Egypt's First Updated Nationally Determined Contributions

EGYPT'S FIRST UPDATED NATIONALLY DETERMINED CONTRIBUTIONS

8th June 2022

I. NATIONAL CONTEXT

Introduction

▪ Egypt ratified the United Nations Framework Convention on Climate Change (UNFCCC) in 1994 to be among the first countries to respond to the threats of climate change as per the equity principle of common but differentiated responsibilities in accordance with the respective national capabilities.

▪ Egypt submitted its Intended Nationally Determined Contribution (INDC) in November 2015 to achieve the global targets set out in the UNFCCC's Paris Agreement. After Egypt signed the Paris Agreement on the 22nd of April 2016 and ratified it on 29th June 2017, the INDC was considered Egypt's first NDC.

▪ This document presents an update to Egypt's first NDC, covering the period between 2015 till 2030. The NDC update is aligned with Egypt's developmental and climate change policies, including Sustainable Development Strategy: Egypt's Vision 2030, the emerging Long Term Low Emission Development Strategy 2050 (LT-LEDS), the National Climate Change Strategy 2050 (NCCS), National Strategy for Disaster Risk Reduction 2030[1], and the National Strategy for Adaptation to Climate Change. In addition to sectoral strategies, such as: Integrated Sustainable Energy Strategy 2035, National Energy Efficiency Action Plan II (2018 – 2022), National Water Resources Plan (2017- 2037), Integrated Solid Waste Management Strategy, and Sustainable Agricultural Development Strategy towards 2030 (SADS 2030).

▪ Egypt submitted its initial, second and third national communications to the UNFCCC in 1999, 2010 and 2016, respectively. Moreover, Egypt's first Biennial Update Report (BUR) was submitted in 2019 and the fourth national communication is underway and expected to be submitted to the UNFCCC by the end of 2024. These reports presented the cumulative adaptation and mitigation measures and envisaged plans to achieve Egypt's commitments under the UNFCCC. Since then, Egypt adopted additional range of actions to respond to the climate change challenges as highlighted below.

1-https://www.preventionweb.net/files/57333_egyptiannationalstrategyfordrrengli.pdf

National Circumstances

▪ Egypt is a developing country, with a fast-growing population of about 102 million as of January 2022. About 95% of the population lives in the Nile Valley and Delta. With an ambitious economic growth outlook, these demographics place considerable stresses on natural resources, employment, infrastructure, education, and healthcare.

▪ The Nile River is the main source of fresh water for Egypt supplying 55.5 billion cubic meters (BCM) per year as per the share agreed by international treaties. Additional marginal amounts are provided from deep non-renewable groundwater aquifers (2.1 BCM), limited rainfall (1.3 BCM), and desalination (0.35 BCM) to increase the total yearly available water resources to 59.25 BCM.[2] The total water needs are estimated at 114 BCM, whereas in order to bridge the gap the country depends on the reuse of the agricultural drainage and treated wastewater equivalent to 21 BCM. Egypt has 97% dependency ratio since its renewable water sources comes from outside its territory, increasing its sensitivity to external influences. With population growth, there has been a sharp decline in the annual freshwater resources available per capita to shrink from 1,972 cubic meters per year in 1970 to 570 cubic meters per year in 2018. It is expected to fall to 390 cubic meters per year by 2050[3] , pushing the country closer to the severe water scarcity threshold. Egypt's water stress levels are at 117%[4] as of 2017 . Climate change impacts, water pollution, and geopolitical factors are expected to exacerbate water stress in Egypt. The climate change scenarios indicate that the Nile inflow at Aswan will decrease as result of the impact throughout the Nile Basin.

2-Ministry of Water Resources and Irrigation Strategy 2050 (issued 2016)
3-https://aps.aucegypt.edu/en/articles/470/water-resources-management-in-egypt-assessment-and-recommendations
4- United Nations Data Portal-Water -SDG6. Egypt file. Available at https://www.sdg6data.org/country-or-area/Egypt

Key socio-economic indicators for Egypt in 2022 (CAPMAS, 2022[5])

Indicator	Value
Population (million), January 2022	102.87
Population growth rate (percentage)	1.36%
Total population density in Egypt (capita per km2) (70.2 capita per km2 in 2005)	103.3
Population density in Cairo megacity (capita per km2)	52,751.3
Urban population as percentage of total population (percentage) (Expected to reach 75% in 2050)	43%
Population below national poverty line (percentage, 2019/2020)	29.7%
pulation below extreme poverty line (percentage, 2019/2020)	4.5%
Unemployment rate (percentage, 2021)	7.4%
Illiteracy rate for 10 years old and above (percentage, 2017)	25.8%
Female	30.8%
Male	21.2%
GDP (2020/2021)	
Billion EGP	6,923
Billion USD (1 USD = 15.617 EGP, Central Bank of Egypt in 30 June 2021)	443
GDP per capita ($)	4,309

▪ Egypt is highly vulnerable to the risks of climate change impacts, where the Nile Delta is considered one of the three extreme vulnerable hotspots mega-deltas directly affected by 2050 according to the IPCC.[6] Estimates indicate that sea level rise (SLR) may reach about 1.0 m by year 2100 which would sink several coastal areas in the Nile Delta, the

5- https://www.capmas.gov.eg/Pages/StaticPages.aspx?page_id=5035
6 -https://www.ipcc.ch/site/assets/uploads/2018/02/ar4-wg2-chapter6-1.pdf

Northern Coast, and Sinai. SLR will lead to the sinking of at least 1% of Egypt's area where most of its residents live in only 5.5% of its total area. Saltwater intrusion from sea-level rise, reduced recharge rates, and higher evaporation rates with increased temperatures will extend areas of salinization of groundwater and estuaries, resulting in a decrease in freshwater availability suitable for drinking and irrigation.

▪ More than 30% of the Nile delta is a lowland area (levels lower than +2.00 m) and faces several risks such as erosion and flooding. About three-fifths of Egypt's food production is secured from agricultural land in the Nile Delta region. Studies anticipate that Egyptian cultivated area will be reduced to about 0.95 million acres (~ 8.2% of the Egyptian cultivated area) by 2030 due to climate change impacts The Delta is expected to lose up to a minimum of 30% of its food production by 2030. Further impact on national food security is expected from the increased frequency of droughts and floods, which consequently lowers productivity of crops and livestock. This will compound the already economically tense and food insecure state of the region.

▪ As to socio-economic impacts, the decreased water allocated for agriculture purposes, that consumes about 80% from the total water budget, will have a negative impact on the livelihoods of more than 25% of the labor force in Egypt working in agriculture activities. This will have a negative impact on the Delta's human settlements and agricultural land, particularly the northern areas bordering the Mediterranean coast. The lost land to the sea, flooded human settlements and agriculture lands, labor migration from marginal and coastal areas, would further aggravate the situation.

▪ Additional pressures are affecting the coastal zones, particularly the Nile Delta, due to impact of the sea level rise and the recurrence of severe storms and other extreme weather events that have increased significantly in Egypt over the last ten years inducing casualties and economic losses. This would negatively impact ecosystems in coastal cities in the Mediterranean Sea, Red Sea, and Upper Egypt, land uses, infrastructure, human settlements, economic activities human health, the reliability and operating costs of water and sanitation infrastructure, and the country's economic activities in general.

▪ Egypt's ambitious macroeconomic and structural reforms since 2016 has stabilized the economy, thus it entered COVID-19 crisis with sizable buffers. Egypt was one of

the few emerging market countries that showed resilience in the face of the pandemic and experienced a positive growth rate in 2020. Still, the adverse repercussions of the pandemic, global economic shocks leading to abrupt increase in food and fuel prices, and other geo-political tensions have undermined this recent progress and threatened the country's ability to access funds to meet its needs. The real growth has declined from 5.6% in FY2018/19 to 3.3% during FY 2020/21.[7] Some sectors continue to severely suffer (such as tourism, manufacturing, and oil and gas extractives) due to imposed restrictions on international travel, decline in demand, and disruptions in supply chains and trade. Moreover, Egypt's foreign debt is ballooning with an alarming $8 billion increase in just three months and increase to $145.5 billion by the end of December 2021.[8] Egypt's balance of payments hit $325 million deficit in second quarter of FY2021/22. The increase in foreign debt is expected to consume almost 45 per cent of total revenues in the new FY2022/23 budget. It has prompted the Central Bank of Egypt in March 2022 to depreciate the exchange rate overnight by around 16% to stem the widening net exports deficit. These soaring inflationary pressures necessitates that the Government further intensifies its poverty reduction efforts. Consequently, all these factors limit Egypt's ambition on allocating future climate investments.

▪ Egypt's vision by 2030 is to achieve a competitive, balanced, diversified, and knowledge-based economy, characterized by justice, social integration and participation, with a balanced and diversified ecosystem, benefiting from its strategic location and human capital to achieve sustainable development for a better life of all Egyptians. Climate change efforts falls within Egypt's path toward sustainable and inclusive development that eradicates poverty and strives to achieve prosperity for future generations. It shall leverage on Egypt's recent success on attaining pro-poor economic growth with the decline in poverty since 2020 for the first time in almost two decades and strengthening social safety nets to reach the most vulnerable. The key sustainability enablers to accelerate the way forward to horizon 2030 are data availability, financing, digital transformation, technology and innovation, legislative environment, supportive cultural values, and population growth

7-World Bank (May 2022) https://www.worldbank.org/en/country/egypt/overview#1 and IMF (July 2021) https://www.imf.org/en/News/Articles/2021/07/14/na070621-egypt-overcoming-the-covid-shock-and-maintaining-growth

8- https://www.cbe.org.eg/en/EconomicResearch/Publications/Pages/ExternalPosition.aspx and https://english.ahram.org.eg/NewsContent/50/1201/465312/AlAhram-Weekly/Egypt/Reasons-behind-Egypt's-debt.aspx

management.[9] In 2021, development partners provided $10.27 billion as support to Egypt in accelerating the achievement of its SDG vision.[10] The collaboration with the international community is pivotal to realize a green and low carbon future.

▪ This NDC update is Egypt's pledge for climate change action up to 2030 anchored and dependent on international financial support, ensuring just transition, and appropriateness to national capabilities.

II. REVISION HIGHLIGHTS

▪ Review of mitigation and adaptation planned measures reported in first NDC and an update provided on progress since 2015.

▪ Additional mitigation and adaptation actions categorized by sector.

▪ Projections of business as usual (BAU) GHG emissions by 2030 for three sectors and quantification of GHG reductions from the implementation of the ongoing and planned mitigation projects.

▪ Information to facilitate clarity, transparency, and understanding reported in the Annex.

III. ACTIONS TAKEN TO IMPLEMENT FIRST NDC SINCE 2015

Egypt faced multitude of development challenges that were further exacerbated by the negative impacts of climate change and the accompanying stress on the national budget, as well as the need to address the economic impacts of the COVID pandemic. Nevertheless, Egypt was still able to embark on a broad range of climate policies and projects as detailed in this document. Thus, it reflects Egypt's ambitious contribution to the global efforts, despite of the country's negligible responsibility for the world's historical GHG emissions.

▪ **Energy Policy Reforms:** The Government launched a comprehensive energy policy reform programme that included energy subsidy phase-out and comprehensive reforms for electricity and oil & gas sectors that were initiated in July 2014 and expected to be completed in FY2024/25. Prior to this programme, energy subsidies constituted 22% of

9-https://sustainabledevelopment.un.org/content/documents/279512021_VNR_Report_Egypt.pdf
10- International Partnerships for Sustainable Development: Engaging for Impact Towards Our Common Future, Ministry of International Cooperation, Annual Report 2021 https://moic.gov.eg/page/annual-report-2021

total government expenditure and 6% of the country's GDP in 2012/13.[11] Between 2014 and FY2017/18, energy subsidies dropped by nearly half to 3.4 percent of Egypt's total GDP and comprised of only 0.3 percent of total GDP in FY2019/2020.[12] The energy policy reforms included substantial renewable energy and energy efficiency programs reflected in the Integrated Energy Strategy 2035.

▪ **Renewable Energy:** Investments in renewable energy were encouraged by the Government of Egypt through multiple policy measures regulated under Renewable Energy Law (Decree No 203/2014) and other supporting legislations. The total installed wind and solar power plants in FY2019/20 are 3,016 MW which is 340% increase from FY2015/16 (887 MW). The total renewable energy (including hydropower) in FY2019/20 is 5,848 MW.[13] The most prominent renewable energy accomplishments in power sector were the launch of Benban Solar Park (total of 1,465 MW), Assuit hydropower plant (32 MW), Kom Ombo Solar PV Plant (26 MW), and Gabal El-Zeit Wind Power Plant (580 MW).

▪ **Energy Efficiency in Electricity Sector:** As part of a national plan to improve energy efficiency in the electricity sector, a set of measures have been implemented on both the supply and the demand sides. Due to the extensive power station maintenance, upgrade, and replacement programs on the supply side, a significant drop in the generation fuel consumption rate has been achieved in FY2019/20. The improvement in electricity generation efficiency when coupled with the electricity generated from renewable sources have led to a substantial decline in fuel consumption for electricity generation in two years from 2017/2018 to 2019/2020.

▪ **Energy Efficiency and Low Carbon Fuels in Petroleum Sector:** The petroleum sector in parallel launched in 2016 Egypt's Oil and Gas Sector Modernization Project where under its Program 4B "improving the energy efficiency within the sector' was implemented. Thirty-one companies succeeded in applying no/low-cost energy efficiency measures. In addition, the project provided capacity building trainings to over 900 of sector employees in the domain of energy efficiency. Furthermore, to support the promotion of cars

11Financial Statements of the State's General Budget for FY 2017/18, Ministry of Finance, Egypt and Breisinger et al. (2019). Energy subsidy reform for growth and equity in Egypt: The approach matters. Energy Policy 129, pp 661-671.
12-Developing Human Capital in Egypt through Energy Subsidy Reforms: A Case Study. World Bank and Baseera, April 2021. https://openknowledge.worldbank.org/bitstream/handle/10986/35533/Developing-Human-Capital-in-Egypt-through-Energy-Subsidy-Reforms-A-Case-Study.pdf?sequence=1&isAllowed=y
13- Annual Report of Egyptian Electricity Holding Company for FY 2019/2020, issued 2021.

operating on low carbon fuels, there has been rapid spread of natural gas car stations that quadrupled in number during the last 18 months to reach more than 850 stations serving natural gas cars nationwide serving 450,000 cars. On a strategic level, the sector's energy efficiency policies are defined through the Petroleum Higher Energy Efficiency Committee and cascaded to the energy efficiency departments that are established throughout the petroleum sector.

▪ **Energy Efficiency on Demand Side:** Numerous energy efficiency programs are implemented including Improving the Energy Efficiency of Lighting and Building Appliances (2010 – 2017), Industrial Energy Efficiency (IEE) Project (2013 – 2018), Solar Heating in Industrial Processes (SHIP) (2014 – 2022), Motor Efficiency Improvement (Phase I: 2015 – 2018, Phase II: 2018 – 2022), and Egyptian Pollution Abatement Project Phase III (2017-2022). This has been supported by the issuance of Electricity Law 87/2015 with specific articles for electricity efficiency and energy management and the Second National Energy Efficiency Action Plan (NEEAP II) (2018/2019 – 2021/2022). Due to the above mentioned programs and measures by electricity consumers, this has led to reduction in electricity consumption in FY2019/20 compared to FY2018/19 despite a growing population and large development initiatives. Energy efficiency improvement measures include market transformation to energy efficient lighting that showed significant drop in electricity consumption that reached 40% in some buildings as well as improved energy efficiency in industrial sector through energy management systems and simple energy optimization measures.

▪ **Low Carbon Transport:** The further expansion in the Greater Cairo underground metro network included the operation of stage 4 of length 11.5 km (Phase I: 2019, Phase II: 2020) of the third Cairo metro line as a progress towards achieving the modal shift to low carbon mass transit.[14] The third line is the first metro to link east and west Cairo and is expected to serve 2 million passenger trips per day.[15] The concept of high quality service buses has been introduced to Egypt targeting car owners to use the newly public transportation system that is integrated with the existing mass transit systems. It is offered by the private sector and is expanding rapidly with more than 200 smart buses linked to mobile applications.

14- https://www.shorouknews.com/news/view.aspx?cdate=16082020&id=a1906c3e-b2c4-4412-a7c5-480b17ba6cf1 and https://egy-map.com/project/المرحلة-الرابعة-من-الخط-الثالث-لمترو-أنفاق-القاهرة
15- http://www.nat.org.eg/english/Line3.html

▪ **Solid Waste Management:** Policy reforms took place with the issuance of Waste Management Regulation Law 202/2020 and its Executive Regulations, Prime Minister Decree 41/2019 on waste-to-energy feed in tariff (October 2019), and Ministerial Decree 49/2021 for mandatory partial replacement of alternative fuels in cement sector (March 2021). In addition to investments in establishing the 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.

▪ **Green Finance:** Mobilizing national and international green finance through multiple mechanisms and initiatives. The launch of the first Sovereign Green Bonds (September 2020) in Middle East and North Africa region by Egypt's Ministry of Finance at a value of 750 million listed in London Stock Exchange to attract foreign investors. Egypt's portfolio of eligible green projects is worth $1.9 billion, 16% in renewable energy, 19% in clean transportation, 26% in sustainable water and wastewater management, and 39% in pollution reduction and control.[16] The Environmental Sustainability Criteria Guideline has enabled the increase of green investments from 15% in FY2019/20 to 30% in FY 2020/21, with projections to reach 50% in FY2024/25. This is complemented by Financial Regulatory Authority Decree 107 and 108 in 2021 that mandates companies listed in the Egyptian Stock Exchange and companies operating in the non-banking sector to submit environmental, social and governance disclosure reports related to sustainability (ESG standards) and to the financial impacts of climate change.[17] Furthermore, availing attractive green finance through public and private financial institutions, notably the Green Economy Financing Facility (GEFF).

▪ **Climate Adaption Action:** Several sectoral adaptation projects have been implemented through pilot projects financed by national and international sources, including: Sustainable Agriculture Investments and Livelihoods Project (SAIL) (2014-2023), Building Resilient

16-https://sis.gov.eg/Story/152324/Egypt-getting-ready-for-issuing-its-first-sovereign-green-bonds---minister?lang=en-us

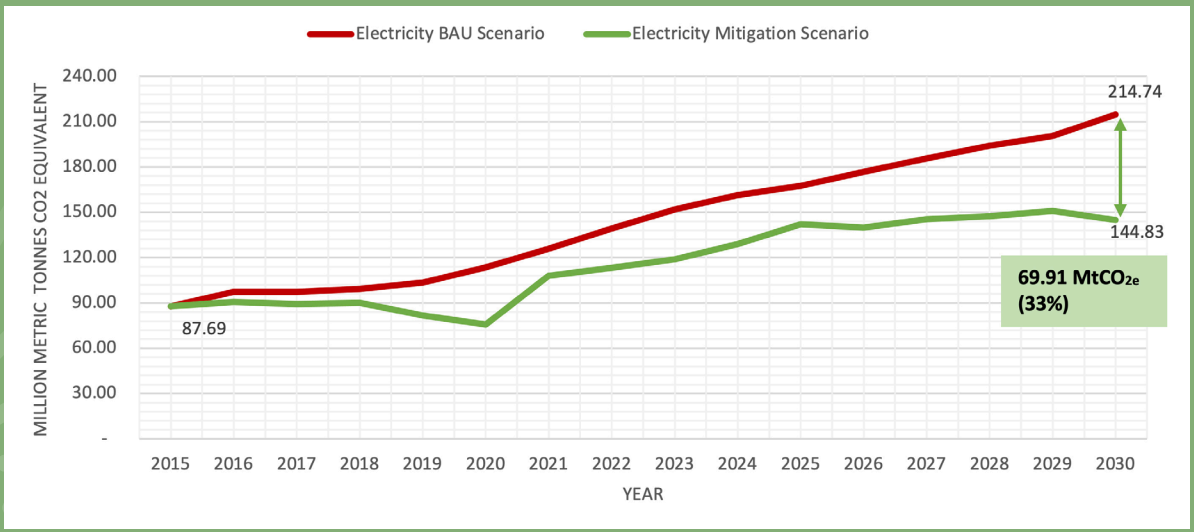
17- https://fra.gov.eg/fra_news/مطالبة-الشركات-المقيدة-بالبورصة-المص/?TSPD_101_R0=72d116e75b09d37570f53ff4d8b2274ak7w0000000000000000817f2ec5ffff-0000000000000000000000000000061407bc1009848fd84

Food Security Systems to Benefit the Southern Egypt Region (2013-2018), Participatory Development Programme in Urban Areas (PDP) (2010-2018), Adaptation to Climate Change in the Nile Delta through Integrated Coastal Zone Management (2009-2017), and Enhancing Climate Change Adaptation in the North Coast and Nile Delta Regions in Egypt (2018-2024).[18]

IV.PATHWAY TO EGYPT'S 2030 MITIGATION TARGETS

Electricity Generation, Transmission, and Distribution

Baseline GHG Emissions in 2015 =	87,694 Gg CO_{2e}
BAU GHG Emissions by 2030 =	214,740 Gg CO_{2e}
Mitigation Target by 2030 =	69,910 Gg CO_{2e}
GHG reduction % compared to BAU in 2030 =	33%



▪ Maximize energy production from local resources and diversify supply, reduce the intensity of energy consumption, and transition to low carbon pathway in the electricity sector, primarily through:

18-"National Adaptation Plans in focus: Lessons from Egypt',' UNDP, link: https://www.adaptation-undp.org/sites/default/files/resources/naps_in_focus_lessons_from_egypt.pdf

▪ Installing additional renewable energy (RE) capacities to reach electric power contribution target of 42% by 2035 as per Egypt's Integrated Sustainable Energy Strategy 2035. By 2030, the share of RE capacities is expected to be about 40%. Reaching the target includes accelerating the scale-up of on-grid renewable energy by reducing coal capacity in the generation mix and replacement of inefficient thermal power plants. This scale-up in renewable energy would necessitate to transform the electricity grid to "smart grid' through modern digital technology, smart metering, and flexible solutions appropriate to the local context and expand on regional interconnections.

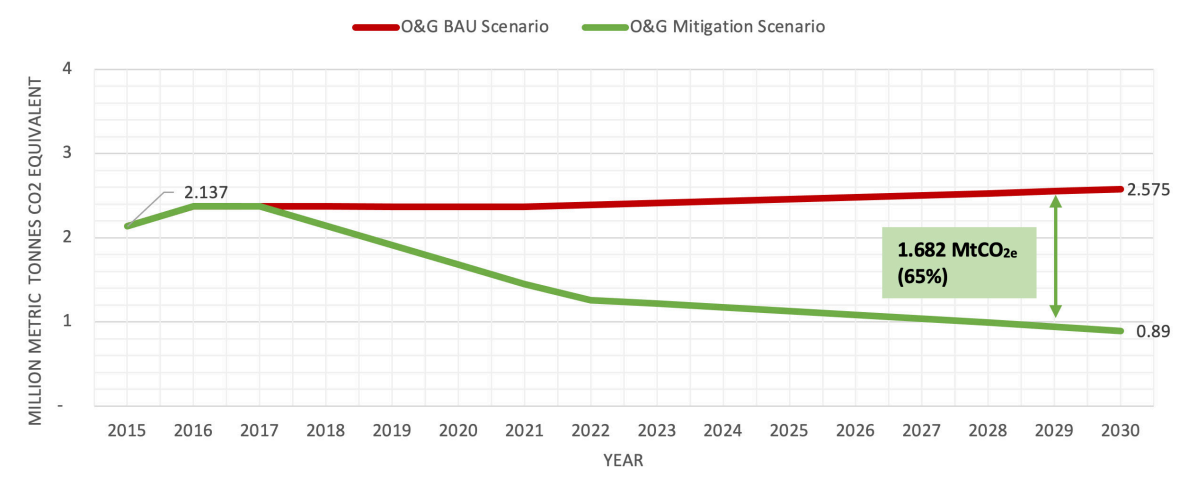
▪ Improve the energy efficiency of electricity generation by the maintenance, upgrade, and replacement programs for obsolete power plants. This includes conversion of simple cycle gas turbines to combined cycle power plants, installation of supercritical steam units, and other measures.

▪ Activation of the role of electricity distribution companies in achieving energy efficiency improvements and promotion of large scale and smalls scale decentralized renewable energy systems for subscribers by implementing Sustainable Energy Action Plans required by the Electricity Law 87/2015.

▪ Improve and upgrade the transmission and distribution networks including Extra High voltage substations, control centers, and smart grids. The transformation to smart grids will contribute significantly to improve electricity efficiency, reduce carbon emissions, and reduce the investment required for infrastructure for electrical networks.

Oil and Gas

For the Associated Gases Subsector:	
Baseline GHG Emissions in 2015 =	2,137 Gg CO_{2e}
BAU GHG Emissions by 2030 =	2,575 Gg CO_{2e}
Mitigation Target by 2030 =	1,682 Gg CO_{2e}
GHG reduction % compared to BAU in 2030 =	65%



Implement an integrated transformative program to modernize the oil and gas sector including adopting energy efficiency and low carbon technologies in the upstream and downstream activities, primarily through:

For the quantitative target for associated gases:

- Recovery and utilization of associated gases generated from the crude oil fields, which is an ongoing program with 17 implemented projects and additional 36 projects planned up to 2030. Instead of flaring, the associated gases will instead be directed to gas processing facilities to produce LPG, natural gas, and condensates.

The following additional measures will be implemented in the oil and gas sector:

- Under the umbrella of Decent Life Initiative's 'Hayah Karima' initiated in January 2021, the sector aims improve the standard of living of citizens through access to clean fuel in households. The natural gas pipelines were already connected to 86 villages. It is planned to extend to additional 180 villages serving 476,000 residents.

- Low investment energy efficiency measures in petroleum companies to reduce 5% of the sector's energy consumption. Moreover, it is planned to conduct energy efficiency audits in two refineries, one petrochemical plant, and two upstream oil and gas facilities. A Voluntary Annual Target has been defined to conserve energy in all operations.

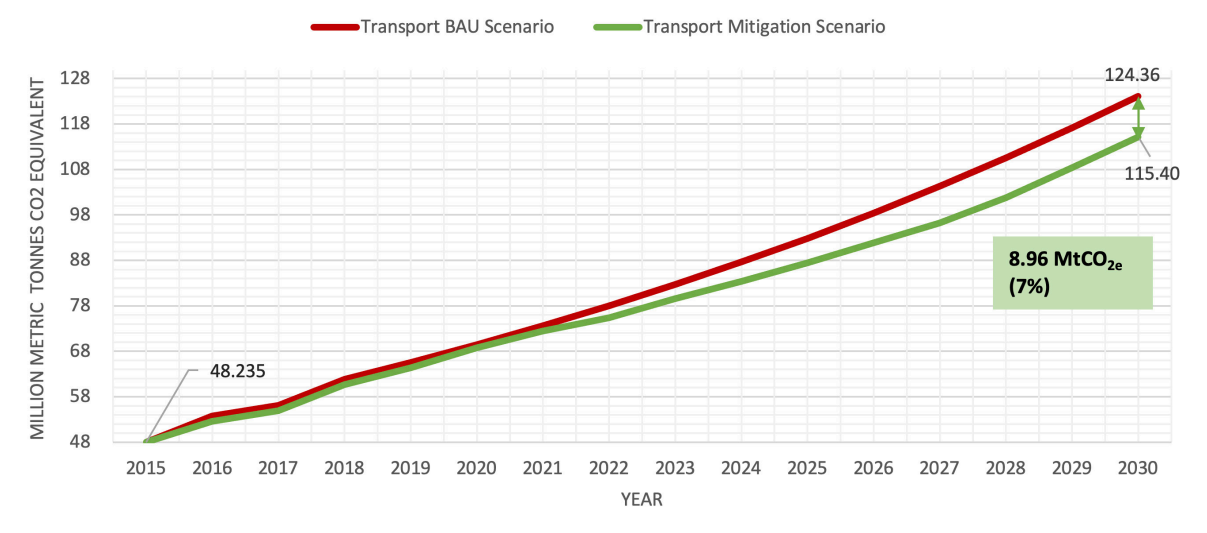
- To avoid the accumulation of plastic waste in the marine and land environment and increase the production of green petrochemicals, two programs are planned. The first program would manufacture 75,000 tons of biodegradable plastic bags annually. The second program aims to convert plastic waste into oil as an intermediary product to produce 30,000 tons of polyethylene.

- To utilize natural resources, it is planned to produce medium-density wood panels (MDF) in Idku city at a design capacity 205 thousand cubic meters annually from 250 thousand tons of rice straw.

- The production of alternative green fuels, such as the extraction of 350,000 tons of algae oil annually for use in the production of biofuels and the generation of 100,000 tons bioethanol annually.

Transport Sector

Baseline GHG Emissions in 2015 =	48,235 Gg CO_{2e}
BAU GHG Emissions by 2030 =	124,360 Gg CO_{2e}
Mitigation Target by 2030 =	8,960 Gg CO_{2e}
GHG reduction % compared to BAU in 2030 =	7%



Since road transport is by far the largest GHGs contributor in the transport sector in Egypt, it is planned to drive low carbon modal shift from private passenger and freight vehicles into mass transit, primarily through:

- The expansion in Cairo metro network through the construction and operation of stage 3 of Line 3 (17.7 km); Line 4 (42 km) that extends from Nasr City, Abbassia and Giza; Line 5 (25 km) that starts from Nasr City passes Heliopolis and ends at Shubra El Kheima;[19] and Line 6 (35 km) that connects Maadi, Old City Centre, Shubra El Kheima. The GHG emission reductions from Cairo metro network includes the rehabilitation of existing lines 1, 2, and 3.
- The development of Alexandria Metro (Abu Qir – Alexandria railway line) and rehabilitation of the Raml tram line. The two projects would transport 61,000 passengers/hour/direction and 13,800 passengersz/hour/direction respectively.[20]

19-Multiple sources: https://www.railway-technology.com/projects/cairo-metro/ ; https://egy-map.com/project/-المرحلة الثالثة-من-الخط-الثالث-لمترو-الأنفاق ; https://www.railjournal.com/news/cairo-metro-line-4-phase-1-systems-contract-awarded/

20-http://www.nat.org.eg/arabic/alex.html and http://www.nat.org.eg/arabic/ports.html

- The operation of New Capital monorail at the length of 56.5 km (22 stations) and 6th October monorail at the length of 42 km (12 stations).[21, 22]

- The operation of the Light Rail Transit (LRT) electric train (Al Salam – 10th of Ramadan – New Capital) at the length of 103 km (19 stations). In addition, operation of the rapid electric train (Ain Sokhna – New Capital – Borg El Arab – Alamein – Matrouh) at the length of 660 km (20 stations). Others include the rapid electric train (6th October – Luxor – Aswan) at the length of 925 km (28 stations), the rapid electric train (Luxor – Qena – Safaga – Hurghada), and the rapid electric train (West Port Said - Abu Qir).[23]

- The transformation of public buses to operate on lower carbon intensive fuels (i.e. natural gas), efficient routes through the adoption of Bus Rapid Transit (BRT) systems. Moreover, the encouragement of use of bicycles and construction of designated lanes and other infrastructure.

- Implement the National Road Project that aims to develop new roads of 7,000 km length to sum up the total roads network to 30,000 km and upgrade 10,000 km of the current road infrastructure. Moreover, establish 34 new road axes on the Nile, construct 1,000 bridges and tunnels, construct paved roads within the governorates, and utilize modern asphalt recycling technologies to reduce environmental impacts. This would improve interconnections between cities and decrease commuting time and fuel consumption for road vehicles.

- Greening of the civil aviation sector through introducing 2% biofuels to airplanes, convert passenger buses and other vehicles to operate on cleaner fuels, install PV in airports and improve energy efficiency of its facilities, and other resource efficiency measures.

21 -http://www.nat.org.eg/arabic/10thTrain%20more1.html and http://www.nat.org.eg/arabic/10thTrain%20more.html
22-https://egy-map.com/project/مونوريل-الأسكندرية
23-http://www.nat.org.eg/arabic/phase3.html

Industry

Decarbonize the industrial sector by reducing the energy intensity, use of renewable and alternative fuels, and low carbon process improvements, primarily through:

- Implement measures in the low carbon roadmap for the Egyptian cement industry including alternative fuels partial substitution, lowering the clinker content in cement up to 80% conditional on meeting relevant national standards, and energy efficiency improvements. Ministerial Decree 49/2021 for mandatory partial replacement of alternative fuels in cement sector was issued in March 2021 by the Ministry of Environment as supporting policy measure. The cement sector has already started using alternative fuel at a share of 6.4% in 2015 to replace a percentage of the coal used as the main fuel for the thermal energy. Furthermore, it is planned to decrease the average specific energy consumption from 3710 to 3540 MJ/ton cement.

- Enhance electrical and thermal energy efficiency in other resource-intensive sectors and with SMEs. The energy-intensive industries represent 68.47% of the total energy consumption of the industrial sector, while SMEs account for 11% of the country's total electricity consumption.[24] The decrease in the average specific thermal energy consumption by 10% for three energy intensive industries (iron and steel, fertilizers, and ceramic tiles industries). Furthermore, increase the share of solar heating in the industrial processes of relevant sectors and promote roof-top PV systems. The industrial process heat represents 23% of the energy consumption in the textile industry, 33% of that in the food industry and 7% in the chemical sector in Egypt.[25]

- A stand-alone motor system optimization programme has been initiated to replace old inefficient motors with IE3 or higher motors in industrial plants to achieve savings in electrical energy consumption. It was complemented by the issuance of Ministerial Decree #463/2020 in October 2020 by Ministry of Trade and Industry to mandate producers and importers of electric motors to comply with the Egyptian specification for minimum energy performance standard (MEPS).

24-Second National Energy Efficiency Action Plan (NEEAP II), 2018/2019 – 2021/2022 (Chapter 9).
25-UNIDO Project Document for Utilizing Solar Energy for Industrial Process Heat in Egyptian Industry. Link: https://open.unido.org/api/documents/3080549/download/CEO%20Endorsement%20(GEF%20Project%20Document%20120073)

- Apply sector-specific process improvements, such as the transformation of the charcoal sector from traditional open pits into mechanized kilns. The Ministry of Environment has started the transformation strategy in 2016 by banning charcoal exports and forcing the charcoal producers to develop compliance action plans (CAP). Moreover, replace feedstock with green hydrogen to produce green ammonia and transition towards low carbon nitrogen fertilizer production.

- Promote eco-industrial parks concept to scale up resource efficiency through intra-firm exchanges, improvement of economic, environmental, and social performances of businesses, and creation of green industries (such as recycling and renewable energy) towards an inclusive and sustainable industrial development.

Buildings and Urban Cities

Promote sustainability in existing and new buildings and urban developments towards adopting low carbon standards and programmes, primarily through:

- Promoting the use of renewable energy and energy efficiency in existing and new establishments and rank sustainability interventions in accordance with national priorities. This includes installation of rooftop PV panels for electricity generation, 5,300 solar water heaters, and expand the use of LED lighting in residential sector by 2030.

- Expanding on energy efficiency labels and specifications for appliances programme, elimination of non-energy efficient equipment, and raising awareness among consumers on purchasing alternative energy efficient home appliances.

- Promote green buildings by activating the energy efficiency codes for new buildings, adopting procedures for the renovation of existing buildings to meet energy performance standards, adopting voluntary green buildings guidelines, and roll-out incentives to encourage the use of best available technologies for sustainable buildings. Energy Efficiency Building Codes for new residential buildings and for commercial and government buildings were first developed by the Housing and Building Research Center (HBRC) and then enacted by ministerial decrees issued

in 2005, 2009 and 2010. It is planned to develop 16,960 residential units according to green building standards by 2030 and increase awareness and community participation on sustainable buildings.

- Increase green spaces and sustainable parks in new cities that are irrigated with treated wastewater to act as carbon sinks to improve quality of life for citizens and reduce negative health impacts. Furthermore, increase the per capita share of public green areas in existing cities, such as Ahl Masr Walkway and Ain Hayah project.
- Adopt the National Active Mobility Strategy to encourage citizens to use bicycles and walking in designated paths, and shift gradually to electric vehicles using clean energy sources and the establishment of the necessary infrastructure inside cities.
- Installing energy efficient and/or solar-operated street lighting and advertisements in internal roads and in highways between cities.

Tourism

Strive towards low carbon touristic developments and greening of hotels and resorts, primarily through:

- Promoting the use of renewable energy, such as solar PV power plants, solar water heating for domestic uses and for swimming pools in touristic hotels and resorts, and solar water desalination.
- Implementing energy efficiency improvements through LED lighting replacements, improved building envelope, employing efficient heating, ventilation, and air conditioning (HVAC) systems, efficient water pumping, and influencing the behavior of the hotel guests towards energy efficiency.

Waste Management

Integrated waste management to improve the efficiency of the system across the value chain and valorization of waste through materials and energy recovery to decrease amount of waste directed to landfilling, primarily through:

- Attracting investments in upgrading the solid waste management infrastructure in all governorates to improve collection efficiency from 55% to 95% by year 2025 and increase recycling and energy recovery rates. This entails establishment of fixed and mobile transfer stations, rehabilitation and new construction of mechanical and biological treatment (MBT) plants to utilize at least 60% of the collected waste, and closure of uncontrolled dumpsites to be replaced with sanitary landfills but not to exceed 20% of the collected waste by 2025.
- Increase waste-to-energy contribution in solid waste management up to 20% of collected waste by 2026 through utilization of waste as alternative fuel in cement sector, waste to biofuels, and installation of 300 MW[26] to generate electric power through incineration, pyrolysis, and other modern technologies.

26-Prime Minister Decree 41/2019 on waste-to-energy feed in tariff (October 2019).

- Expand the coverage of municipal and industrial wastewater tertiary treatment infrastructure and rehabilitate existing facilities, utilize treated wastewater and grey water, and recover sewage sludge for recycling and energy use. At present, the 409 municipal wastewater treatment plants attend to only 59.7% of the country's population, which covers 90% of urban areas and 12% of rural areas.[27] Recently Bahr El Baqar, one of the largest agricultural drainage and wastewater treatment plant of its kind worldwide, was inaugurated in Port Said with production capacity of 5.6 million cubic metres per day to recycle and reuse the drainage water that flows along the Bahr Al-Baqar drain to be used in reducing the gap for agricultural irrigation (September 2021).[28] It is planned to construct 215 water treatment facilities (design capacity of 4365 thousand m3 daily) and sewage plants of total design capacity of 7250 thousand m3 daily under three phases by 2030.

V. CONTRIBUTION TO CLIMATE CHANGE ADAPTATION

Water Resources & Irrigation

Rehabilitation of 20,000 km of irrigation canals for agricultural climate resilience (Beneficiary: 60 million people) Renewable water desalination of 4 million m3 daily (Beneficiary: 33 million people)

The adaptation policy actions and measures in water resources and irrigation are planned to address both the expected decrease and increase of water flows in the Nile River resulting from water shortages due to climate change and flash flooding, primally through:

- Water conservation measures in agriculture, industry, and municipal supplies. This includes lining of 20,000 km of irrigation canals to reduce water seepage and evaporation losses and rehabilitation of drainage systems in the agriculture sector. It would be complemented by enacting programs for upgrading water quality and sanitation to minimize pollution and public awareness campaigns for the participation of citizens in water use rationalization.

27- https://www.hcww.com.eg/الشركة-القابضة-لمياه-الشرب-و-الصرف-الص2/ and https://www.tandfonline.com/doi/full/10.1080/02508060.2021.1921503
28-https://english.ahram.org.eg/News/423833.aspx

- Development of non-conventional water resources to compensate for the increased demand in drinking water, targeting a total design capacity of 4 million m3 daily for water desalination. This includes the use of renewable energy (solar and wind), in addition to the construction of infrastructure to protect citizens from flash floods (i.e. Sinai, Red Sea and Upper and Middle Egypt), and catchments for rainwater harvesting and its use whether in irrigation or recharge the local aquifers.

- Expansion in the reuse of agricultural drainage and treated wastewater and the construction of mega projects treatment plants, such as Bahr el Baqar, Mahsama and the ongoing Hammam Plant in West Delta with total amount of reused water to reach approximately 14 MCM daily.

- Strengthen cooperation with Nile Basin countries to promote efficient use of water resources in an integrated and harmonious manner that would benefit all the countries.

Agriculture

Adaptation of crop production in the Nile Valley and Delta (Beneficiary: 10 million people)
On-farm irrigation in old lands (Beneficiary: 6 million people)
Modernizing on-farm practices for climate resilience (Beneficiary: 1.75 million people)
Crop yield increases from 10-15%

The adaptation policy actions and measures in agriculture are planned to develop flexible agro-economic structures efficient in land resource management, focused on agricultural inputs and production, and enable climate change data monitoring, primally through:

- Use of modern surface irrigation techniques for 4 million feddans, increasing the efficiency of current agricultural water use by 20%, changing cropping patterns to more tolerant crop species, and soil maintenance and protection of land from degradation.

- Preserving and expanding the biodiversity (genetics, species, or ecosystems) of strategic crops and livestock varieties and introduce new traits (i.e. heat and salinity tolerant, water conserving, pests) under the use of breeding programs in order to maximize production efficiency under the expected extreme climatic conditions in the most vulnerable ecosystems.

- Protection of livestock, poultry, and fish and the development of prevention and immunization programs. Close the feed gap by introducing new techniques for producing non-traditional animal fodder of higher nutritional value as a source of energy, fiber, and protein.

- Review of new and existing land use policies and agricultural expansion programs to consider possibilities of land degradation in affected areas resulting from the Mediterranean Sea level rise. Altering agricultural systems or lands to adapt to new climate conditions, such as the waterlogged lands at the north of the Delta wetlands.

- Building an effective institutional system for crisis and disaster management for agricultural areas by strengthening the capacity of monitoring, forecasting, analysis, establishment of an early warning systems, and dissemination at the national level and exchange information at the regional level. Conducting economic risk assessment studies of climate change in different agricultural areas and vulnerability of rural communities.

- Support small farmers in adapting to climate change through the multi-stakeholder engagement approach (i.e. farmers, civil society, agricultural extension, agricultural cooperatives and others), capacity building in the resource management of their land (i.e. soil, water, fertilizer and outputs), and promote use of traditional knowledge and nature-based solutions.

Coastal Zones

Adaptation of the Northern Delta affected by Sea Level Rise (SLR) (Beneficiary: 10 million people)
Natural protection of Rosetta shoreline using the sand motor (Beneficiary: 4.25 million people)
Integration of coastal protection in 3 Egyptian Mediterranean cities (Beneficiary: 6 million people)

The adaptation policy actions and measures in coastal zones are highly site-dependent which adopts accommodation and protection approaches to the risks resulting from climate change such as sea level rise and extreme weather events, primally through:

- Develop a climate resilient Integrated Coastal Zone Management (ICZM) Plan for the North Coast of Egypt that links land use development plans with the costly coastal protection works over the next 10-15 years.
- Structural and architectural interventions of conventional and unconventional engineering protection work (i.e. maritime walls, submersible barriers, soil fixation), artificial nourishment with sand to compensate for the erosion of beaches, and construction and reinforcement of anti-flood protection structures to protect lives, properties and economic activities for vulnerable populations.
- Reinforcement of nature-based solutions for land protection through sand dune stabilization by the cultivation of wild plants and wooden barriers and preserving natural defense lines against sea encroachment during storms.
- Strengthen the implementation of good fishing practices in both the Mediterranean and the Red Sea to protect marine life and its ecosystems.
- Avail relevant information for effective planning and implementation including detailed studies on the effectiveness of the proposed adaptation measures and Decision Support Tools.
- Capacity building and enhancing national partnership for the effective management and response to climate change associated risks and disasters coupled with long term monitoring of changes in the sea and early warning system to minimize the impacts of extreme weather events.

Urban Development and Tourism

Protectorates to cover 17% of the national marine and wildlife areas
Sustainable parks in new cities from 5 to 20 feddans

The adaptation policy actions and measures in urban development and tourism is combination of soft and hard interventions, primally through:

- Directing city planning and architectural design towards meeting the requirements of green architecture and construction, and climate resilience including response to risks from climate change impacts (i.e. heat stress, floods), and the replacement and renovation of old houses in urban and rural areas including informal housing.
- Review of the road network to determine potential areas vulnerable to flooding, redirection of floodways away from roads, construction of obstructive dams to slow down the flow of floods, protection and diversion dams to direct floods to the main drainage basins, and construction of bridges over waterways to allow floodwater to flow unimpeded.
- Assessing the degree of fragility and vulnerability of touristic sites, marine and wildlife protectorates, and sites of archaeological value, orienting tourism growth away from environmentally sensitive areas, and implementation of integrated environmental management systems in touristic sites.
- Maintain and expand the protectorates to cover 17% of the national marine and wildlife areas with at least 5% constituting coastal areas.
- Developing monitoring system for the expected impacts of climate change and encouraging and supporting civil society organizations to participate in applying strategic operational policies in touristic locations.

Other Adaptation Measures

Establishing an early warning system (Beneficiary: 30 million people)
Resilience for most vulnerable and marginal regions (Beneficiary: 5 million people)

- Develop weather forecast and early warning systems to provide citizens with information for time-sensitive actions to reduce injury, sickness, and deaths.
- Raise the efficiency of the health care sector to deal with climate change and increase awareness on pro-active health measures to limit risks and confronting crises and disasters on both political and community levels.
- Promote scientific research and demographic studies to identify population groups that are most vulnerable to the impacts of climate change and effective means for support. Assess the impact of climate change on biodiversity in vulnerable and protected areas.
- Integrate to the educational curricula of schools and universities content on climate change.

VI.MEANS OF IMPLEMENTATION

Policy Mechanisms and Institutional Arrangements

- The National Climate Change Council (NCCC) was founded in 2015 through the Prime Minister Decree No.1912 (later amended by the Prime Minister Decree No. 1129/2019) as the national authority in Egypt concerned with climate change. The members of its Supreme Committee are represented across the relevant line ministries headed by the Egyptian Prime Minister.
- The Ministry of Environment (MoE) was established in 1997 by Presidential Decree no. 275/1997 and its policies are executed by the Egyptian Environmental Affairs Agency (EEAA). The Climate Change Central Department (CCCD) in the EEAA is the technical secretariat to the NCCC and focal point to the UNFCCC and coordinates climate efforts with relevant ministries and governmental entities. Furthermore, the planning and implementation of climate measures follows participatory approaches

through collaboration among government, private sector, civil society, academia, media, international community and other concerned stakeholders.

International Agreements

- Egypt adopts a coherent approach in addressing climate change, biodiversity loss, and land and ecosystem degradation. Egypt is a party to the three Rio Conventions (UNFCCC, CBD, and UNCCD), and recognizes the interconnectivity between them particularly with regards to adaptation and resilience, in addition to Montreal Protocol and chemicals conventions, among other multilateral international agreements.

Capacity Building and Technology Transfer

- Building a strong foundation for the planning, implementation, and reporting of national climate actions requires adequate institutional, technical, and financial arrangements. In this context, several gaps should be addressed through capacity building and technology transfer.

- Egypt has a strong climate institutional set-up is in place, but it is constrained by the limited resources and incomplete supporting legal architecture. The CCCD requires substantial financial and human resources to achieve its mandate, cooperate effectively with national partners, implement capacity building programs, and establish robust information systems to address the challenges of climate change.

- The national climate reporting relies mainly on donor-funded projects and contracting consultants on an ad-hoc basis to prepare the reports required under the UNFCCC. To sustain these efforts and scale up the implementation of mitigation and adaptation measures across Egypt, the proposed MRV system should be institutionalized (refer to Section VII). The relevant ministries should establish climate change unit and/or assign employees to be responsible for climate data collection. Moreover, CAPMAS, the national statistical agency, to expand its environmental unit to include a Climate Change GHG Unit to aggregate climate data from the ministries in coordination with CCCD. A technical support working group could be formed from consultants and

experts to provide support to CCCD, CAPMAS and ministerial units and design the data collection forms. For capacity building requirements, data management training (collection, analysis, archiving, and QA/QC) is required for the full-time employees within CCCD, CAPMAS, and ministerial units. The additional requirements include the legal instrument to mandate CAPMAS to report climate data to CCCD.

- Technology, research and development, and innovation play an important role in pursuing ambitious climate actions. Egypt's ability to implement climate action is highly constrained by the availability of appropriate technologies. Support is required to deploy climate-friendly technologies (such as energy storage), build administrative capacities, and supportive legal frameworks. Climate know-how should be freely-available as a global public good to collectively fast-track the transition towards the 1.5-degree target of Paris Agreement. Furthermore, secure and diversify the supply of critical components and raw materials required for climate technologies (such as renewable energy), which are currently concentrated in few countries.

- Increase investments in climate projects through the creation of innovative operational models within the local context for partnership between government, private sector (i.e. manufacturers, tech companies, suppliers), development organizations financial institutions, NGOs, and research and educational institutions. Encourage youth to participate in the green transition through skills training, research and innovation, and incentives. Furthermore, facilitate access to business incubators and accelerators to support green entrepreneurship and link to creative financial instruments.

Financial Support

- The financial resources required to implement the updated NDC up to 2030 is estimated at minimum USD 246 billion. The mitigation interventions require USD 196 billion and the adaptation interventions require USD 50 billion. The financial estimates are derived from the required upfront capital expenditures to implement mitigation and adaptation programmes, capacity building and technology transfer, and the human resources needed to implement the actions. The actual

implementation of these mitigation and adaptation measures are conditional on the provision of adequate, appropriate international finance through highly concessional finance and grants as appropriate.

- Egypt is committed to meet the sustainable development goals under its Vision 2030 and the government has already mobilized significant investments from its local public and private resources. However, the Egyptian national efforts alone will not be sufficient to fulfill the country's aspirations described in this updated NDC to contribute to the international climate change GHGs reduction targets. Therefore, Article 9 of the Paris Agreement, which states that developed parties shall provide support to developing countries, should be enacted. The required finance could be disbursed through international and regional development partners, funds, and investors in multiple types of financial modalities and channels, such as blended finance, green bonds, and grants.

Description	**Total Conditional Finance**
Mitigation	USD$ 196 billion
Adaptation	USD$ 50 billion
Total	**USD$ 246 billion**

Examples of key mitigation projects:

Sector / Project	Cost (Million USD)
Electricity Sector	
Wind power plants	$40,526
Solar PV power plants	$23,754
Solar CSP power plants	$18,109
Replacement of existing inefficient thermal power plants with renewable energy	$10,000
Smart meters	$1,297
Oil & Gas Sector	
Petroleum associated gases flaring	$150
Biodegradable Plastic Production	$600
Bioethanol production	$130
Melamine Project in Damietta Port (CCU)	$260
Extracting algae oil for production of biofuels	$600
Fuel Oil Production from Waste Plastic	$50
Wooden plates production (MDF) from rice straw	$1,500
Transport Sector	
Upgrading the Cairo metro network (two subprojects)	$6,400
Electric High-Speed Rails (HSR) (three subprojects)	$27,200
Bus Rapid Transit (BRT) system - Ring Road	$273
Electric light rail network (two sub-projects)	$5,800
Alexandria Raml tram rehabilitation project	$646

Sector / Project	Cost (Million USD)
Industry	
Transform traditional charcoal open pits to mechanized kilns	$138
Green hydrogen for green ammonia	$140
Regulatory Efficient Motors	$11,642
Buildings and Urban Cities	
Energy efficient cooling in buildings	$250
Tourism	
Energy efficiency and renewable energy in hotels and resorts	$345
Waste Sector	
New investments and upgrading of MSW management infrastructure (i.e. MBT plants, waste-to-energy plants) and operation and maintenance	$5,601

Examples of key adaptation projects:

Sector / Project	Cost (Million USD)
Agriculture	
Enhancing agricultural production for adaptation to climate change in the Valley and Nile Delta regions	$4,000
Rehabilitation of Agricultural Areas in Northern Delta Affected by the Repercussions of Sea-Level Rise	$2,000
Increasing the resilience of climatically vulnerable areas through combating desertification, water harvesting and rehabilitating degraded pastures in marginal areas	$3,500
Development of on-farm Irrigation in the old Valley and the Delta	$4,000
Supporting the establishment of early warning systems, improving agricultural weather forecasting services, modern agricultural extension, and establishing an agricultural insurance system against climate risks	$1,500
Water Resources	
Water desalination using solar energy (cross-cutting)	$625
Natural protection of Rosetta shore line using the sand motor	$120
Rehabilitation of irrigation canals to enhance agricultural climate resilience	$4,500
Integration of coastal protection and development in 3 Egyptian cities in the Mediterranean	$2,000
Scaling up solar pumping for irrigation (cross-cutting)	$50
Improve agricultural climate resilience by modernizing on-farm practices (cross-cutting)	$4,000
Transport Sector	
Breakwater in the port of Alexandria	$108

VII. MONITORING, REPORTING, AND VERIFICATION

▪ Measurement, reporting and verification (MRV) systems are the foundation for enhanced national and international action on climate change. Egypt has drafted a proposed national climate MRV structure after engagement of representatives from all concerned national entities. The proposed MRV structure would consist of a supervisory body, represented by the NCCC. The CCCD would be the national coordinating entity with relevant ministries and other governmental agencies. The MRV pathways for data flow consist of four tracks: i) GHG Inventory MRV, ii) Mitigation Policies and Actions MRV, iii) Support Received MRV, and iv) Adaptation Policies and Actions MRV.

▪ The proposed MRV framework has been formally adopted by the NCCC, but has not yet been institutionalized. The kick-off for the national MRV is pending funding and other resources (refer to Section VI, Capacity Building and Technology Transfer), which once available would support the national institutions to mobilize for structuring and implementation. Partial MRV activities exist and would be a solid foundation to evolve into a comprehensive national MRV system.

▪ The Annex provides information which enhances clarity, transparency, and understanding of Egypt's updated NDC.

Annex

Information to facilitate clarity, transparency, and understanding

<table>
<tr><th colspan="3">Information to facilitate clarity, transparency and understanding of nationally determined contributions, referred to in decision 1/CP.21, paragraph 28</th></tr>
<tr><td>1.</td><td colspan="2">Quantifiable information on the reference point (including, as appropriate, a base year):</td></tr>
<tr><td>(a)</td><td>Reference year(s), base year(s), reference period(s) or other starting point(s);</td><td>The reference year for Egypt's GHG emissions is 2015. The reference period is between 2020 – 2030. The Business As Usual (BAU) projection year is 2030.</td></tr>
<tr><td>(b)</td><td>Quantifiable information on the reference indicators, their values in the reference year(s), base year(s), reference period(s) or other starting point(s), and, as applicable, in the target year;</td><td>Egypt's total GHG emissions were 325,614 GgCO2e in 2015 (reference year) as reported in the First BUR. Values in the reference year and projections in 2030 for the sectoral GHG emissions are as follows:
<table>
<tr><th>Sector*</th><th>GHG emissions (GgCO2e) in 2015</th><th>Share in total GHG emissions in 2015 (%)</th><th>GHG emissions (GgCO2e) in 2030</th></tr>
<tr><td>Electricity</td><td>87,694</td><td>27%</td><td>214,740</td></tr>
<tr><td>Oil & Gas (Associated gases)</td><td>2,137</td><td>0.65%</td><td>2,575</td></tr>
<tr><td>Transport</td><td>48,235</td><td>15%</td><td>124,360</td></tr>
</table>
*These three sectors represent about 43% of Egypt's total GHG emissions in 2015.</td></tr>
<tr><td>(c)</td><td>For strategies, plans and actions referred to in Article 4 paragraph 6, of the Paris Agreement, or policies and measures as components of nationally determined contributions where paragraph 1(b) above is not applicable, Parties to provide other relevant information;</td><td>Not applicable</td></tr>
</table>

<table>
<tr><td>(d)</td><td>Target relative to the reference indicator, expressed numerically, for example in percentage or amount of reduction;</td><td>Egypt will GHG emission reduction for the below three sectors by 2030 relative to the BAU emission levels. The sectoral emission reduction targets as a result of implementing mitigation measures are as follows:

<table><tr><th rowspan="2">Sector*</th><th colspan="2">Mitigation emission reductions in 2030</th></tr><tr><th>GgCO2e</th><th>%</th></tr><tr><td>Electricity</td><td>69,910</td><td>33%</td></tr><tr><td>Oil & Gas (associated gases)</td><td>1,682</td><td>65%</td></tr><tr><td>Transport</td><td>8,960</td><td>7%</td></tr></table></td></tr>
<tr><td>(e)</td><td>Information on sources of data used in quantifying the reference point(s);</td><td>Data used in quantifying the baseline GHG emissions of the reference year 2015 is based on Egypt’s GHG Inventory submitted to the UNFCCC in 2019 under the First BUR. The modelling of the 2030 projections (BAU and target reductions) was based on analysis for Egypt’s Low Emission Development Strategy (LEDS) utilizing the LEAP software.</td></tr>
<tr><td>(f)</td><td>Information on the circumstances under which the Party may update the values of the reference indicators.</td><td>In case Egypt’s GHG inventory and/or LEDS would be revised/updated.</td></tr>
<tr><td>2</td><td colspan="2">Time frames and/or periods for implementation:</td></tr>
<tr><td>(a)</td><td>Time frame and/or period for implementation, including start and end date, consistent with any further relevant decision adopted by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement (CMA);</td><td>16 November 2015 to 31st December 2030</td></tr>
<tr><td>(b)</td><td>Whether it is a single-year or multi-year target, as applicable.</td><td>Single-year target in 2030</td></tr>
</table>

3	**Scope and coverage:**	
(a)	General description of the target;	Sectoral emission reduction targets are provided compared to the BAU projection of each sector by 2030.
(b)	Sectors, gases, categories and pools covered by the nationally determined contribution, including, as applicable, consistent with Intergovernmental Panel on Climate Change (IPCC) guidelines;	**Sectors covered:** Quantitative targets for the following sectors ▪Electricity (Power Generation, Transmission, and Distribution) ▪Oil & Gas ▪Transport **Policies and measures for the following sectors:** ▪Industry ▪Buildings and Urban Cities ▪Tourism ▪Waste Management Agriculture and Land Use sector has not been included under the mitigation actions. **Greenhouse gases covered:** Carbon Dioxide (CO_2), Methane (CH_4), and Nitrous Oxide (N_2O)
(c)	How the Party has taken into consideration paragraph 31(c) and (d) of decision 1/CP.21; Para. 31(c) "Parties strive to include all categories of anthropogenic emissions or removals in their Nationally Determined Contributions and, once a source, sink or activity is included, continue to include it' Para. 31(d) "Parties shall provide an explanation of why any categories of anthropogenic emissions or removals are excluded'	All major sources of GHG emissions in the GHG inventory have already been covered in this NDC update.

3	Scope and coverage:	
(d)	Mitigation co-benefits resulting from Parties' adaptation actions and/or economic diversification plans, including description of specific projects, measures and initiatives of Parties' adaptation actions and/or economic diversification plans	The adaptation actions with the main mitigation co-benefit potential includes the following: ▪Impact of water conservation, recycling, and rainwater harvesting measures on energy use. ▪Use of renewable energy to develop unconventional water sources (i.e. solar desalination). ▪Increasing the sustainability of natural resources through improved land and livestock management and capacity building for farmers. ▪Availing data by strengthening the institutional systems for crisis and disaster management through monitoring, forecasting, and analysis and applying strategic operational policies for certain sectors (i.e. agriculture, tourism). ▪Green city planning, architectural design, and construction of buildings and other establishments. ▪Diversion dams to direct flows away from roads to avoid traffic congestions.

4	Planning process	
(a)	Information on the planning processes that the Party undertook to prepare its nationally determined contribution and, if available, on the Party's implementation plans, including, as appropriate:	The NDC update is aligned with Egypt's developmental and climate change policies, including Sustainable Development Strategy: Egypt's Vision 2030, the emerging Long Term Low Emission Development Strategy 2050 (LT-LEDS) and the National Climate Change Strategy 2050 (NCCS), and the National Strategy for Adaptation to Climate Change and Disaster Risk Reduction. In addition to sectoral strategies, such as: Integrated Sustainable Energy Strategy 2035, National Energy Efficiency Action Plan, Integrated Solid Waste Management Strategy, and Sustainable Agricultural Development Strategy towards 2030.
i	Domestic institutional arrangements, public participation and engagement with local communities and indigenous peoples, in a gender-responsive manner;	Refer to Section VI (Means of Implementation > Policy Mechanisms and Institutional Arrangements) above The National Climate Change Council (NCCC) was founded in 2015 through the Prime Minister Decree No.1912 (later amended by the Prime Minister Decree No. 1129/2019) as the national authority in Egypt concerned with climate change. The members of its Supreme Committee are represented across the relevant line ministries headed by the Egyptian Prime Minister. The Ministry of Environment (MoE) was established in 1997 by Presidential Decree no. 275/1997 and its policies are executed by the Egyptian Environmental Affairs Agency (EEAA).

4	Planning process	
i		The Climate Change Central Department (CCCD) in the EEAA is the technical secretariat to the NCCC and focal point to the UNFCCC and coordinates climate efforts with relevant ministries and governmental entities. Furthermore, the planning and implementation of climate measures follows participatory approaches through collaboration among government, private sector, civil society, academia, media, international community, and other concerned stakeholders. Consultations with line ministries and workshops with a wide range of sector representatives were held to agree on mitigation and adaptation actions and targets during the preparation of 1st BUR, LEDS, and NDC update.
ii	Contextual matters, including, inter alia, as appropriate:	
a	National circumstances, such as geography, climate, economy, sustainable development and poverty eradication;	Refer to Section I (National Context > National Circumstances) above
b	Best practices and experience related to the preparation of the nationally determined contribution;	Refer to Section I (National Context > Introduction)above Egypt submitted its Intended Nationally Determined Contribution (INDC) in November 2015 to achieve the global targets set out in the UNFCCC's Paris Agreement. After Egypt signed the Paris Agreement on the 22nd of April 2016 and ratified it on 29th June 2017, the INDC was considered Egypt's first NDC. Consultations with line ministries and NCC representatives were held to approve the updated NDC.

4	Planning process	
c	Other contextual aspirations and priorities acknowledged when joining the Paris Agreement;	Refer to Section I (National Context > Introduction) above
(b)	Specific information applicable to Parties, including regional economicintegrationorganizations and their member States, that have reached an agreement to act jointly under Article 4, paragraph 2, of the Paris Agreement, including the Parties that agreed to act jointly and the terms of the agreement, in accordance with Article 4, paragraphs 16–18, of the Paris Agreement;	Not applicable
(c)	How the Party's preparation of its nationally determined contribution has been informed by the outcomes of the global stocktake, in accordance with Article 4, paragraph 9, of the Paris Agreement;	Not applicable since the Global Stock take has not yet taken place (planned 2023).
(d)	Each Party with a nationally determined contribution under Article 4 of the Paris Agreement that consists of adaptation action and/or economic diversification plans resulting in mitigation co-benefits consistent with Article 4, paragraph 7, of the Paris Agreement to submit information on:	
i	How the economic and social consequences of response measures have been considered in developing the nationally determined contribution;	Not applicable

4	**Planning process**	
ii	Specific projects, measures and activities to be implemented to contribute to mitigation co-benefits, including information on adaptation plans that also yield mitigation co-benefits, which may cover, but are not limited to, key sectors, such as energy, resources, water resources, coastal resources, human settlements and urban planning, agriculture and forestry; and economic diversification actions, which may cover, but are not limited to, sectors such as manufacturing and industry, energy and mining, transport and communication, construction, tourism, real estate, agriculture and fisheries	Specific activities and associated indicators have been identified for adaptation and mitigation in Egypt Vision 2030, National Climate Change Strategy 2050, and the supporting technical documents prepared as part of this NDC update.
5	**Assumptions and methodological approaches, including those for estimating and accounting for anthropogenic greenhouse gas emissions and, as appropriate, removals:**	
(a)	Assumptions and methodological approaches used for accounting for anthropogenic greenhouse gas emissions and removals corresponding to the Party's nationally determined contribution, consistent with decision 1/CP.21, paragraph 31, and accounting guidance adopted by the CMA;	Current approach is in accordance with methodologies and common metrics assessed by the IPCC (refer to 5(d) below).
(b)	Assumptions and methodological approaches used for accounting for the implementation of policies and measures or strategies in the nationally determined contribution;	Refer to Section VII (Monitoring, Reporting, and Verification) above

5	**Assumptions and methodological approaches, including those for estimating and accounting for anthropogenic greenhouse gas emissions and, as appropriate, removals:**	
(c)	If applicable, information on how the Party will take into account existing methods and guidance under the Convention to account for anthropogenic emissions and removals, in accordance with Article 4, paragraph 14, of the Paris Agreement, as appropriate;	Refer to 5(d) below
(d)	IPCC methodologies and metrics used for estimating anthropogenic greenhouse gas emissions and removals;	**IPCC methodologies:** The 2006 IPCC Guidelines for National GHG Inventories were applied for the calculation of GHGs in all sectors (utilizing IPCC GHG Inventory software). Default emission factors in IPCC good practice guidance issued in the years 1996 and 2006 have been utilized. **Additional Guidance:** In addition to the IPCC Guidelines for National GHG Inventories, the 'Good Practice Guidance and Uncertainty Management in National GHG Inventories' guidelines were used for preparation of the inventories. **Metrics:** Global Warming Potential (GWP) values for a 100-year time horizon from the IPCC Second Assessment Report (1995).

5	**Assumptions and methodological approaches, including those for estimating and accounting for anthropogenic greenhouse gas emissions and, as appropriate, removals:**	
(e)	Sector-, category- or activity-specific assumptions, methodologies and approaches consistent with IPCC guidance, as appropriate, including, as applicable:	
i	Approach to addressing emissions and subsequent removals from natural disturbances on managed lands;	Not applicable
ii	Approach used to account for emissions and removals from harvested wood products;	Not applicable
iii	Approach used to address the effects of age-class structure in forests;	Not applicable
(f)	Other assumptions and methodological approaches used for understanding the nationally determined contribution and, if applicable, estimating corresponding emissions and removals, including:	
i	How the reference indicators, baseline(s) and/or reference level(s), including, where applicable, sector-, category- or activity-specific reference levels, are constructed, including, for example, key parameters, assumptions, definitions, methodologies, data sources and models used	The projected BAU 2030 has been simulated with LEAP software under the LEDS. The 2015 reference year is based on Egypt's GHG Inventory under 1st BUR. GHG emissions estimates in Egypt's GHG Inventory are made using methodologies outlined in the 2006 IPCC Guidelines for National Greenhouse Gas Inventories and subsequent IPCC guidelines (refer to section 5(d)).
ii	For Parties with nationally determined contributions that contain non-greenhouse-gas components, information on assumptions and methodological approaches used in relation to those components, as applicable;	Not applicable

5	**Assumptions and methodological approaches, including those for estimating and accounting for anthropogenic greenhouse gas emissions and, as appropriate, removals:**	
iii	For climate forcers included in nationally determined contributions not covered by IPCC guidelines, information on how the climate forcers are estimated;	Not applicable
iv	Further technical information, as necessary;	Not applicable
(g)	The intention to use voluntary cooperation under Article 6 of the Paris Agreement, if applicable.	Egypt expresses interest for voluntary cooperation in emerging international carbon markets governed by Article 6 of the Paris Agreement.
6	**How the Party considers that its nationally determined contribution is fair and ambitious in the light of its national circumstances:**	
(a)	How the Party considers that its nationally determined contribution is fair and ambitious in the light of its national circumstances;	Egypt adopts the equity principle of common but differentiated responsibilities in accordance with the respective national capabilities, in accordance with the UNFCCC and Paris Agreement. Despite that Egypt's contribution to global emissions is marginal, but the country is highly vulnerable to climate change impacts (specifically Delta region) that threaten its path to sustainable development. Egypt has set an ambitious target to contribute to reducing GHG emissions. Egypt update of its NDC is ambitious in terms of meeting the long-term goal set by the Paris Agreement including mitigation and adaptation. Leveraging this ambition is directly proportional to the availability of additional sustainable and predictable support to facilitate the means for implementation.

6	**How the Party considers that its nationally determined contribution is fair and ambitious in the light of its national circumstances:**	
(b)	Fairness considerations, including reflecting on equity;	Refer to 6(a)
(c)	How the Party has addressed Article 4, paragraph 3, of the Paris Agreement;	Refer to Section II (Revision Highlights) above
(d)	How the Party has addressed Article 4, paragraph 4, of the Paris Agreement;	Not applicable
(e)	How the Party has addressed Article 4, paragraph 6, of the Paris Agreement.	Not applicable
7	**How the nationally determined contribution contributes towards achieving the objective of the Convention as set out in its Article 2:**	
(a)	How the nationally determined contribution contributes towards achieving the objective of the Convention as set out in its Article 2;	Refer to 6(a)
(b)	How the nationally determined contribution contributes towards Article 2, paragraph 1(a), and Article 4, paragraph 1, of the Paris Agreement.	Refer to 6(a)