principles for Sustainable Finance	Voluntary guidelines first issued to guide banking best practices within the realm of sustainable finance.
2022	Key Legislation and Regulations	Central Bank of Egypt Sustainable Finance Regulations	Binding regulations based on the Guiding principles that aim to integrate sustainable finance within the incumbent Egyptian banking system.
2022	Country Strategy	National Climate Change Strategy 2050	Unifying the Government's policy trajectory to fight climate change in one political communication that outlines various objectives for the realization of the green economy, proposed policy measures to achieve them, as well as the required funding.
2022	Government-Led Multistakeholder Initiative	COP27 Presidency	The Government assumed the Presidency of COP27, leading to a number of achievements within the UNFCCC process related to loss and damage as well as adaptation finance. A number of bilateral agreements were also signed on its sidelines to promote a number of green energy projects and initiatives between the Government of Egypt and a number of high-income economies.

2022	Government-Led Multistakeholder Initiative	Central Bank of Egypt Low Interest Rate Initiatives	Now discontinued initiative by the Central Bank of Egypt towards providing low-interest rate facilities to promote a number of low-emission and green activities.
2022	Government-Led Multistakeholder Initiative	National Initiative for Smart Green Projects	Initiative which aims at promoting smart and green national projects, map them on a governorate level, as well as link them with external sources of funding.
2022	Government-Led Multistakeholder Initiative	Nexus on Water, Food, and Energy (NWFE) Platform	Government initiative which aims at leveraging climate finance from Egypt's bilateral and multilateral development partners along with the private sector to support Egypt's green transition.
2014-2021	Government-Led Multistakeholder Initiative	Infrastructure Developments	Various public infrastructure developments and investments for both climate adaptation and mitigation.

## Country Strategies

### Egypt National Climate Change Strategy 2050

Prior to the development of the National Climate Change Strategy 2050 (NCCS 2050), the Government of Egypt had previously prepared its first National Strategy for Climate Change Adaptation and Disaster Risk Reduction in 2011, along with a Low Emission Development Strategy (LEDS) that was issued in 2018 with the aim of being in line with the Sustainable Development Strategy SDS- Egypt Vision 2030 (Egypt National Climate Change Strategy 2050). However, while such efforts aimed in part to address the issue of climate change in Egypt, they were ultimately fragmented in nature. As indicated within the NCCS 2050, there was a need to consolidate all aspects related to the issue of climate change in a singular document that would act



as the basic reference that ensures that the issue of climate change is integrated within the “general planning of all sectors in the country” (Egypt National Climate Change Strategy 2050, p. 7). Thus, as per the request of the National Council for Climate Change in Egypt, the National Climate Change Strategy 2050 was launched in May of 2022.

The NCCS 2050 aims at providing a roadmap for implementing Objective 3.1: Meeting the Challenges of Climate Change” within the framework of the updated SDS- Egypt Vision 2030 via enabling the Government of Egypt to “plan and manage climate change at different levels in a way that supports the achievement of the country’s desired economic and development goals” through a low-emissions approach (Egypt National Climate Change Strategy 2050, p. 7). In this vein, the NCCS 2050 identifies five main goals with twenty-two objectives towards tackling the issue of climate change:

*Goal 1: Achieving Sustainable Economic Growth and Low-Emission Development in Various Sectors*

*Goal 2: Enhancing Adaptive Capacity and Resilience to Climate Change and Alleviating the Associated Negative Impacts*

*Goal 3: Enhancing Climate Change Action Governance*

*Goal 4: Enhancing Climate Financing Infrastructure*

*Goal 5: Enhancing Scientific Research, Technology Transfer, Knowledge Management and Awareness to Combat Climate Change*

*Source: (Egypt National Climate Change Strategy 2050).*

Looking at Goal 1 of the Strategy, one can observe it was guided by four main objectives: (i) increasing the share of renewable energies within Egypt’s energy mix, (ii) reducing fossil fuel emissions, (iii) maximizing energy efficiency, as well as (iv) adopting sustainable production and consumption trends towards reducing greenhouse gas emissions from non-energy activities (Egypt National Climate Change Strategy 2050). Towards achieving such objectives, the NCCS 2050 calls towards the adoption of a number of policies that incentivize the use of electric vehicles and establishing the necessary infrastructure accordingly, the expansion of the use of renewable and

alternative energies by the private sector, empowering the role of civil society to for awareness raising on carbon footprint implications, as well as adopting green building codes amongst other key enabling policies and tools (Egypt National Climate Change Strategy 2050).

On the other hand, Goal 4 of the Strategy concerns itself with the financial dimension of climate change, and is guided by five main objectives: (i) promoting local green banking and green credit lines; (ii) promoting innovative financing mechanisms that prioritize adaptation initiatives; (iii) promoting private sector engagement in climate finance and promotion of green jobs; (iv) complying with multilateral development bank (MDB) guidelines for climate finances; and (v) building on the success of the current climate finance programs (Egypt National Climate Change Strategy 2050). Towards achieving such objectives, the NCCS 2050 calls upon the National Council for Climate Change to coordinate accordingly with the banking sector to find ways to increase facilitations for climate change projects, identify priority adaptation and mitigation programs to be added to the Green Bond Plan, study the guidelines of MDBs and set clear plan to comply with such guidelines, and build on Law No. 152 of 2020 regarding the development of MSMEs particularly amongst the most affected and vulnerable groups (Egypt National Climate Change Strategy 2050).

## Key Legislation and Regulations

### Renewable Energy Law (Law 203/2014)

In September of 2014, the Government launched an ambitious incentive program towards the generation of 4.3GW of solar and wind energy projects. The program set a target within the first regulatory period (2015 to 2017) of 2GW of wind energy, 2GW of utility-scale solar photovoltaic energy (PV energy), and 300MW of small-scale PV energy (El Mazghouny, 2022). Out of 178 solar bids, 67 consortia reportedly qualified with a total capacity of 2.88GW. (El Mazghouny, 2022). The utility-scale PV tender was also over-subscribed by a factor of two, but out of 48 of the consortia which bid for the wind projects, only 27 qualified amounting to 1.67GW and not all projects were completed (El Mazghouny, 2022).

On December 2014, the Government of Egypt published the Renewable Energy Law, with the aim of encouraging the private sector to produce electricity from renewable energy sources (El Mazghouny, 2022). The Law introduced a number of development schemes for the private sector's development of renewable energy projects; including competitive bids, feed-in tariffs, as well as independent power production via third-party access (IEA, 2016).

On competitive bidding, the Law indicated that such bidding is to be run by the New and Renewable Energy Authority (NREA) open to private sector companies for the construction of renewable power projects via EPC contracts (IEA, 2016; Riad and Riad, 2021). As per the Law, produced electricity is to be sold to the Egyptian Electricity Transmission Company (EETC) at a regulated price to be determined by the Egyptian Electric Utility and Consumer Protection Regulatory Agency (EgyptERA) and approved by the Cabinet of Ministers (Riad and Riad, 2021). In September of 2015, the Ministry of Electricity and Renewable Energy (MOEE) issued special public procurement regulations that apply on all NREA procurement activities such as purchase and contracting transactions, services and supply work (including maintenance and installation), consultancy and technical works, as well as leasing and real estate licensing (Riad and Riad, 2021). Said regulations allow NREA to sell electricity produced by its stations either to the EETC as per the prices to be determined by EgyptERA and that are approved by the Cabinet or to end users directly (Riad and Riad, 2021).

For competitive bidding for build-own-operate (BOO) contracts, the Law outlines that such a mechanism is to be run by EETC and to be open to private companies for construction, ownership, and operation of the renewable energy projects (IEA, 2016). Generated electricity as outlined within the scope of the Law is to be sold to the EETC on the price agreed between EETC and the plant owner (IEA, 2016).

With respect to the Feed-in Tariff (FIT) support system, the Law outlines the reservations of the FIT support system under which private sector investors are allowed to build, own, and operate renewable energy power stations and electricity generated by such stations to the EETC or to licensed distribution companies via power purchase agreements (PPA) (IEA, 2016). The Law stipulates that PPAs shall determine the duration of the contract and a fixed electricity price.

Additionally, the Law indicates that PPAs for FITs are set to last 20 years for solar installations and 25 years for wind projects (IEA, 2016). The Law only avails access to the FIT system for solar PV and wind technologies (IEA, 2016).

With regards to independent power producers (IPPs), the Law allows IPPs to enter bilateral electricity purchase contracts with eligible consumers as well as sell them produced electricity on a direct basis (IEA, 2016). The Law indicates that the EETC must allow for the conclusion of such contracts and make the grid network available, under such case the EETC would be allowed to charge and collect access fees for grid usage (IEA, 2016).

### Net Metering Scheme Decree

The net metering scheme is a system which encourages the exchange and usage of electricity derived from solar sources to allow the customer to save on the electricity bill of their home/facility (Riad and Riad, 2021). The scheme would allow customers to establish solar plants within their premises to meet their electricity needs, and subsequently feed any surplus back into the national grid with the option to claim it back in the coming months if needed (Riad and Riad, 2021).

On April 28<sup>th</sup>, 2020, EgyptERA issued new rules for net metering by virtue of Decree No.2 of 2020. As per the Decree, a maximum aggregate capacity of solar plants across the country not exceeding 300MW has been instated (excluding 75MW that has been already licensed by EgyptERA at the issuance date of the Decree). The Decree also outlines other requirements and conditions relating to the solar plant-including its location and capacity as well as customer eligibility (Riad and Riad, 2021).

### Central Bank of Egypt Sustainable Finance Regulations

In July 2021, the Central Bank of Egypt (CBE) issued the Guiding Principles for Sustainable Finance towards supporting sustainable development goals and in line with international best practices towards the establishment of rules pertaining to sustainable finance within the Egyptian banking sector (Central Bank of Egypt, n.d.). Such guiding principles were comprised of six main Principles as follows: (i) Capacity Building and Necessary Knowledge; (ii)

Enhancing Sustainable Finance; (iii) Involvement of the Stakeholders; (iv) Managing Climate Risks; (v) Applying the Principles of Sustainability to the Bank's Internal Activities and Operations; and (vi) Reporting (Central Bank of Egypt, n.d.).

In November 2022, the CBE issued binding sustainable finance regulations, with the aim of achieving the Sustainable Development Goals and Egypt's Vision 2030 as well as to build upon the 2021 Guiding Principles for Sustainable Financing. The regulations are as set forth:

1. Banks need to incorporate sustainable finance within their credit and investment policies via the relevant departments (Central Bank of Egypt, n.d.). Additionally, the CBE stipulates that banks need to set procedures that are consistent with the Guiding Principles for Sustainable Finance that need to be submitted to the CBE by October 1<sup>st</sup>, 2023 (Central Bank of Egypt, n.d.).
2. Banks' Board of Directors are to ensure the implementation policies and procedures related to sustainable financing and are expected to validate required reports that are to be prepared in this regard (Central Bank of Egypt, n.d.).
3. The following periodic reports are to be prepared by banks and submitted to the Central Bank of Egypt's Sustainability Department: (i) a status report on the implementation of the Sustainable Finance Guiding Principles which is to be prepared on a semi-annual basis with the goal of presenting the steps that have been taken towards achieving the Guiding Principles; (ii) a quantitative report on banks' sustainable financing activities within their credit portfolios to be submitted on a quarterly basis; (iii) a sustainability report which is to be prepared on an annual basis and to be approved by banks' Board of Directors of relevant counterparts, prepared in accordance with the Global Reporting Initiative (GRI) and in cooperation with one of the offices approved by such an initiative, as well as to include banks' activities related to sustainability and demonstrate efforts in achieving it (Central Bank of Egypt, n.d.).
4. Banks are required to establish an independent Department of Sustainability and Sustainable Finance that would report directly to the Chief Executive Officer or their deputy. The roles and responsibilities of such a Department would include the implementation of the Guiding Principles aforementioned (Central Bank of Egypt, n.d.).

5. Banks are required to consult an environmental expert that is certified by the Ministry of Environment to assess the environmental risks that are associated with large corporate projects to be financed (Central Bank of Egypt, n.d.).

## Government-Led Initiatives

### COP27 Presidency

During November 6-20, 2022, the Government of Egypt hosted the 27<sup>th</sup> UNFCCC Conference of the Parties (COP27) in the governorate of Sharm El Sheikh (UNFCCC, n.d). Under a theme of moving from pledges to implementation, countries' heads of state and high-level delegations convened to take action towards achieving global climate goals that have been agreed upon within the Paris Agreement and the Convention within the scope of COP27 (UNFCCC, n.d). In total, the Government signed Memoranda of Understanding for green hydrogen and green ammonia projects worth USD 83 billion on the sidelines of COP27 (Egyptian Cabinet of Ministers, November, 2022).

### Green Sovereign Bond Issuance

On September 29<sup>th</sup>, 2020, Egypt issued the MENA region's first sovereign green bonds, initially announced at USD 500 million with an interest rate of 5.75% (World Bank, 2022). As the bond was over seven times oversubscribed, the Government increased the size of the issuance to USD 750 million and to lower the interest rate to 5.25% (World Bank, 2022). The green bond was developed to meet Egypt's gap in environmentally sustainable investments, with proceeds earmarked for financing green transportation, renewable energy, pollution prevention and control, along with other green projects (World Bank, 2022).

### Central Bank of Egypt Low Interest Rate Initiatives

Towards the promotion of sustainable finance, the CBE issued a number of initiatives that aim at granting low interest rate credit facilities. Such low-interest rate initiatives that arguably worked towards the promotion of the green economy included the following:

- *Including local bakeries in the small size initiative with decreasing rate 5% to finance conversion to natural gas.*
- *Initiative for medium-sized industrial and agricultural companies, in addition to new and renewable energy projects with decreasing rate 7%.*
- *Initiative of substituting cars to work with dual fuel.*
- *Initiative of funding the transition to modern irrigation methods.*

*Source: CBE, n.d.*

As a result of Egypt's most recent Extended Fund Facility (EFF) IMF program, however, such initiatives have been announced to no longer be managed by the CBE- with the Ministry of Finance to take over the responsibility of managing the form and function of such initiatives as of November 19<sup>th</sup>, 2022 (Moneim, 2022).

Overall, the Government has exhibited a number of efforts towards incentivizing private sector activity within the green economy through the release of various country strategies, legislation, as well as national initiatives. The Government's trajectory seems to be focusing on the promotion of renewable energy use within the Egyptian economy, as was particularly evident within the scope of the Renewable Energy Law and associated Net Metering Decree, as well as with the various agreements for green hydrogen and green ammonia signed within the scope of COP27. Despite the Government's efforts, however, there persist a number of shortfalls. For one, the efforts are still dispersed, with a multiplicity of line Ministries and entities having contributed to interventions but in a rather siloed approach. Additionally, while the political will towards realizing the green transition is arguably apparent, there is still a clear lack of a cohesive, consistent, and long-term implementation mechanism towards realizing the macro goals set out.

## **Chapter Four: Conceptual Framework and Research Methodology**

### **4.1: Conceptual Framework**

Through a thorough surveyal of the existing literature on the matter- particularly via the works of Agrawala et al. (2011), Crick et al. (2018), Pauw (2015), Bowman and Minas (2019), as well as Ansah and Sorooshian (2019)- three main emergent themes were identified that capture the engagement of the private sector with the climate crisis and its associated policies. Such themes included the need for government incentives and potential market opportunities to spur private sector activity to adopt green projects, the importance of robust governance mechanisms and business enabling environments to attract private finance towards the green sector, as well as possible climate-based risks and tools to mitigate them. In this respect, the below conceptual framework has been developed.

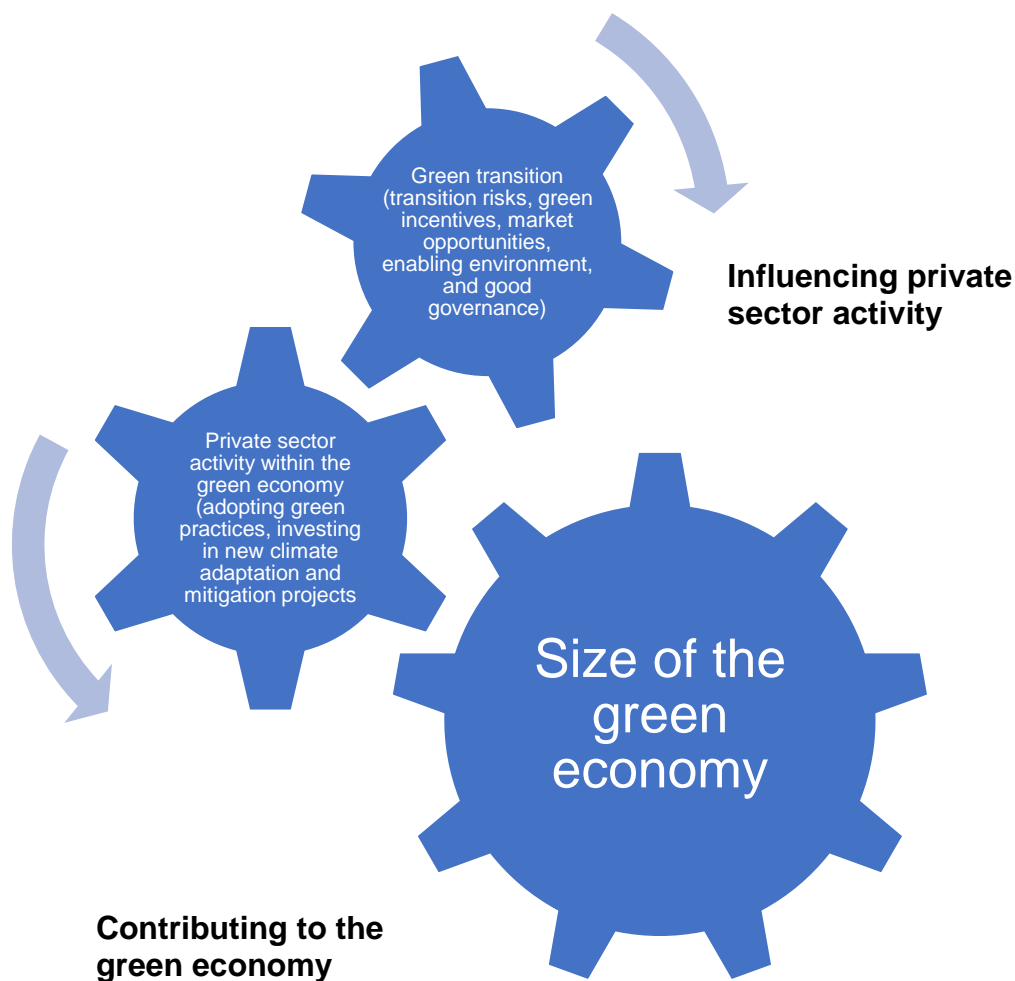
As per the conceptual framework, aspects of the green transition (represented by transition risks, green incentives, market opportunities, as well as business enabling environment and good governance) influence the private sector's activity within the green economy (represented by adopting green business practices as well as investing in new climate adaptation and mitigation projects)- ultimately affecting the size of the green economy.

Within the green transition specifically, it is expected that transition risks would be negatively related with green incentives and market opportunities. This would be due to the fact that as fiscal incentives and market opportunities increase for firms to operate within the potential green economy, they would presumably have further fiscal space and higher levels of business development- leading to a reduction in potential risks for their business as they transition from traditional modes of operation towards climate-conscious modes of operation. Similarly, another inverse correlation would be observed between having a green enabling environment and good governance and transition risks, as competent regulations and legislation would facilitate the green integration of firms whilst mitigating operational complications- further dampening any potential risks to be faced.



As transition risks are reduced and firms are further incentivized to enter into green market opportunities, it would be then expected for firms to increase their investments in green and sustainable modes of operations. This can include shifting legacy modalities of operation towards ones that are green and sustainable, enter into markets for sustainable and green products, as well as change the business direction of the firm to integrate the green agenda as a priority overall. However, if such risks are not reduced (or are even exacerbated) due to a lack of palpable investments, market appetite, or enabling environment, it is expected that the private sector would shy away from going green due to its potential adverse effect on their profitability levels.

Figure 2: Conceptual Framework Diagram



## 4.2: Design Rationale and Selected Methodology

To assess the perspectives of the Egyptian private sector on transitioning towards the green economy, a qualitative exploratory research design method was employed. The qualitative method using in-depth interviews with key industry players and experts allowed for a detailed scoping on the on-ground perceptions of the private sector operating in Egypt, whilst the exploratory approach helped in reflecting the accurate perceptions of said firms.

On the selected methodology to be employed, the exploratory approach was employed within the scope of this research. According to Neuman (2014), the exploratory approach is utilized when the subject is new and has not been explored previously (Neuman, 2014, 38). It also enables the researcher to be “creative, open minded, and flexible; adopt an investigative stance; and explore all sources of information (Neuman, 2014, 38). For the purposes of this study, the exploratory approach is optimal. For one, the newfound momentum towards the green transition and the fight against climate change would necessitate a great deal of flexibility when engaging with the private sector stakeholders on their perceptions on the matter; especially as awareness on climate change is arguably still under development within Egypt. Also, to better inform policy decisions on how to better integrate and catalyze the private sector by meeting their needs within the green transition, it is importance to have an avenue towards the generalization of the specific qualitative data that will be accrued from the participants towards broader concepts and themes. Moreover, as the exploratory allows for the solicitation of all available information, the approach will benefit the study at hand in allowing the for the explanation/justification of the perceptions and stances of firm’s vis a vis the green transition using established theories that cover convergent paradigms.

## 4.3: Explanation of Sample and Identification of Selected Research Tools

Looking at the selected research tool, the data was gathered through semi-structured in-depth interviews. The data accrued is based on a sample of twelve in-depth interviews with key high-level corporate stakeholders operating within the Egyptian private sector from Egyptian and multinational companies.

## 4.4: Data Collection Plan

### 4.4.1: Data Sources

For data sources, I leveraged my existing positionality as an employee within a public policy and government relations consulting firm as well as my existing network of professionals across a variety of private sector firms and industries in Egypt to be able to secure in-depth interviews with key industry experts and stakeholders.

### 4.4.2: Explanation of Methods

Within the scope of the research, I utilized semi-structured in-depth interviews with a maximum length of approximately 60 minutes. The interviews were secured through a mixture of personal connections facilitated via my place of work as well as outreach via social media networking (specifically LinkedIn). The interviews were conducted mainly through phone-call as well as virtual modalities (such as Zoom as well as Microsoft Teams) to maximize efficiency.

### 4.4.3: Selection Criteria

In selecting the private sector stakeholders to be interviewed, I aimed to incorporate higher-level corporate personnel and domain experts among others within a diverse range of sectors (including the F&B, FMCG industrial, banking, as well as consulting sectors). This was to scope the strategic company-level directions and trajectories vis-a-vis the green transition, knowledge that would often be found with higher-level company personnel from diverse backgrounds and business operations. Company heads/managers provided insights on how the business-driven private sector perceives the issue of the green transition, which proved valuable to understand the ethos of why the private sector would contribute towards the green transition. Sustainability heads were also interviewed to identify the specific sustainability efforts exerted by businesses in Egypt as well as the bottlenecks facing such forms of implementation. The diversity of sectors was intentional, with the aim of attaining a scoping of green transition perceptions across a wide variety of differentiated private sector business activity, and hence attempt to extrapolate more holistic realities and recommendations.

Domain experts within the consulting fields are also included as such individuals engage on a strategic level between both the public and private sector, and thus would contribute positively to an understanding of the current status quo. These stakeholders originated from both Egyptian-owned as well as multinational company backgrounds and contributed towards an understanding of the perception and stance of such firm's vis a vis climate change and green transition policies.

To make sure that the diversity of market players is successfully accounted for in this light, I included **three main clusters** of private sector actors (not including two consultants and domain experts interviewed for the sake of this study):

- **Three private sector actors from Egyptian companies with no clear sustainability mandate/department** to get a scoping on whether such companies intend to contribute towards the green economy and the challenges that they perceive which stopped them from such engagements previously.
- **Three private sector actors from Egyptian companies with clear sustainability mandates/departments** to get a scoping on the main challenges and opportunities faced by such firms in their engagement with the green economy, along with the extent of their engagement.
- **Four private sector actors from multinational companies with clear sustainability mandates/departments operating in Egypt** to get a scoping on the main challenges and opportunities faced by such firms in their engagement with the *Egyptian* green economy in specific.

#### 4.4.4: Objectives and Questions

The research focused on shedding light on the current perceptions of private sector actors in Egypt towards the policy direction addressing climate change and the green transition, with sub-aims determined through literature emergent themes tackling the perception of private sector firms in Egypt on potential green incentives and market opportunities, perceptions on the form and function of a green business enabling environment and governance mechanism, as well as their perceptions on possible risks on such businesses within the green transition (whether as a result of the policy measures themselves or due to climate-induced conditions). To that end, a number

questions were asked to guide the semi-structured in-depth interviews with the selected individuals that aimed to shed light on their perceptions and awareness on issues of climate change, government initiatives to incentivize green and sustainable business activity, business risk, as well as green market trends.

#### 4.4.5: Data Analysis Plan

On data analysis, I developed open-coding approach to analyze the accrued data. I first transcribed the audio recordings of the interviews conducted through verbatim transcription. Next and through open-coding, I labeled the raw data transcripts of each of the 12 interviews with appropriate codes to further engage and assess the nature of the data gathered. This process was further guided by concepts previously identified within the scope of the literature, and thus a number of pre-determined codes were utilized (such as business risk, desired incentives, and market opportunities). Afterwards, I then attempt to begin to organize the collected codes and connect them towards categorical groups that will ultimately inform an over-arching theme that addresses the initial question posed at the onset of the research process.

#### 4.4.6: Validity and Ethics

With regards to ethical concerns, the interview guide and the study received the American University in Cairo's Institutional Review Board (IRB) approval on March 18<sup>th</sup>, 2023 to ensure that it complies with ethical standards. The interview data was also be made confidential at all research stages and anonymous within the final write up as well as the transcripts (with pseudonyms utilized to present the respondents' inputs within both). Whilst conducting the research, I clearly presented the goal and aim of the research study as a purely academic one to the respondents secured both via my firm of employment's network as well as from my personal professional network, engaging with both solely as master's degree candidate to avoid any conflicts of interest. Full results of the interviews were also reported.

With respect to the validity and reliability of the study, the study adhered to the Post-positivist/Systematic Paradigm- utilizing triangulation through the interviews, established literature, as well as existing climate and investment governmental policies. This ideally meets the “lens of the reviewer” tenet of the Post-positivist/Systematic Paradigm stipulated by Creswell and Miller (2000, 126). The interview, transcription, and coding methods were also standardized across all subjects to ensure reliability of the data.

#### 4.4.7: Limitations

There are a number of limitations relating to the scope of this study. The study only tackles the perceptions of private sector firms within Egypt and does not concern itself with other countries. Additionally, the subjects interviewed were mainly high-ranking corporate personnel, and thus the analysis is largely top-down in nature, which might obfuscate grassroots realities and impacts of the green transition for businesses. While the opinions of employees and normal consumers are not assessed within this study specifically, this top-down perception, however is important to be delivered to be able to accurately scope the long-term plans and visions of such companies and thus provide a scoping on how the private sector would engage with the issues of climate change and the green transition. Having said that, it would be valuable to gauge such grassroots perceptions for future research (for example, one could possibly compare and contrast between differences in companies’ strategic decisions versus the opinions of its employees on such trajectories). Additionally, the diverse backgrounds of the interviewees might obfuscate actionable policy recommendations, as each firm would have their own realities when faced with the issue of climate change and the green transition. Moreover, there persists the risk of “greenwashing”, as firms would potentially present business-as-usual firm activities (which might not necessarily be contributing towards fighting climate change) as “green” and “sustainable”.

## **Chapter Five: Findings and Analysis**

This chapter presents the various findings and analyses of the 12 expert interviews conducted with private sector market players in Egypt on their perceptions of the green transition within the Egyptian context. The interview findings are divided based on three main themes: (i) awareness and visibility on the green transition in Egypt; (ii) challenges and implementation gaps for mobilizing private sector activity within the Egyptian green transition; and (iii) desired incentives, initiatives, and market outcomes within the coming period towards the green transition.

Within the first theme, issues pertaining to private sector actors' awareness and perceptions on the issue of climate change at large along with government efforts to tackle it are explored, along with the intersection (or lack thereof) of such awareness with the on-ground efforts and priorities of the actors in question. The second theme primary sheds light on the main bottlenecks and challenges facing the Egyptian private sector towards adopting sustainable business practices, tackling issues pertaining to cost, legal and regulatory frameworks, as well as overall trust of the government's trajectories towards the green transition in Egypt. From there, the third theme identifies the main desired incentives and initiatives from the private sectors' end to spur business activity in to shift to sustainable modalities, in addition to their expectations within the upcoming period towards the various market opportunities that would emerge from going green.

### **5.1: Awareness and Visibility on the Current State of the Green Transition in Egypt**

#### **5.1.1: Awareness and Prioritization of Climate Change and the Green Transition**

##### *Climate Change as an Existential Issue*

When looking at the awareness of various private sector actors in Egypt towards the issue of climate change, there was a universal recognition of the issue as well as its detrimental effects on people and planet at large. All 12 participants from all demographics (including private sector actors from multinational firms, national firms with sustainability mandates/positionings as well as national firms with no sustainability mandate) converged that climate change is real. Additionally, all 12 recognized that climate change is linked to man-made emissions, while 4

interviewees linked issues of scarcity to climate change. Moreover, 2 interviewees expressed the timely, existential threat that climate change poses directly. They explained to me:

*So I don't know what to say. I mean, I'm living in a city that is already in danger of being drowned. Alexandria is in real danger. So. Not just the market or the... It's it's a... It's a vital risking.*

*(Egyptian Plastic Factory Owner, March 2023).*

As indicated by the plastic factory owner above who has no sustainability mandate nor positioning within their current operations), there is a clear awareness on the existential threat that climate change poses. As an Egyptian living in Alexandria, the plastic factory owner expressed their worryment on the fate of their city in the face of the climate induced conditions when asked about the issue of business risk vis a vis the green transition in Egypt, commenting that their city is in danger of being overtaken by the rising sea levels. Alexandria and the Nile Delta region are among the most vulnerable areas in the world to climate change, with the UN's Intergovernmental Panel on Climate Change predicting that global sea levels could rise by 68 cm by 2050- flooding parts of Alexandria and leading to the intrusion of saltwater into the groundwater (Mixed Migration Center, 2023). Similarly, the multinational F&B head had this to say about the issue of climate change:

*This is very critical and it's something that will affect humanity.*

*(Multinational F&B Public Policy and Sustainability Head, March 2023).*

Such a comment by the multinational F&B head reflects their understanding of the grave issue that climate change poses not only within the scope of a single paradigm or country, but to all of mankind at large. The comments made by both the multinational F&B head as well as the Egyptian plastic factory owner, reflects their heightened understanding on the grave risk that climate change poses, as well as the urgency needed towards action against it. The operationalization of this perception, however, proves more elusive as will be indicated in the following sections.



### *Prioritization of Climate Change in Business Operations*

While the issue of climate change was recognized universally by the private sector actors interviewed, its intersection with their business practices and operations proved to be more complicated-largely correlated by the demographic of the private actor. Multinational company representatives generally expounded upon how being sustainable was a top priority for their operations in Egypt, stemming from the agendas of their respective global leaderships. Such multinationals could be observed to engage in a series of efforts related to reducing emissions, sourcing more sustainable materials, as well as other forms of climate mitigation efforts. For instance, one international company corporate executive indicated:

*Water for example, we have reduced our route water usage in our manufacturing in the last 12 years by 68%...Carbon emission, we've reduced by 37%. OK, some investment is involved, some process change are involved, et cetera. But overall, when I look to the to the outcome and [the company] has five factories in Egypt, so it's you know it's not a small portion, OK, it's actually when you look at the impact on the environment, it's massive. The third one is a waste to landfill. OK, globally, we've set ourselves in 2009, a journey of seven years to achieve 0 waste to landfill globally. Now globally, including Egypt. We've achieved that in 2014. So as we speak, as of 2014, we send zero waste to landfill. We continue on our journey to you know, reduce water usage and carbon emissions.*

*(Multinational FMCG Company VP, March 2023)*

In this case, the multinational FMCG company executive reflects on the various climate mitigation efforts that their company has undertaken in the past period- whether it is related to carbon emissions reduction, eliminating waste to landfill, as well as reducing route water usage. Similarly, another multinational company head had this to say when asked about the efforts their company has taken towards fighting climate change:

*And you know, we we're trying to reduce the plastics that we use as much as we can through different mixes and even now we're planning to launch our own recycled PET. .... And in addition to the plastics to the RPET, we are also working on the plastic collection. So we provide like incentives to workers to the, to the waste pickers, what we call in order to collect more and provide that to recyclers either... So we tried to embed that within our own businesses, even whenever it's possible, we have a net zero targets as well. This is published on our website.*

*(Multinational F&B Company Sustainability and Public Policy Head, March 2023)*

In this case, the multinational F&B company head reflects on their company's efforts within the space of climate mitigation-specifically to utilize recycled plastics as well as incentivize recycling activities. Both quotes mentioned above reflect tendencies of private sector companies to invest in climate mitigation projects within the space of attempting to "go green". When reflected with the various forms of sustainability within the green economy as outlined within the literature, one could observe that the efforts of such multinational companies in Egypt fall under the cleaner production approach (which falls under the weak sustainability) as well as the waste hierarchy approach (which falls between both strong and weak sustainability approaches) as put forth by Loiseau et al. (2016). While the approaches definitely represent positive steps forward, there must be stronger emphasis on solutions catered more towards strong sustainability approaches.

In the same vein, multinational companies in the financial sector operating in Egypt were also observed to prioritize climate change within their operations, both due to their global agendas as well as resulting from the regulations issued by the Central Bank of Egypt (which will be discussed further). Such a prioritization would have to do less with the day-to-day operations of the bank and more with the capital they allot to companies (and subsequently the types of businesses and industries they associate themselves to). One CEO of a global multinational bank indicated that over 50% of their pipeline of new deals pertains an ESG component, that the bank has issued limitations to financing coal, oil, and gas, and that green projects are prioritized for credit allocations (Global Multinational Bank CEO, March 2023). This further reflects that multinational companies operating in Egypt across the variety of sectors can be observed to highly prioritize climate considerations within the scope of their operations.

On the other hand, when looking at Egyptian companies, this prioritization is not as clear cut. Some firms have indicated that going green is a top priority within the scope of their operations, whether it is due to the adverse impacts of climate change on the sector in which they are operating, business-centric aims (such as positioning for export markets), or simply because it is part and parcel of the nature of their work (such as for companies operating within the solar energy industry). A particular case study could be observed with one Egyptian agricultural company which exports its produce to international markets:

*Uh, well, yes. We started becoming aware of the climate issues after we got multiple requests from our export clients specifically in the UK and in the Netherlands, where they requested certain quality certifications which revolve around the social aspect of the cultivation process in the farms and the quality of a production such as pesticide use and something that was newly introduced into the market focusing on the water consumption in our farm.. Upon further explanation we understood that the water crisis that is emerging. Not really in Egypt or Egyptians are not really aware of the water struggle that the other countries such as EU nations are going through. However, that was the start. The spark of noticing the climate change effects on an industry that has been as all this time, which is agriculture.*

*(Egyptian Agriculture Company Export Manager, March 2023)*

For this firm, they were not yet aware of the issue of climate change issues until after it was induced from their export clients, from which then they were made aware of the climate-induced issue of water scarcity that affects Egypt as well as other countries in Europe. This falls in line with international statistics, as according to UNICEF, Egypt faces an annual water deficit of around seven billion cubic meters- with the country in risk of “running out of water” by 2025 (UNICEF, Water Scarcity in Egypt, 2021). Additionally, the European Commission indicated that Europe in 2022 has been suffering from a severe drought affecting many of its regions, that of which has been further worsening and expanding (European Commission, 2022). From there, and based on their export-demand, this firm began to adopt innovations in the “supply chain of agriculture” through utilizing modern technology which provide measurements such as the soil’s carbon

percentage, water usage through irrigation systems amongst others. They are also reportedly working on a new software, dubbed the “supply chain traceability solution” to follow how produce was “cultivated, the fertilizer use, how much pesticides were used, the irrigation factor, how much water rates and all of that” (Egyptian Agriculture Company Export Manager, March 2023). As an agricultural export company, such considerations would be especially relevant considering the potential impact that climate change might have on their final produce output as well as on the quality and quantity of the inputs they use. Thus, this provides a clear exemplar on Egyptian companies’ prioritization of sustainability considerations within their business operations.

However, it was found that Egyptian firms within no clear sustainability mandates or positionings (largely within the industrial sector) did not prioritize heavily green considerations within the scope of their operations. An industrial sector expert provided their input on prioritizing green projects in Egypt:

*I encourage people to do such [green] project but not all project to go in the same line because we want at the same time the traditional industrial project do all products which is out of the Egypt stock which is not in in our country... We should go up in parallel and like I told you part of them is the green and the sustainability and ... the government [should] maintain and give incentive for this OK and at the same time the traditional projects which is doing good products for... our country again.*

*(Egyptian Industrial Sector Expert, March 2023).*

While this could be attributed to a multitude of challenges that will be discussed in a later section, it is important to note that there was a perception that that there are “green projects” and there are normal “industrial projects”, with little room conceptually allotted for transitioning from the latter to the former once they’re in action. Such a consideration as indicated by the industrial sector expert was intimately related to the nature of the energy-intensive industrial projects, believing that shifting the businesses models of such old-school energy firms would be a challenging undertaking on a number of dimensions including the cost of energy (to be discussed in the coming sections) (Egyptian Industrial Sector Expert, March 2023).

This perception of distention between green and industrial projects can be detrimental to the green transition, as it would ultimately limit sustainable practices to a specific relegation of business, leaving traditional businesses to continue with business-as-usual practices that might pose detriments to the surrounding environment.

While there was a clear gap in current green implementations of business actors versus their perceptions on climate change, the majority of business owners believed it was an inevitable undertaking in the near future for the private sector generally in Egypt:

*Actually it's not an option. Maybe it was an option 2-3 years ago now it's not an option because I as I as I told you in the beginning, the whole ecosystem, even the regulators, now they are thinking green.*

*(Egyptian Public Policy Consultancy COO, March 2023).*

This provides an indication that while a number of Egyptian private sector actors have yet to adopt sustainable business practices in the current term, there are positive implications for this to change in the period to come.

### *Climate Change and the Issue of Responsibility*

The issue of responsibility of climate-induced conditions was also a prevalent theme amongst interviewees. While multinational company representatives did not reflect on the issue of responsibility to climate induced conditions, national private sector actors of whom pertained no clear sustainability mandate/positioning perceived the issue of climate change was largely the responsibility of high-emitting developed countries and not developing countries such as Egypt-echoing loss and damage rhetoric presented in in UNEP (2022). To such private sector actors, the issue of climate change is largely an issue to be tackled not by Egypt nor its constituents, but primarily in a collective fashion with a great emphasis on the developed world:

*The United States, China, the Soviet Union, Europe. Has to stop killing us. I really, I..Look. I don't blame our government a lot... I saw Trump fighting. Fighting and retreating from the treaty [you] know. The Paris Agreement.*

*(Egyptian Plastic Factory Owner, March 2023).*

One interviewee- an Egyptian medical supplies factory owner- expanded on such an issue through presenting a particular case with a German business partner of theirs:

*I will tell you a very short story which might be very related to our discussion. I have a very good German partner -a German friend. My German friend, about 10 years ago, he decided to be vegetarian, and he decided to stop flying ... stop driving ... and to make it cleaner for the future if not for him for the future of his children. I was with him two weeks ago, and after COP and we were discussing the outcome of the Russian Ukrainian war and you can simply understand the gap between the talk and discussion about climate change climate protection and what's going on in the ground... So he was very furious for the first time in my life since 15 years I saw him such furious man ... He was... I felt how much he felt that he wasted his time. He didn't talk too much. He was very aggressive, but I understand him.*

*(Egyptian Medical Supplies Factory Owner, March 2023).*

From the perspective of the medical supplies factory owner as well as the plastic factory owner, the geo-political directives and actions of governments of the Global North (such as the Russia-Ukraine war or the United States' momentary withdrawal from the Paris Agreement) could be observed to be working against efforts exerted towards the green transition. As a result, such sentiments increasingly downplayed any efforts towards adopting sustainable business practices within the Egyptian context; as it is simply not an issue propagated by Egypt. Such an argument could be supported by national statistics which indicate that Egypt contributes to 0.6% of global emissions, as per national statistics (CBE, n.d.).

On the other hand, Egyptian private sector companies with clear sustainability mandates/positionalities could be observed to show great ownership to the issue of climate change and emissions reduction on the national level.

*Yes, actually definitely. Our company is working in solar energy, so it is one of the*

*solution especially we are focusing as you know for solving the problem of agricultural sector, usually in Egypt and also some other countries, which is the small form or and also medium format depending on the solar on the diesel generator which is have a huge consumption of fuel and also carbon dioxide emission.*

*(Egyptian Solar Company Owner, March 2023).*

For this Egyptian business owner working in the solar energy industry, their business is evidently contributing solving the emissions problem of the agricultural sector through providing solar solutions to agricultural companies with significant fuel consumption and carbon dioxide emissions (it should be noted that the agriculture sector in Egypt represents 10% of the country's total emissions as per FAO (n.d.).

#### 5.1.2: From Pledges to Implementation: Impact of COP27

##### *Perceptions of COP27*

With regards to COP27, all private actors interviewed were aware of its proceedings- though opinions were mixed when it came to perceptions on the true efficacy of the climate conference in fighting climate change- particularly amongst multinational companies. The multinational company representatives had this to say when asked about their reflections on COP27:

*We had our global CEO here and was his first time here in a number of years and he was amazed by the development here and the opportunity and the focus of the Egyptian government so that NWFE program that you would know well actually kind of crystallized that that view.. so I thought it did a lot to kind of bring energy, effort and focus.*

*(Multinational Bank CEO, March 2023).*

On one end, the multinational bank CEO provided an extremely positive reflection on the proceedings of COP27 and the NWFE program which was launched on its sidelines- indicating that it did a lot in terms of energy and focus and that it highlighted the focus of the Egyptian Government in this respect. Due to their nature as a capital provider, the bank CEO found COP27

to be an opportune event for their bank's engagement (considering that the NWFE program aims to leverage private capital for climate change through bankable projects). On the other hand, the multinational FMCG company top management had this to say on the climate conference:

*OK, we have engaged COP27 to be honest at the skill that might have been, you know, a bit better... Yeah, I'll be very transparent and blunt. Uh, out of disappointment of the actions that were made in COP26 that this is the company's decision to at the level of engagement in COP 27 might have been affected...we expected more to happen. There were lots of, you know, talks, agreements et cetera. But when it comes to action planning between COP26 and COP27, we have not seen much. So this is why we're continuing on our path as a company that's responsible, that has lots of the agenda to fulfill. But at the same time, we're starting to have doubts about...uh translation of whatever agreements that happen in these meetings to reality.*

*(Multinational FMCG Company VP, March 2023).*

It is evident that in contrast with the multinational bank CEO, the multinational FMCG company top management had significant doubts of the efficacy of the entirety of the UNFCCC process; being dismayed at the outcomes presented within COP26 and ultimately skeptical on the execution of the pledges made by countries within these conferences to reality. There was also a lack of consensus on the efficacy of COP27 amongst Egyptian company owners, even within those that have clear sustainability mandates/positionalities as is evident from the following:

*There is some people coming talking well and everything is we follow up the media and everything. But I think it that the effect maybe it is [going] to the big companies not a not for us and [our] sector actually.*

*(Egyptian Solar Company Owner, March 2023).*

*As it was a very honorable event as an Egyptian to have such a global exhibition or a global conference being done in Egypt, I found a lot of press and e media coverage here in the UK... And the main thing that we got out of COP27 was the awareness - the public awareness, in regards to what is climate change? How does it affect the private sector, specifically in agriculture?*



*(Egyptian Agriculture Company Export Manager, March 2023).*

There is a stark difference in perceptions of ownership when it comes to the climate conference between the solar panel company owner and the agricultural company export manager. Where the agricultural company export manager ascribed the event to their identity as an Egyptian and felt a palpable positive outcome from the proceedings of the climate conference, the solar energy company owner felt almost otherized from the proceedings of the conference- feeling that it is not directed at their company size nor sector. The issue of leaving no one behind is a central tenet within the proceedings of the UNFCCC, with the Director of Mitigation at UN Climate Change indicating that “to ensure no one is left behind, countries need just transition and economic diversification policies that are comprehensive, inclusive, and based on social dialogue and stakeholder engagement” (UNFCCC, n.d.). While COP27 had aimed at including all stakeholder interests within the fight against climate change, the proceedings of the climate conference arguably reflects that a deeper effort is needed to cater to a wider audience of private sector actors.

### *Impact of COP27 on Business Operation*

Looking specifically on the impact of COP27 on business operations, there were two main reflections from the interviewees: half of the interviewees felt that that it had no impact on their business operations, and the other half felt that it contributed positively towards their business. In light of the above perceptions on COP27, companies who had positive meanderings on the climate conference also recounted positive implications of the conference on their business operations, including those related to positioning, opening up opportunities for new clients, as well as even providing new opportunities for business development. The following represent some examples of such positive business developments as a result of COP27:

*We collaborated with the governmental entities to eventually develop a 5 MW solar energy project internship to feed the conference rooms of the conference actually so that the conference rooms were actually lit up by green energy and we managed to eventually develop this project and get it up and running and into operation in time which was quite challenging because of the time constraints so we were very proud and happy to contribute to [COP27].*

*(Egyptian Solar Energy Company Director, March 2023).*

*I walked through that Green Zone and there was a number of individual companies there right that have been set up and I was really pleased ...We banked almost every single one of them.*

*(Multinational Bank CEO, March 2023).*

The solar company director leveraged COP27 for business development to further provide solar solutions- their main business offering- while the multinational bank CEO leveraged the climate conference to “bank” companies operating in the green space. This falls in line with Prime Minister Mostafa Madbouly’s aim for the climate conference, as they indicated that the Government aims at through its COP27 Presidency to enhance public-private partnerships, sustainability, green growth and achieve a just transition toward a green economy" (Madbouly in Hafez, 2022). It also reflects that the main aim for such companies within COP27 was their bottom line considerations and not considerations for the climate. Some even indicated that as a result of the increased awareness provided by the climate conference on issues pertaining to the green transition and climate change, there was an increase in the number of green enterprises developing within the Egyptian economy within the past period- such as the number of recycling companies increasing in Egypt (Industrial Sector Expert, March 2023).

For other companies, however, the proceedings of COP27 did not reflect much on their business operations, if at all. This was especially the case with companies operating within the industrial sector actors, as they indicated that COP27 did not affect their company operations in any way. This perceived lack of impact towards their business operations arguably reflected the lack of trust some of the actors had in public climate-based events and initiatives, dismissing them as simply “very nice words and very nice figures” but nothing more. (Egyptian Medical Supplies Factory Owner, March 2023).

### 5.1.3: Awareness and Perceptions on Government Efforts for the Green Transition

#### *Perceptions on Government Communication*

The issue of communication between the public and private sectors arguably represents a significant component of the governmental policies targeting to stimulate private sector activity within the green economy- which in turn largely impacts firms' tendency to adopt sustainable practices as put forth by Crick et al. (2018). To that end, all participants agreed that the Government needs to work harder in improving communication with the private sector. As put forth by the Public Policy Consultancy COO:

*I think they started already to do so, since the preparations of COP 27, but there is a lot of efforts that need to be done. Also, I believe that everyone is working in isolation. It's better if it's like a whole vision and strategy coming from the government.*

*(Public Policy Consultancy COO, March 2023).*

The above statement summarizes a number of grievances from the private sector interviewees, including the need for adopting a streamlined and cohesive modality of communication that clearly and transparently reflects the policies to be taken as well as the trajectory to come for the green transition. It is very interesting to note that there are still calls for a unified strategy from the Government on the issue of green transition, despite that the Government most recently published the NCCS 2050. When asked about the NCCS 2050 specifically, the multinational bank CEO had this to say:

*I think it's aspirational right? You actually got to make it work. Like, somebody's going to drive it .. the devil's the details right, and sometimes too what happens is that there's ,, it's all talk and there's just no there's no meat on the bones.*

*(Multinational Bank CEO, March 2023).*

This reflects that the NCCS 2050, while representing a positive (if “aspirational”) indication on the Government’s plan to tackle the issue of climate change, would need to be accompanied by further details guiding its on-ground operationalization.

While all agreed that the Government needs to generally improve its communication with the private sector, those working in multinational banks indicated that the Central Bank, with its

regular circulars, was actually adept in its communication with the banking industry. As put forth by the Multinational Bank Sustainability Director, the “banks are always engaged in what is happening” (Multinational Bank Sustainability Director, March 2023). A similar positive comment was made on NREA as well by the Solar Energy Director, indicating that “even if [they] have questions or anything [they] go to them and [they] ask them specifically” and that they avail valuable data on their websites which are important for investors within the sector (Egyptian Company Solar Energy Director, March 2023).

### *Awareness and Perceptions on Government Green Initiatives and Incentives*

With respect to perceptions on the existing green initiatives and incentives put forth by the Government towards incentivizing business activity in the green economy, there was a mixed response from the interviewees, largely depending again on their business demographic.

Looking at multinational companies, there was a significant level of awareness on the various government efforts towards the green transition, but it was deemed insufficient and was heavily critiqued for the most part. The multinational FMCG company corporate executive argued that while the Government is “is very serious” and that their “willingness is there” towards transitioning to a green economy, the process itself is “very inefficient” (Multinational FMCG Company VP, March 2023). When asked about the same initiatives and incentives, The multinational F&B head indicated that they “haven’t seen any green incentives so far” (Multinational F&B Company Sustainability and Public Policy Head, March 2023). This indicates that for the multinationals operating in such sectors, they have not benefitted in a business-wise from any of the government’s current undertakings and initiatives.

Multinational financial institutions provided a more positive take on the initiatives set forth by the Central Bank of Egypt towards sustainable finance, with the Sustainability Director of one multinational bank indicating that the banking industry is “well regulated” in Egypt and that as a result of the most recent CBE directives, they now “have to have a carve out inside [their] strategy and inside [their] lending portfolio towards sustainable finance” (Multinational Bank Sustainability Director, March 2023). This sentiment was also shared by the CEO of a multinational bank, who indicated that despite believing that their institution was “far ahead of the

other banks” and that he has some questions on the main provisions of the CBE directives, they generally think that the CBE regulations are “the right way to go” because it places “banks on a level playing field” when it comes to sustainable finance (Multinational Bank CEO, March 2023).

When looking at Egyptian companies with sustainability mandates, there was an appreciation of the Government’s efforts towards establishing the framework for renewable energy. The Solar Energy Director expounded positively on the legal and regulatory framework the government put in place for the development of the solar industry, crediting the Government with “creating a space for companies such as [themselves] to start investing” within the renewable energy field (Solar Energy Director, March 2023). They further expounded upon the “attractive feed-in tariff” provided by the Government to renewable energy investors (Solar Energy Director, March 2023). As indicated by the multinational F&B Sustainability and Public Policy Head, such feed-in tariffs are expected to increase within the coming period, providing positive implications for the renewable energy sector in Egypt.

Additionally, the public policy consultancy COO had a lot to say when it came to the Government’s policies and initiatives, indicating that every Ministry is now looking at amending their regulations to add green incentives, giving the example of the New Waste Management Law, the Prime Minister’s involvement in the preparation of the up-and-coming Extended Producer Responsibility Act (which will include the various manufacturing incentives to encourage green manufacturing), as well as the Smart Green Projects Initiative spearheaded by the Ministry of Planning and Economic Development (Public Policy Consultancy COO, March 2023). Having said that, there was also a grievance expressed by the Egyptian Solar Company Owner that the Government does not offer clear financial incentives nor cashbacks towards incentivizing the business activity of the green economy.

Amongst all the interviews, the initiative which received the most attention by far was the now discontinued Central Bank of Egypt low-interest rate loan initiative for renewable energy projects. The initiative was an important step towards incentivizing private investments within the

renewable energy space for the multinational FMCG company executive, and was a crucial part of the business operations for Egyptian private sector actors working within the renewable energy space such as the solar energy company owner, who recounts that the “initial capital investment of solar energy whatever the business sector we dealing with them, is the big challenge” and thus such an initiative was of great significance in encouraging the uptake of solar energy solutions (Egyptian Solar Company Owner, March 2023). The significance of this past initiative, as well as the challenges that would result from its removal, provides an appropriate segue towards the main challenges and gaps for implementation facing firms within the Egyptian green transition.

## 5.2: Challenges and Implementation Gaps for Mobilizing Private Activity within the Egyptian Green Transition

### 5.2.1: Cost of Adopting Green Business Practices

The cost dimension was one of the most, if not the most, significant barrier towards the transition of firms’ adoption of green and sustainable business practices. As indicated by the interviewees, the cost of sourcing sustainable materials, as well as the cost of utilizing renewable energies is high. When asked whether he would be open to utilizing “green” plastics, the plastic factory owner would always refer to such types of plastic as “it is in the in the dream range, not not practical”, to which they then clarified that if they were to use such types of plastics, they would most likely double their current business costs (Plastic Factory Owner, March 2023). In a similar fashion, the multinational F&B company head indicated that recycled plastics (or RPET) costs 50%-60% more than virgin plastics. Moreover, the multinational FMCG company corporate executive indicated that because their company adopted a strategic decision to source sustainable materials, their company incurs an 8% premium.

This issue of cost is also a major deterrent in the adoption of renewable energies within the scope of business operations. As indicated by the interviewees, the payback period of installing solar energies amounts to a period of 10 years, which would represent a major deterrent for its adoption. Such a long payback period for capital investments within the renewable energy space reflect the significant costs that it would incur on company owners. The Egyptian solar company

owner, in light of this, comments on the industry strategies to promote the uptake of solar cells to potential clients:

*The simple model we negotiate with the client: you will pay something, you will return the this after how many years, then you get free electricity for example 20 years and so on. So this is the only way to convince the people to using the solar energy otherwise.*  
(Egyptian Solar Company Owner, March 2023).

From this quote, we can clearly perceive how the main concern for the Egyptian solar company owner's clientele is not the climate impact that they would be mitigating by purchasing their solar panels, but rather the potential savings they would incur from making the shift to solar energy. Such issues reflect the arguments presented by Ansah and Sorooshian (2019) on how transitioning towards climate-conscious business practices would lead to increased short-term costs for businesses and that such a concern would dominate firms' priorities.

#### 5.2.2: Challenges with Existing Legal and Regulatory Framework

Along with the cost dimension, the legal and regulatory framework challenges represent a dominant bottleneck for the Egyptian green transition as interviewees would constantly reflect on the various legal issues hindering their sustainable business practice. Such legal and regulatory challenges were reflected within the framework of red tape, legal vacuum, as inhibiting regulations.

Looking at the issue of red tape, interviewees reflected on how the existing legal and regulatory framework status quo constrains the green transition. The multinational FMCG company corporate executive reflects on this issue:

*It's... it's very inefficient. Why? It's very inefficient because we're trying to manage it within the current legal framework. OK. Green economy is a completely new, I would say initiative, and if you really want to be a pioneering green economy, you have to start tailoring a legislative system that is pro green economy.*  
(Multinational FMCG Company VP, March 2023).

The comments made by the multinational FMCG company corporate executive indicate that the current legal and regulatory framework is outdated, and doesn't fit the specific, novel nature of the green transition. They further reflected on how the current framework is driving away potential investments:

*You will have someone who's coming forward with a very genuine initiative package. But when it comes to implementation, it has to go through different other bodies and once that happens, everything stops. So people immediately go out and go to different countries, neighbor countries, and they get whatever they like in a 30 minute meeting.*

*(Multinational FMCG Company VP, March 2023).*

Such comments highlight the issue of bureaucratic governmental processes driving away potential investments and has been a recurring theme amongst the interviewees along with the divide between policy direction and implementation. It also reflects that because of such bureaucracies, Egypt is losing out on potential investments to neighboring countries with more enabling business environments. When asked if this issue of bureaucracy is the main bottleneck towards Egypt's transition to a green economy, the multinational FMCG company executive answered "definitely yes" (Multinational FMCG Company VP, March 2023).

Along with the issue of red tape, there was a marked issue pertaining to legal vacuum when it comes to operationalization of sustainable business practices. This was especially apparent within the case of recycled plastics (RPET), as indicated by the chemicals factory owner:

*The non-recycled waste is an issue by the way... Also plastic was one of the initiatives because we have been thinking to go to RPET to have a plant for RPET but this is still very unnatural and this is one of the initiatives which Egypt must or Egypt government must take an action on it because during our business study for RPET recycling testing ... We have been very shocked to know that is still in Egypt there is no regulation or standard specification to allow the buyers to buy the RPET and recycled plastic while worldwide all the countries with no exception we have such they are supporting all the firms and*



*companies with a very clear regulation ... to buy those plastics, but in Egypt we found that there is no rules.*

*(Chemicals Factory Owner, March 2023).*

From the quote, we can clearly observe how despite having the will to penetrate the recycled plastics industry, the lack of clear regulatory framework to govern such practice has been the main reason they were not willing nor able to undertake such a business practice. This concern was also shared with the multinational F&B head, who argued that his company had even lobbied with the Government to regulate RPET plastics because “there was no regulations for locally sourced RPET”, and that this “took [them] like 2 years”, though the governance of the use of such materials is still “unclear” from their perspective today (Multinational F&B Company Public Policy and Sustainability Head, March 2023).

In addition to the issues presented with respect to red tape and regulatory vacuums, interviewees also shared examples of some legal and regulatory frameworks which inhibited their activity within the green economy. Instances of this were highlighted by the solar energy director, who shed light on a number of regulatory systems in place within the renewables energy sector which would actually inhibit the activity of solar companies. The first example of this would be found within the framework for net metering. According to the solar energy director, the new net metering regulations in principle is very robust as it “solves the issue of storage”, but the problem is that the regulators are only allowing free net metering for up to 1 MW. If the company exceeds this capacity, they would be required to pay integration fees, which would make many projects “unfeasible” within the renewable energy sector. Another example presented from their end was that the regulators currently only allow energy customers to contract directly the Government-owned electricity company for net metering projects, where before they allowed a tripartite agreement between the Government-owned electricity company, the solar energy developer, as well as the customer in question. This change as per the solar energy director would limit the ability of solar energy companies for business development.

The aforementioned issues presented within the legal and regulatory space reflect reflects the arguments presented by Bowman and Minas (2019) on how developing countries face the

challenge of attracting private funds for the green transition because of the lack of an enabling legal and policy environment (Bowman and Minas, 2019, Section 4.2.2).

### 5.2.3: Macroeconomic Issues and Uncertainty

*There is a foggy version [for] the future.*  
(Solar Company Owner, March 2023).

Perceptions on Egypt's macroeconomic conditions represented another significant challenge for businesses' green transition, as interviewees expressed that the tight macroeconomic conditions as well as uncertainty on Egypt's coming economic conditions represented significant challenges for their adoption of sustainable practices or investment in the green economy as a whole.

For one, the solar company owner expounded particularly on issues relating to the country's shortage of foreign currency and challenges to importing of foreign capital inputs from abroad. The solar company owner shed light that this represented the main challenge for the renewable energy sector in Egypt, since 80% of the capital inputs of the sector are imported from China, and that as a result of the past import restrictions companies in the sector were faced with high prices of such imports. This led to 50% of the companies that previously operated in the sector were forced to either shut down or shift their practice away from the sector entirely (Solar Company Owner, March 2023). On February 22, 2022, the CBE implemented new requirements that Egypt will only accept Letters of Credit (LCs) in the execution of import operations, with exceptions applying only to multinationals, branches, and subsidiaries of multinationals in Egypt (ITA, 2022). While such regulations were later repealed, the indications of the Solar Company Owner reflect the adverse impacts that such regulations had on Egyptian companies operating within the solar energy industry (and by extension import-reliant Egyptian companies at large).

There was also a concern on the current economic conditions facing the country. The multinational F&B head argued that "the economic situation is not really a clear to anyone" and that the country currently lacks clarity when it comes to its "tax system" and the "currency being available at the banks and how ... to mobilize [it]" (Multinational F&B Company Public Policy and Sustainability Head, March 2023). Concerns over the macroeconomic state of the country

extended towards the consumers as well, as it was deemed unlikely for consumers to spend a premium on products that are sustainably produced because of the “difficult” economic conditions faced by the people (Multinational FMCG Company VP, March 2023). This indicates that a positive and stable macroeconomic environment and outlook are crucial for the development of the Egyptian green economy.

#### 5.2.5: Concerns of Culture and Awareness

In addition to the abovementioned issues, there was a palpable concern on Egyptian consumers’ awareness and culture when it came to being aware of climate change issues as well as purchasing products that were manufactured in sustainable modalities. This issue was particularly expounded upon by the Multinational FMCG Company VP:

*Unfortunately, it’s a very slim and we’ve done this this this exercise, by the way. Unfortunately, the percentage of people who said yes, we’re willing to pay a bit more to that sustainable product did not go beyond 3%. The economic conditions now are very difficult and very different and therefore, in my opinion, even those 3% would be reluctant today to pay anything else because people are struggling on the, you know, to make ends meet and different.*

*(Multinational FMCG Company VP, March 2023).*

The study developed by the multinational FMCG company executive on the Egyptian market reveals sobering realities that a very slim percentage of Egyptian consumers would be willing to pay more for products that are produced in a sustainable fashion. This issue was further elaborated on by both the multinational F&B company head as well as the plastic factory owner, respectively. The multinational F&B company head indicated that a certain multinational F&B company debuted plastic water bottles that were 100% produced from RPET plastic, but it was received with 85% negative comments from customers (Multinational F&B Company Public Policy and Sustainability Head, March 2023). The plastic factory owner, when asked if they were open to using recycled plastics within the scope of their operation, indicated that it would drive them out of the market because Egyptians perceive it as “garbage” and thus won’t feel comfortable purchasing their goods which need to be food-grade (Plastic Factory Owner, March 2023).

Furthermore, they indicated that while there are plastic manufacturers in Egypt who use recycled plastics, the plastic factory owner stated that they are not proud of it, and do not disclose it (Plastic Factory Owner, March 2023).

Echoing the arguments presented by Surminski (2013), such an issue of awareness poses another layer of challenges towards businesses aiming to transition to sustainable modes of production. Without consumer demand for green projects, it would make less business sense to integrate them within operations- thus acting as a disincentive to go green.

### 5.3: Desired Incentives, Initiatives and Market Outcomes for the Coming Period

#### 5.3.1: Desired Incentives and Reforms

In light of the aforementioned challenges and perceptions on Government efforts towards the green transition, interviewees expressed interest a number of potential measures that from their perspective would hasten business adoption of green and sustainable practices. Such desired initiatives and incentives included legal reforms, fiscal incentives and business facilitations, awareness initiatives, as well as infrastructure developments.

#### *Fiscal Incentives*

As interviewees highlighted the issue of cost and difficult economic conditions as one of the main setbacks for their green transition, there was a strong call from interviewees towards implementing palpable fiscal incentives that would entice businesses towards investing in more sustainable modes of production and operation. Such fiscal incentives included calls for subsidies to help finance green technology adoption, tax exemptions, as well as the provision of concessional loans for businesses engaged in green activities. The following are some of the calls made by the interviewees:

*Longer term [loans with] better pricing and what we call initiatives... Scale up startups that have no like a lot of years of experience on the ground and the financials could be a bit maybe easier... [For those] working in green projects, existing large corporates that have a started a process of greening or making a more sustainable supply chain... OK, so*

*whenever there is a green initiative we can of for example, give them a longer tenor of a loan or a better pricing of a loan.*

*(Multinational Bank Sustainability Director, March 2023)*

*Financing of these green solutions would be of great help.*

*(Agricultural Company Export Manager, March 2023)*

*Government [should encourage] green products... green production. For example, we have in Egypt 15% preference to Egyptian companies producing in Egypt, you can add a 5% for green ... Could be an attractive point.*

*(Medical Devices Factory Owner, March 2023)*

In the same vein, the multinational company F&B head reflected what he would like to see in terms of green incentives for producer responsibility. According to them, it would be valuable if the Government provides companies who are part of the upcoming producer responsibility initiative and pay their fees “some sort of like a green seal that you can put on your products” as an in-kind benefit to promote the company’s products or to “reduce the taxes” (Multinational Company F&B Public Policy and Sustainability Head, March 2023). Such calls coincide with the arguments presented Crick et al. (2018), reflecting the important nature of fiscal incentives to kick-start business activity within the green economy particularly amongst SMEs. On the other end, the multinational bank CEO expressed their concern towards over-reliance on incentives- arguing that it could make people less careful when it comes to taking business decisions and that the Government is currently in “no position to pay” any monetary incentives to businesses within the current economic climate (Multinational Bank CEO, March 2023). In this respect, he called for the following:

*I don't think the Government's in a position to help pay but [what] they can do is tax ... the other end right. So, you make one more attractive by actually applying the real cost to society.*

*(Multinational Bank CEO, March 2023).*

In calling for the application of a carbon tax (effectively penalizing businesses with non-sustainable/environmentally harmful practices), the Multinational Bank CEO reflects the points presented by the IMF on the need for carbon taxes to reflect the true cost of non-sustainable/environmentally harmful practices (Ehlers et al., 2022).

### *Legal Reforms and Business Facilitations*

Given the issues pertaining to the existing legal and regulatory framework, interviewees called for legal reforms and regulatory facilitations to streamline business activity within the Egyptian green economy. For one, there was a desire to develop a more cohesive legal and regulatory framework that is free from contradiction. The public policy consultancy COO argued that because the current legal and regulatory framework can sometimes contradict with the Government's aims towards the green transition (such as the examples reflected within the renewable energy industry above) we would need to start with developing the appropriate legal and regulatory framework (Public Policy Consultancy COO, March 2023). The Egyptian industrial sector expert further highlighted the need for legal and regulatory reform:

*[The Government] are so restricted with our laws... [They] are not doing this in [the] proper way... We should be more flexible in laws but here in Egypt... We [have] some laws from more than 50 years and before we are still using till now.*  
(Egyptian Industrial Sector Expert, March 2023).

This sentiment was shared by the multinational FMCG company corporate executive, who put forth that such a legal and regulatory framework tailored specifically to be “pro green economy” (Multinational FMCG Company VP, March 2023). Building on this, the Multinational FMCG Company VP argued that the Egyptian Government needs to reflect their seriousness and commitment through streamlining regulatory barriers hampering investments in the green space:

*When it comes to the mechanics of implementation, usually they're not clear. And when it comes to let's clarify then there are 101 authorities involved. OK. That pushes investors out. Investors want to talk to one entity, one voice, one commitment, one deal.*

*(Multinational FMCG Company VP, March 2023).*

The merits of such a “green one stop shop” has been reflected in OECD (2020), who indicate that one-stop shops have developed as a way for governments to “provide better services and improve regulatory delivery to citizens and business” (OECD, 2020). Overall, when it came to legislation and regulations, the interviewees expressed their desire to be involved in the process to make sure their concerns and realities are reflected within the relevant regulations and legislation. As indicated by the Multinational F&B Company Public Policy and Sustainability Head:

*You need to continue having this dialogue and you need to involve [the private sector] when it comes to regulations and legislative framework. And you need to make sure that you understand, let's say the concerns from the businesses regarding how we can still operate.*

*(Multinational F&B Company Public Policy and Sustainability Head, March 2023).*

Towards operationalizing this concept of including the private sector in the development of legislation and regulation for the promotion of the Egyptian green economy, the multinational bank sustainability head suggested the development of a regular committee with representatives or “champions” from each economic sector as well as high-level Government officials to meet on a regular basis and be tasked with the development of such policy trajectories (Multinational Bank Sustainability Head, March 2023).

#### *Awareness and Capacity Building Measures*

*Number one, if the community is aware, they will push and stress the private sector to do whatever they want.*

*(Plastic Factory Owner, March 2023).*

Given that the issue of awareness presented significant concern for businesses considering the adoption of sustainable practices in Egypt, there was a call from the businesses for the

Government to invest in measures and initiatives to increase Egyptians' climate awareness and build their capacities on issues related to the green transition at large. When asked about this issue of awareness, the Medical Devices Factory Owner indicated that this would lead to “new products” and “new innovations, new ideas, and so on” (Medical Devices Factory Owner, March 2023). The Multinational Bank Sustainability Head was optimistic on the issue of awareness, stating that it has become more prevalent than ever before amongst Egyptian society. From her perspective, however, the Government could do more to raise awareness on the issue through simplified, light-hearted public campaigns (Multinational Bank Sustainability Head, March 2023). This further reflects the arguments presented in Biagini and Miller (2013) on the importance of awareness towards promoting the green economy.

Additionally, there was a desire for the Government to increase the capacity of Egyptian businesses themselves vis a vis their use of technology as well as their engagement in the green economy such as how “to issue carbon credits and begin exporting it to other more developed countries that would pay for these carbon credits” (Agriculture Company Export Manager, March 2023). This reflected the importance private sector actors in Egypt allotted to the issue of awareness: both for their potential consumer base that would ideally pay more for sustainably produced products, as well as for their own capacities to better take advantage of the business opportunities to be presented by the green transition. This affirms the arguments presented in Pauw (2015) on how governments must build capacities of both private and public actors to tackle climate change.

### 5.3.2: Business Expectations and Market Opportunities

When looking at business expectations and future market opportunities, interviewees expressed a mostly positive perception on the business outlook towards adopting sustainable business practices. While there were some concerns on risks pertaining to the cost of adopting sustainable practices along with the concern of consumer awareness, most interviewees agreed that the economy of the future is green:

*[Green] is the language of the coming projects... The language of the coming strategies.*



*(Egyptian Industrial Sector Expert, March 2023).*

Such a positive outlook on firms' transition to sustainable modalities was due in large part to three main themes: expectations on coming business opportunities, environmental cost-driven considerations, as well as apprehensions on foreign market requirements.

### *Upcoming Business Opportunities*

Looking at upcoming business opportunities, there was an acute focus amongst the interviewees on the potential that green hydrogen, green ammonia, as well as solar energy represent for the Egyptian economy. Looking at green hydrogen and green ammonia projects, the Government of Egypt signed in November of 2022 a number of Memoranda of Understanding for such projects valued at USD 83 billion (Cabinet of Ministers, November 2022). On solar energy, the Solar Energy Director indicated that Egypt is “optimally positioned to be one of the best places in the world for solar energy developments” and that the country has “have very good wind resources” (Solar Energy Director, March 2023). It should be noted that interviewees critiqued the current pace and approach the Government is currently adopting towards such opportunities-emphasizing that “we’ll lose that advantage if we don’t get going” towards a “more coherent policy for FDI” else the country will lose such an advantage to Saudi Arabia, the UAE, and “even Oman” (Multinational Bank CEO, March 2023). Despite this, the Public Policy Consultancy COO reflected a positive market outlook for the green economy in Egypt-putting forth that the “momentum is there”, and that “everyone has to start now to look at the current ecosystem and the current regulations, the initiatives and to match-make with his own vision [and] plans and then jump into the projects in the early beginning” (Public Policy Consultancy COO, March 2023).

### *Foreign Market Expectations*

In addition to the upcoming business opportunities, several interviewees cited shifting foreign market expectations and demands as a primary driver for businesses to go green. For one, there was a significant concern that if Egyptian businesses do not adapt their productions to sustainable modalities, they would be barred from export markets. As indicated by the

Multinational Company F&B Public Policy and Sustainability Head, European markets are expected to put forth regulations pertaining to green products, possibly including “sustainable packaging with... certain carbon dioxide emissions...limitation” (Multinational Company F&B Public Policy and Sustainability Head, March 2023). In this vein, he argues that to export to other markets, Egyptian businesses will need to abide by such sustainability regulations- otherwise risking not exporting and not expanding their businesses (Multinational Company F&B Public Policy and Sustainability Head, March 2023). Indications of such demands were put forth by the Agricultural Company Export Manager prior, further affirming the changing foreign export market regulations. Along with export markets, there was an indication that access to foreign capital will be tied to green and sustainability conditionalities. The Multinational Bank CEO provided an example of such novel green financial conditionalities:

*I looked at an energy deal recently where we had to say to the client (and we know the client extremely well like they are well known to us we've been their bank for years and years and years) to do this deal you need a transition plan and we need to see the transition plan and it's got to go to our team of experts in the UK because of the size of the deal and they need to bless it... The company got caught a little by surprise because they were saying “yeah yeah yeah transition plan”: no we need to see it, OK? We need to quantify it. It's gotta have a series of benchmarks. What you're gonna do? And and and they did it... I was... shocked.. I was shocked! I didn't think they'd get it like ... this is an old school energy company!*

*(Multinational Bank CEO, March 2023).*

The energy company case presented by the Multinational Bank CEO presents both the newfound sustainability conditionalities presented by private multinational financial institutions, but arguably more importantly the willingness and ability of Egyptian firms to go green when given the proper incentive to do so- even an old-school Egyptian energy company.

### *Environmental Cost-Driven Considerations*

In addition to the mentioned drivers above, various firms reflected an understanding of environmental cost-driven considerations as a primary rationale on the positive outlook on firms’

transition to green and sustainable modalities. Interviewees highlighted that if firms do not make the shift towards renewable energies, there will be an over-reliance on oil as a source of energy- leading to “economic shocks” and “high inflation” (Solar Energy Director, March 2023). Additionally, there was a concern on water scarcity within the Egyptian context. As per the findings, there was a concern that if Egyptian firms within the agricultural sector do not rationalize their water use in a sustainable fashion, they would be forced to reduce the quality of their crop due to issues of water scarcity- thus prompting such firms to “to do the shift now” (Multinational F&B Company Public Policy and Sustainability Head, March 2023). Such findings further affirm the arguments presented in Ansah and Sorooshian (2019) on how climate change can lead to the disruption of business operations through increased input and material costs.

The findings of this chapter reveal that the private sector in Egypt have various perceptions on the issue of the green transition in Egypt. While all participants have clear awareness towards the issue of climate change, not all have operationalized this within the scope of their business operations. This was largely due to the presence of a number of incumbent challenges, despite participants pertaining a generally positive outlook towards the Egyptian green economy. In this regard, there was a clear consensus amongst participants that the Government of Egypt needs to enact more palpable interventions towards the promotion of green and sustainable business practices that would serve to catalyze the green economy in Egypt.

## **Chapter Six: Conclusion and Recommendations**

### **6.1: Concluding Remarks**

The pressing nature of climate cannot be understated, with global changes being observed in the Earth's climate leading to adverse impacts- particularly to the developing world at large and Egypt in specific due to specific climate vulnerabilities. With the financial contribution of private sector actors within climate adaptation and mitigation projects proving paramount to ensure that governments the world over are able to meet climate challenges, this study aimed to explore the perceptions of private sector actors within the Egyptian context on the green transition, aiming to understand the various opportunities, challenges, and perspectives of private sector actors in Egypt towards ultimately guiding Egyptian policymaking towards a conducive and inclusive transition towards the green economy.

The results of this study proved revealing on a number of fronts, reflecting a number of realities of private sector firms operating in the Egyptian economy vis a vis their perceptions on the issue of climate change and the green transition at large. While all firms were aware of the issues presented by climate change as well as its existential realities, not all firms prioritized nor operationalized such a concern within their business operations. On a closer examination of the reasons behind such a reluctance to transition, firms expressed a number of challenges related to going green- including the cost of adopting green business practices, challenges with a legacy legal and regulatory framework that was deemed inflexible and inefficient, macroeconomic issues and uncertainty, as well as issues with the lack of the general public's awareness on issues relating to climate change along with a culture that is counter-productive to potential sustainability measures relating to using recycled materials. The issue of responsibility of climate-induced conditions was also raised- with some interviewees blaming the developed world primarily for the climate crisis and implicitly extolled themselves of any contribution to the issue.

To address such challenges, interviewees expressed their desire for a number of incentives and reforms. Such expressions reflected in part the inefficacy of the Government's current policies to significantly incentivize firms towards green and sustainable practices despite their being a strong institutional willingness expressed for such a matter. Interviewees called for fiscal

incentives to be provided by the Government as a result of the issues of the cost of sustainable materials, inputs, and difficult economic conditions. There was also a call for the application of a carbon tax to better reflect the true cost of non-sustainable businesses to society. Additionally, interviewees called for legal reforms and regulatory facilitations to streamline business activity-including a more consistent and cohesive legal and regulatory framework, the development of flexible, modern laws that are conducive for the development of the green economy, as well as the development of a green one-stop-shop to further facilitate investor relations in the country. To apply such measures, there was a call for the development of a regular public-private committee which convenes on a regular basis and contribute to the development of pro-business legislation and regulations. Moreover, interviewees called for further government investment in raising Egyptians' climate awareness as well as building the capacities of Egyptian businesses to better engage with the green economy. The mentioned incentives and reforms reflected the arguments presented within the scope of the literature - specifically Agrawala et al. (2011), Biagini and Miller (2013), and Pauw and Pegels (2013). Overall, there was observed to be a great reliance from the private sector's end on the Government to pave the way for a potential green economy: there was little willingness from the private sector's end to undertake such a transition on their own without the extensive support and enablement from the Government. This was especially true for local firms, as multinationals would have to operate based on their global agendas and policies (though they still expressed a deep reliance on the Government to further expand on such initiatives).

While interviewees identified numerous gaps and challenges for their businesses to go green in the immediate and short term, there was a marked positive outlook on the long-term status of the Egyptian green economy to be realized. Such positive perceptions were largely due to expectations on upcoming business opportunities, environmental cost-driven considerations, as well as apprehensions on foreign market requirements. On expectations for the upcoming business opportunities, interviewees were generally confident that the green economy is the economy of the future, and that the sooner firms are able to transition to such sustainable business practices the more returns they would be able to reap from such opportunities. This sentiment remained consistent, despite concerns that the Government needs to move in a faster pace to avoid losing out on potential investment opportunities to neighboring countries in the region. Additionally, interviewees cited the changing foreign export market and capital requirements towards pro-green

requirements, indicating that Egyptian businesses will effectively be barred from accessing European markets and capital if they do not adhere to the required green and sustainable modes of doing business. Moreover, various interviewees displayed an awareness of environmental cost-driven issues as their primary driver for the coming shift to green and sustainable business conduct. Within this paradigm, interviewees argued that firms risk causing and exposing themselves to economic shocks and inflationary effects if they continue an extended reliance on non-renewable energies and if they do not rationalize their water consumption (the latter taking into consideration Egypt's water scarcity and echoing the sentiments expressed in Agrawala et al. (2011) ).

Overall, ushering the green economy in Egypt will depend on a solid understanding and consideration on the varied and diversified nature and realities of firms within the Egyptian Government's public policy trajectory within the upcoming period as reflected within Ansah and Sorooshian (2019) as well as Crick et al. (2018). As profit maximizing entities by nature, it should not be assumed that firms would undertake mass voluntary change in a vacuum, but rather their operations should be influenced by strong, effective, and clear policies which would shape the overall business direction of the country towards a new paradigm of operation that would get Egypt closer to Rao and Baer (2012)'s sustainable decent life. In essence, as the private sector is reliant on the Government to lead the transition- the Government should adopt the main recommendations outlined within the scope of Pauw (2015)- to depend less on political communications that reflect their willingness to fight climate change, and more on hard policies which would spur firms to act sustainably and ultimately grow green.

## 6.2: Policy Recommendations

### *6.2.1: Comprehensive Legal Framework for the Egyptian Green Transition*

Echoing the arguments presented by World Bank (2022), Crick et al. (2018), Bowman and Minas (2019), as well as Klien et al. (2018), along with the interviewees' desires for clear and approachable incentives and legal frameworks in Egypt, the aim of policy recommendations from this study is to develop a holistic legislative framework/law for the Egyptian green transition with a clear and transparent structure. Such a framework would ideally serve to operationalize the main tenets set forth within the NCCS 2050, as while the Strategy is comprehensive in its scope of the

main dimensions of the green economy- it does not put forth an operational road map for its realization. The World Bank (2022) further comments on the need to create an enabling environment to support the transition to a green economy in Egypt. Accordingly, this newfound framework would ideally be tailored specifically for the green transition in mind- especially its time sensitive and opportune nature- and would provide clear directives on the entity responsible, the incentive mechanisms, as well as addressing the legal vacuums.

#### **6.2.1.1: Singular Entity**

The newfound framework would place a singular entity to oversee green investments in Egypt. Based on interviewee concerns and requests for a singular investment entity for investors to communicate with, said entity would be solely tasked with conversing with all potential green investors and would handle all necessary approvals for the incoming investor in question. It would play the steering role called for within World Bank (2022). Such an entity would report directly to the Prime Minister and have its own legal and operational independence to implement and facilitate investments within the potential Egyptian green economy. Additionally, said entity would provide key data relevant for green and sustainable investments in the country- including mapping climate risks and weather forecasts versus key sectors and competitiveness assets along with the development of information systems for investors within the agricultural sector (such as information on water availability, and soil quality amongst others) (World Bank, 2022).

#### **6.2.1.2: Incentive Mechanisms**

The newfound framework would outline the different incentive mechanisms for firms-both monetary and non-monetary. Monetary forms of incentives could include tax incentives, subsidies, as well as concessionary loans for green investments. As the Government had announced that the low-interest loan initiatives will be transferred from the purview of the CBE to the Executive branch of Government under the recommendations of the IMF, this newfound framework will ensure that such loans are to continue for companies operating in the green economy, including renewable energy sectors as well as for the procurement of sustainable materials. Additionally, the newfound framework could introduce novel financial products- such as “disaster risk insurance as

well as loan assistance for recovery and rebuilding”. It could also consider a combination of financing options-including annuity models, viability gap funding, as well as guarantees for scaling up desalination (World Bank, 2022, 59-60).

With respect to non-monetary incentives, such provisions could include facilitated regulatory procedures as well as a requirement for firms to publicly disclose their environmental certifications. The latter (as was indicated by the interviewees) could potentially lead to reputational enhancements for firms, leading to increased business development for such firms.

#### **6.2.1.3: Addressing Legal Vacuums**

This newfound framework would also aim at addressing the legislative and regulatory vacuum that is currently in place towards regulating the use of sustainable and recycled materials in the country, such as the use of RPET and other innovative materials along with the implementation of carbon markets. The latter proves particularly pressing, as the World Bank (2022) argues that the implementation of the carbon market would be of cornerstone importance in alignment with the country’s Nationally Determined Contributions (NDCs) and national development priorities- along with providing much needed certainty to private sector investors seeking to channel funds into carbon credit generating projects (World Bank, 2022). This would provide businesses aiming to penetrate such novel fields with the regulatory affirmation to do so, further boosting investor confidence in the Egyptian green economy.

#### ***6.2.4: Reducing Red Tape***

As indicated by the interviewees, the issue of bureaucratic red tape represents one of the most significant bottlenecks for the realization of the Egyptian green economy, as investors’ time and energy are consumed within a plethora of governmental approvals and processes. To further catalyze private sector activity for the green transition in Egypt, there must be a conscious effort to what the OECD dubs as “administrative simplification” (OECD, 2006), which entail regulatory measures to review and reduce administrative and regulatory procedures (OECD, 2010).



### *6.2.2: Building Clear and Transparent Communication Mechanisms*

Given the central importance of public-private dialogue towards realizing the green economy, it is evident from the interview data that there is significant room for improvement when it comes to the way the Government generally communicates with investors and private actors. While participants were cognizant of the various efforts that the Government is taking within the green transition, there was a general lack of confidence in the Government's commitment to realizing concrete climate achievements. While this could be due to various factors, there was a clear issue of communication reflected by the participants.

Improving communication with private sector actors would build trust relations between both public and private actors and would allow for a greater sense of ownership towards the climate crisis as firms are better informed of the potential opportunities to be realized to transition to a low-carbon economy along with the various challenges that they might face if they adhere to legacy production modes. It would also allow for better business planning and heightened sense of investor confidence amongst the business community as firms are more aware on the public policy trajectories of the Government and are better engaged with the policymakers through a streamlined mode of communication. Building on existing communication hallmarks (such as the ones exhibited by the CBE as well as NREA as per interview data) towards catalyzing activity within the Egyptian green economy, the Government could adopt the following measures:

#### **6.2.2.1: Modernizing Communication Methods**

To further streamline communication between public and private sector actors towards the realization of the Egyptian economy, the Government could begin to modernize its communication modalities- leaving behind outdated mediums of communication (such as the legacy letter system which continues to this day) and doubling-down on the embrace of digital solutions across the entirety of its dealings with private investors. This would lead to a more efficient exchange of information amongst both public and private stakeholders- sending a message to private stakeholders of an agile and approachable Government.

#### **6.2.2.2: Adopt Clear and Concise Language**

A major determinant of the efficacy of communication is the simplicity and accessibility of the language utilized within the form and function of Government communication channels, as the more straightforward and direct the language operationalized is, the more effective it would be amongst the audience it is conveyed towards. This is reflected within Bischof and Senninger (2017), who indicate that the utilization of simple language in the communication of policy directions is more likely to garner public support. In this vein, the Government should always ensure that it employs simple and clear language when conveying key policy directives towards the Egyptian green transition for private sector investors.

#### **6.2.2.3: Increase Transparency**

The importance of transparency cannot be understated within the framework of effective public-private communication. As indicated by the OECD, public sector transparency proves its merit for effective public governance and development as well as for investors (OECD, 2003)- both key tenets in the fight against climate change. To that end, the Government should promote further streamlining of data accessibility through open, facilitated and public channels. This can include but is not limited to climate-specific data, budgets and government spending (Transparency International, n.d.), as well as financial flows amongst others. Additionally, there should be better visibility allotted towards the status of pipeline legislation and regulations, providing the public with early access on the state of such legislative frameworks through open data channels.

#### **6.2.2.4: Adopting a Participatory Approach**

The importance of adopting a participatory approach in policy design, formulation and execution is significant- especially within the framework of climate change. While the fight against climate change will undoubtedly be Government-led, adopting a participatory approach with private sector stakeholders towards mitigating the climate crisis would arguably lead to increased perceptions of ownership and fewer complaints. As private sector interviewees expressed their desire to be included within the framework of designing climate change policies for the Egyptian private sector, the Government should operationalize regular public-private dialogue/feedback sessions on the state and trajectory of the Egyptian green economy, which would include

representatives from the key private sector representatives across the country's main sectors (as was recommended within the interview data).

### *6.2.3: Increased Investments for Awareness and Capacity Building*

Interview data reflected the significant issues lack of awareness on climate change can pose towards the development of the Egyptian green transition, especially amongst the Egyptian consumer base. As consumption patterns are oftentimes the product of social interactions and cultural norms, increased investments in education and awareness on the various facets of the climate crisis can help steer public behavior towards adopting more environmentally conscious lifestyles (World Bank, 2022)- including increased consumption of sustainably-produced materials. Additionally, as the transition to a green economy will “both create and destroy jobs”- demanding a “different set of skills from those available in the economy”- the Government will need to invest in re-skilling and up-skilling within the Egyptian private sector (World Bank, 2022). As many of the new occupations borne out of the green economy will be amongst high-skilled jobs, a completely different set of knowledge and skills will be required from specialized sources (World Bank, 2022). To achieve this, the Government may pursue further public-private partnerships with key academic institutions in the country.

### *6.2.4: Leveraging International Expertise Through Multi-Stakeholder Partnerships*

As advocated by Crick et al. (2018), MSPs can be of great value towards facilitating private companies' ability to adapt to changing climate conditions- promoting the advent of the green economy. As the business landscape of the Egyptian private sector includes the presence of multinational companies and foreign FDI, it would be valuable to leverage their international technical expertise towards designing more impactful and inclusive strategies for green economic growth. Such partnerships can be further complemented by technical assistance from Egypt's multilateral development partners- such as the World Bank, the European Bank for Reconstruction and Development (EBRD), as well as the African Development Bank amongst others- along with the valued contribution of academia and civil society at large.

In conclusion, the findings of this study reveal that private sector companies in Egypt are largely reliant on the Government of Egypt to take the lead in catalyzing the Egyptian green transition through various institutional reforms and incentive provisions. Towards that end, the recommendations presented within the scope of this section aim towards addressing the main grievances of the private sector actors operating in Egypt via promoting a more effective and efficient legal and institutional framework that takes into consideration the on-ground realities and needs of the business community in Egypt while doubling-down on positioning the Government to be more agile in tackling the issue of climate change through an increased emphasis on partnerships and capacity building. This would hopefully serve towards fostering the growth of the Egyptian green economy and positioning the country towards a more prosperous, sustainable future.

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## **Appendix 1: Government Efforts for the Green Transition**

### Country Strategies

#### Egypt Vision 2030

Launched by President Abdelfattah El Sisi in 2016, Egypt's Sustainable Development Strategy (SDS) Vision 2030 represents Egypt's national development agenda towards achieving "sustainable and inclusive development" as well as "balanced regional development" in line with the SDGs and the Sustainable Development Strategy for Africa 2063 (Egypt SDS Vision 2030). Vision 2030 represents the current Government's attempt towards a "unified long-term political, economic, and social vision" that would represent the underlying basis of all upcoming "short and medium term development plans at the national, local, and sectoral levels" (Egypt SDS Vision 2030, page 3). The Strategy is based on three main pillars to be achieved via foreign policy, national security, as well as national policy: the Social Dimension (with a focus on social justice, health, education and training, and culture); the Economic Dimension (with a focus on economic development, energy, knowledge, innovation and scientific research, as well as transparency and efficiency of government institutions); as well as the Environmental Dimension (with a focus on the environment and urban development) (Egypt SDS Vision 2030).

Within the scope of the green transition, the three pillars can arguably be observed to contribute to a transition to a green and circular economy, whether on a direct or indirect manner. Starting off with the Economic Dimension, the Strategy aims by 2030 to transform the Egyptian

economy into a knowledge-based, competitive, balanced, and diversified market economy that is “characterized by a stable macroeconomic environment, capable of achieving sustainable inclusive growth” (Egypt SDS Vision 2030, p. 12). The Economic Dimension also allots a particular focus to the issue of renewable energy, indicating that it aims at transitioning Egypt to be a “renewable energy and efficient resource management leader” and the energy sector specifically to be capable of “forecasting and adapting to local, regional and international developments and complying with SDGs” (Egypt SDS Vision 2030, p. 12). Additionally, the Economic Dimension provides a focus on the production of “science, technology, and knowledge” with such knowledge production operationalized towards facing “challenges and meet national objectives” (Egypt SDS Vision 2030, p. 12). Looking at the Social Dimension, there is a focus on a “high quality education and training system available to all, without discrimination within an efficient, just, sustainable and flexible institutional framework” (Egypt SDS Vision 2030, p. 13). This would contribute to the promotion of the green transition in promoting greater citizen awareness. Moreover, the Environment Dimension allots cross-cutting attention to environmental issues, calling for the integration of the environment in “all economic sectors to preserve natural resources and support their efficient use and investment” (Egypt SDS Vision 2030, p. 14).

In this respect, there is a focus on the positive economic externalities of environmental protection. The Dimension calls for a “clean, safe and healthy environment [which would lead] to diversified production resources and economic activities, supporting competitiveness, providing new jobs, eliminating poverty, and achieving social justice” (Egypt SDS Vision 2030, p. 14). Accordingly, the SDS Vision 2030 outlined 12 main Environment programs to be implemented until 2030- including those that aim towards strengthening water management structures, expanding infrastructure, undertaking fiscal reforms to encourage sustainable consumption, promoting awareness of climate change, enhancing waste management, reducing air pollution, protecting biodiversity, protecting coastal areas, establishing a higher council for sustainable development, as well as promoting policies for private sector involvement in the green economy amongst others (Egypt SDS Vision 2030).

## Key Legislation and Regulations



## Investment Law No. 72/2017

Investment Law No. 72/2017 was officially approved on May 31<sup>st</sup>, 2017 and was entered into force on June 1<sup>st</sup>, 2017. Incentives that are given to renewable projects can be divided into three main types: general incentives, special incentives, and additional incentives (Riad and Riad, 2021).

General incentives include the application of a unified flat customs duty rate of 2% on all machines and equipment needed for establishing the renewable energy project, exemption from the registration fees of the land needed for the project, exemption from the stamp duty tax as well as notary public fees for a period of 5 years from the registration of the company in the commercial register (Riad and Riad, 2021).

Special incentives are designated in the form of tax deductions from net taxable profits, depending on the project location. If the renewable energy project is designated in Zone A (which includes the Suez Canal Economic Zone, the Golden Triangle Special Economic Zone, South of Giza, Port Said, Ismailia, Suez (east of the canal), border governorates including the Red Sea governorate from South Safaga, and governorates in upper Egypt), then such a project is entitled to 50% discount from the project investment costs (Riad and Riad, 2021). If the project is designated in Zone B (which covers all geographic areas other than those stipulated in Zone A), then the project is entitled to a 30% discount from the project investment costs (Riad and Riad, 2021). In all cases the incentive may not exceed 80% of the paid of capital of the project until the start of its operation. To benefit from such incentives, a new company must have been established within 6 years from the effective date of the Executive Regulation (to be ended on October 28<sup>th</sup>, 2023) and must keep regular and accurate books (Riad and Riad, 2021). The use of the assets of any existing company or liquidation of any existing company to create a new company that benefits from the tax deduction is prohibited as per the Law (Riad and Riad, 2021).

Additional incentives provided within the scope of the Law constitute further non-tax incentives that can be granted to renewable projects upon Cabinet decree. Such incentives include the Government bearing the entirety/portion of the cost of attaching utilities to the land allocated to the project after its operation, the Government to share a portion of the cost of the technical

training of employees, as well as the Government to allocate lands free of charge for specific projects it deems of strategic nature (Riad and Riad, 2021).

### Electricity Law No. 87/2015

In July 2015, the Electricity Law No. 87/2015 was issued with the aim of restructuring the electricity sector in an attempt to make it more competitive (Riad and Riad, 2021). The Law ended the single buyer for electricity system and allowed IPPs to sell their electrical production to end users (Riad and Riad, 2021). The Electricity Law created two distinct electricity markets: the first being a competitive market where eligible consumers are allowed to freely choose their electricity suppliers based on bilateral direct agreements and negotiated energy prices, and the second being a regulated market where ineligible consumers are required to pay a regulated tariff and purchase electricity from the distribution companies who will be supplied via a public trader (Riad and Riad, 2021). While the competitive electricity market has not yet been implemented, MOEE in cooperation with EgyptERA and concerned entities are expected to develop a study for the development of the electricity market to be transferred gradually into a fair competitive market (Riad and Riad, 2021). Additionally, EgyptERA is to be restructured as per the Law to be an independent institutional champion who is responsible for supervising, developing, and coordinating between electricity producers, transmitters, distributors, and end users (Riad and Riad, 2021). EgyptERA would become the electricity regulator in terms of licensing, designing and approving tariffs, allotting a separate dispute resolution mechanism, as well as developing a competitive market structure and design (Riad and Riad, 2021). Moreover, EgyptERA has been designated as per the Law towards ensuring a reliable long-term supply of electricity at reasonable prices while preserving the surrounding environment (Riad and Riad, 2021).

### Government-Led Multistakeholder Initiatives

#### COP27 Presidency

On the sidelines of COP27, Egyptian officials held various meetings with foreign governments and international development organizations to secure a number of strategic agreements and initiatives. On November 11th, Egyptian President AbdelFattah El-Sisi met his

American counterpart Joe Biden, where it was announced the US, the European Union and Germany will provide a package of USD 500 million to finance and facilitate Egypt's transition to clean energy. US President Biden also reflected that this investment would help Egypt reduce greenhouse gas emissions by 10% (AP, 2022). Moreover, the Governments of Egypt and Morocco signed a Memorandum of Understanding (MoU) on November 10th to strengthen cooperation on sustainable development and environmental protection. The agreement covers sectors including renewable energy, climate change adaptation and mitigation, coastal zone management, marine pollution control, waste management, biodiversity conservation, environmental education and technology (Anouar, 2022). Furthermore, on November 7th and 8th, President El-Sisi met with the German Chancellor Olaf Scholz on the sidelines of COP27, where they discussed bilateral relations and ways to boost German investments in Egypt, especially in the fields of technology localization, industry and energy – with a particular focus on the green hydrogen sector. In this regard, Egypt and Germany signed nine agreements worth EUR 160 million on November 17th — with most of which will be directed towards climate-friendly projects such as solid waste management, rehabilitation of canals and improvement of irrigation (Arab Finance, 2022).

Looking at the development of green energies, President Abdelfattah El-Sisi met with Norway's President Jonas Gahr Stør on November 8th, where they launched the first phase of a project to establish a major green hydrogen plant with a capacity to produce 100 MW in Egypt's Ain Sokhna on the Red Sea (Kandil, 2022). Additionally, in the presence of both President Abdelfattah El-Sisi as well as UAE President Sheikh Mohamed bin Zayed, an agreement was signed between UAE's Masdar renewable energy firm and Egypt's Infinity Power and Hassan Allam Utilities. The agreement aims to develop a 10-gigawatt (GW) onshore wind project in Egypt, to offset 23.8 million ton of carbon dioxide emissions: equivalent to around 9 percent of Egypt's current CO<sub>2</sub> output. The wind farm will reportedly also save Egypt an estimated USD 5 billion in annual natural gas costs and help create as much as 100,000 jobs (Esmail, 2022). Moreover, President Abdelfattah El-Sisi unveiled on November 8th a new Egyptian-Belgian green hydrogen initiative co-sponsored with Belgian Prime Minister Alexander De Croo. The initiative, dubbed the Global Renewable Hydrogen Forum, will reportedly establish a permanent platform for dialogue between hydrogen-producing and hydrogen-consuming countries as well as the

private sector, organizations and financial institutions operating in this field (Egyptian Presidency, 2022).

Looking at sustainable transport, German railway company Deutsche Bahn (DB) and the Egyptian private-sector company El-Sewedi Electric signed an agreement on November 8th to manage and operate Egypt's first high-speed electric train network. The agreement was signed in the presence of Egyptian Prime Minister Mostafa Madbouly. To note, the contract extends for a period of 15 years, with the option of another 15 year-extension.

### Nexus on Water, Food, and Energy (NWFE) Platform

Led by the Ministry of International Cooperation (MOIC), Egypt's Country Platform for the Nexus of Water, Food and Energy (NWFE) Program- aims to accelerate the national climate agenda through providing opportunities towards mobilizing climate finance and private investments to support Egypt's green transition as part of the National Climate Change Strategy 2050 (MOIC, 2022 and Hamdy, 2022). The NWFE Program is comprised of a total of nine projects under the each of the Water, Food, and Energy pillars: including one energy project, five food and agricultural projects, as well as three water and irrigation projects (Hamdy, 2022). NWFE aims at establishing renewable energy projects, projects that serve towards enhancing small farmers' adaptation to climate risks and increase crop yields and irrigation efficiency. The Program also aims at developing water desalination capacity, establish early warning systems, and modernize on-farm practices (Hamdy, 2022). In parallel, NWFE+ is a parallel project set up towards establishing sustainable transport projects (Hamdy, 2022). During the finance day of COP27, the Government of Egypt managed to secure through multiple agreements and letters of intent (LIO) USD 10 billion for NWFE and NWFE+, with approximately USD 7 billion for NWFE and USD 3 billion for NWFE+ (Hamdy, 2022). Some of the key financiers of the NWFE program include the European Bank for Reconstruction and Development (EBRD), the International Fund for Agricultural Development (IFAD), the African Development Bank (AfDB), the United States, Germany, as well as the European Union (Hamdy, 2022).

## National Initiative for Smart Green Projects

The National Initiative for Smart Green Projects, led by the Ministry of Planning and Economic Development aims to simultaneously develop a governorate level investment map for green and smart projects and link such projects to internal and external sources of funding and investment (National Initiative for Smart Green Projects, n.d.). The Initiative is a competition based on six categories: large-scale projects, medium-sized projects, small local projects (especially those related to women and the Decent Life Initiative), startup projects, development projects related to women, climate change and sustainability, and non-profit social initiatives (National Initiative for Smart Green Projects, n.d.). As indicated by the Government of Egypt, the first round of the Initiative was a success- with 6.200 project applications received, 162 projects selected, and the best 18 projects selected were presented within the framework of COP27 during the Solutions Day (MCIT, 2023). The second round of the Initiative has been announced in March of 2023, with participation open to companies, individuals, as well as public and private agencies. Projects are evaluated based on a number of criteria, including their environmental impact, energy efficiency, renewable energy usage, as well as level of innovation and use of smart technology and the Fourth Industrial Revolution applications (MCIT, 2023). Additionally, the project must have been either implemented or deemed implementable, and must meet the pressing needs of the governorate/introduce an innovative aspect to such governorate (MCIT, 2023).

## National Solid Waste Management Program

In 2012, the National Solid Waste Management Programme (NSWMP) was launched under the Ministry of Environment in support of the Waste Management Regulatory Authority and establishing a “sustainable and integrated solid waste management system” within the four governorates of Kafr El Sheikh, Gharbeya, Assiut, and Qena (NSWMP, About National Solid Waste Management Programme (NSWMP, n.d.). The Programme is mostly financed by bilateral and development partners, including the European Union, the German Ministry for Economic Cooperation and Development (BMZ) through the German Bank for Reconstruction (KfW) and GIZ, as well as SECO (State Secretariat for Economic Affairs) (NSWMP, n.d.). The Programme aims at enhancing the business environment in an environmentally friendly manner within an integrated waste management framework along with restructuring and developing the waste

management sector (NSWMP, n.d.). In achieving such aims, the Programme serves to provide technical assistance related to solid waste management as well as preparation and implementation of the Programme; constructing the infrastructure related to waste treatment, recycling, composting, production of Refuse-Derived Fuel (RDF), transfer stations, and disposal facilities, as well as advising the Government on issues related to waste management and environmental issues towards the implementation of effective waste management policies at the national and Governorate levels (NSWMP, n.d.).

### Infrastructure Developments

To reduce greenhouse gas emissions and mitigate the adverse impacts of climate change, the Government has invested in a number of infrastructure developments for both climate adaptation and mitigation projects. For climate mitigation, the Government has invested in the following sectors (World Bank, 2022):

- **Renewable energy:** Increasing non-renewable energy capacities from 687 MW in 2014 to 3016 MW in 2021 through launching the Benban Solar Park (total of 1,465 MW), Assuit hydropower plant (32 MW), Kom Ombo Solar PV Plant (26 MW), Zafarana Wind Power Plant (542 MW), Ras Ghareb Wind Power Plant (250 MW), and Gabal El-Zeit Wind Power Plant (580 MW).
- **Energy efficiency:** A large-scale transition to energy-efficient lighting systems, which resulted in a 12.8% nationwide reduction in fuel consumption by power stations since 2015.
- **Oil and Gas:** Recovery and utilization of associated gases generated from the crude oil fields, which is an ongoing program with 19 projects.
- **Transportation:** The expansion of the Cairo underground metro system network, including the opening of Stage 4 of the third Cairo metro line. Additionally, it includes the expansion and development of electric railway networks. With regards to buses, the Government introduced a “high-quality bus system” along with electric buses in Alexandria. Additionally, the Government developed EV infrastructure and issued an EV charging tariff.
- **Industry:** Launching eco-industrial park pilot projects to streamline improved environmental and economic performance of industries in accordance to a framework jointly developed by the World Bank, UNIDO and GIZ.

- **Solid Waste Management:** Investments in establishing solid waste management infrastructure in the four pilot governorates (Kafr El-Sheikh – Assuit – Qena – Al Gharbiya) under the Egyptian National Solid Waste Management Programme. In Greater Cairo, the Air Pollution Management and Climate Change Project (2020 – 2026) focuses on reducing vehicle emissions, improving the management of solid waste, and strengthening the air and climate decision-making system.

Looking at climate adaptation projects, the Government has invested in the following sectors (World Bank, 2022):

- **Water resource management:** Extending/rehabilitating canals to reduce irrigation water losses, building protection structures to harvest and store additional water. Concerning wastewater, the Government inaugurated Bahr Al-Baqar, the largest WWTP in the world (5.6 million m<sup>3</sup>/day) and is currently constructing the Al-Hammam WWTP (with a capacity of 6.5 million m<sup>3</sup>/day). With respect to desalination plants, 76 plants are currently in operation, with capacity expanded from 140,000 m<sup>3</sup>/day in 2014 to 750,000 m<sup>3</sup>/day in 2021. By 2050, an initial capacity of 6.4 m<sup>3</sup>/day renewable energy-based desalination plants are expected to be completed.
- **Agriculture and livelihoods:** The Government has lined and rehabilitated 4,447 km of canals, with 4,185 km currently undergoing rehabilitation. The goal is to rehabilitate 20,000 km of branch canals for improved irrigation and drainage service delivery. Additionally, to support the climate adaptation of smallholder farmers in Upper Egypt to climate change, the Government introduced early warning systems, techniques for improving farmland productivity and income, as well as heat tolerant varieties of common crops.
- **Cities and coastal resilience:** Within the area of aquaculture, the Government has established large sea aquaculture systems in coastal governorates. With regards to coastal protection, the Government worked towards enhancing the climate adaptation of the hot spots on the Mediterranean coast under a GCF-funded project in the North Coast and the Nile Delta regions. Sea-level rise: Preparing for sea-level rise by linking land use planning for coastal protection along 100km of coastline and including shore protection along 40 km. Additionally, within the framework of municipal solid waste management, the

Government has reportedly invested in collection and transportation systems, waste-to-energy and recycling facilities, and landfill development including methane capture.

## **Appendix 2: Research Questions**

1. Are you familiar with issues of climate change/green transition? Has your company/clients reacted in any way to such issues?
2. Has your company/clients engaged in any way with COP27? What is your input on such an event within the scope of your business operations?
3. Is being “green”, “sustainable”, or “climate-friendly” currently a priority for your / your clients’ operations in Egypt?
4. Are you familiar with any of the government’s initiatives and incentives to include the private sector in the fight against climate change? What do you think of such initiatives as a private sector stakeholder?
5. Do you think the government is clearly communicating such incentives towards the private sector?



6. What sort of green incentives would you like to see from the government to encourage the private sector to adopt more environmentally sustainable practices/ invest in more climate friendly projects in Egypt?
7. Has there been any changes in market trends that would encourage the private sector to adopt more environmentally sustainable practices/ invest in more climate friendly projects within the past period? What type of market opportunities do you think can appear as a result of the green transition?
8. Do you think that there are business risks associated with moving towards more climate friendly measures within the scope of your operation (for example moving towards renewable energy sources, reducing/eliminating single use plastics, encouraging the use of electric vehicles)?
9. Do you think that there are business risks associated with not moving towards more climate friendly measures within the scope of your operation (maintaining the status quo)?
10. From your opinion, how can the government better integrate the private sector to adopt more environmentally friendly projects and operations?

