

# EGYPT

## TACKLING THE CLIMATE CHALLENGE

Egypt is heavily exposed to the consequences of global warming due to its Mediterranean geographical location, high population growth and the importance of the agricultural sector. Already deemed critical, water stress is likely to increase in the medium and long term. The deteriorating trend of various vulnerability and resilience indicators, currently at medium levels, is increasing climate risk in the long term. The financial resources of the Egyptian government are extremely constrained, given the deteriorating macroeconomic situation and the unfavourable outlook. Transformation of the energy mix may be partially funded by private capital. However, funding for climate change reduction and adaptation policies, by definition less profitable in the short term, remains problematic.

## SIGNIFICANT EXPOSURE TO CLIMATE RISK

Climate change risk analysis is broken down into three categories of indicators: exposure to risks caused by rising temperatures (drought, rising water levels), vulnerability of the economy and inhabitants to these hazards, and lastly, the capacity to cope with these risks. We use the indicators and data from the INFORM<sup>1</sup> database, which makes a clear distinction between these indicators and provides projections according to the main climate scenarios.

The Mediterranean Basin is classified by the IPCC as a climate change hot spot due to very high exposure to the consequences of rising temperatures. Temperatures are expected to be 20% above the global average by 2100. Against this backdrop, Egypt is particularly vulnerable to the consequences of global warming due to the importance of agricultural activity in the economy (1/4 of employment and 20% of exports), strong population growth, high and difficult to control urbanisation of the population, and the concentration of the population in the Nile basin and in the coastal area.

The issue of water is key, with the population doubly at risk: the risk of drought and the risk of rising water levels. Water stress is considered critical by the Food and Agriculture Organisation (FAO), given the significant imbalance between consumption and available resources. According to the drought risk indicator calculated by INFORM, Egypt achieves the highest score globally in any scenario considered<sup>2</sup>. This indicator analyses the intensity of the risk, the proportion of population affected and the importance of the agricultural sector in the economy. Egypt is dependent on the Nile for around 97% of its water supply and rising temperatures will affect the availability of river water (precipitations, evapotranspiration). It should also be noted that the water resource is subject to a significant geopolitical risk, as the sources of the Nile are located beyond Egypt's borders.

Exposure to risks of flooding (coastal and inland) is also very high, and places the country in the highest risk category. The consequences of global warming are not linear and are expected to lead to the multiplication of extreme weather events, including sudden flooding. While Egypt is not one of the countries most affected by this risk (compared to some countries in Southeast Asia, for example), it may affect a large number of inhabitants given the geographical concentration of the population. Whichever scenario is considered, by 2050, inland flooding could affect about five million people, while coastal flooding could affect about one million.

The level of vulnerability, which measures the predisposition of a population exposed to a risk to be affected, depends mainly on socio-economic factors and the vulnerability of certain population groups (ac-

<sup>1</sup> INFORM Climate Risk, developed by the European Commission (INFORM Climate Change [europa.eu]).

<sup>2</sup> We are considering a central scenario (SSP2-4.5) and a high risk scenario (SSP5-8.5) with a horizon of 2050, according to the IPCC nomenclature (Summary for Policymakers [ipcc.ch]).

FORECASTS					
	2020	2021	2022	2023e	2024e
Real GDP growth, %	3.5	3.3	6.6	3.8	4.0
Inflation, CPI, year average, %	5.7	4.5	8.5	24.1	21.3
Central. Gov. balance / GDP, %	-7.5	-7.0	-6.0	-8.3	-8.7
Central. Gov. debt / GDP, %	86	90	89	92	90
Current account balance / GDP, %	-2.9	-4.4	-3.5	-3.3	-2.7
External debt / GDP, %	32	33	37	40	38
Forex reserves (excl. gold), USD bn	38	41	33	35	38
Forex reserves, in months of imports	6.1	6.0	3.9	4.3	4.5

TABLE 1

(1) FISCAL YEAR FROM JULY 1ST OF YEAR N TO JUNE 30 OF YEAR N+1  
e: ESTIMATES & FORECASTS

SOURCE: BNP PARIBAS ECONOMIC RESEARCH

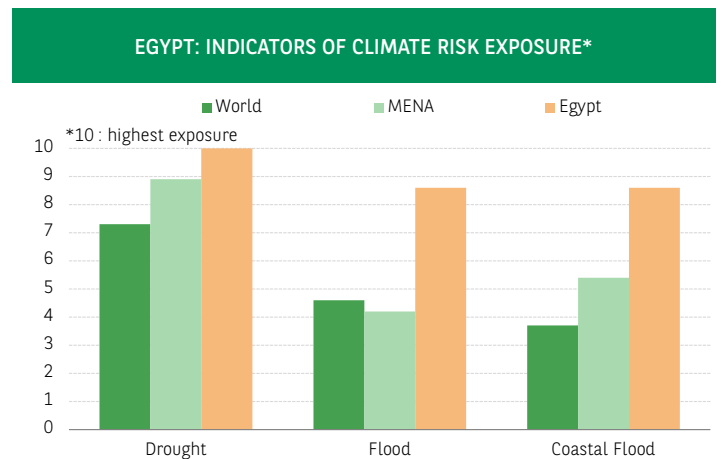


CHART 1

SOURCE: EUROPEAN COMMISSION (INFORM), SCENARIO RCP4,5-SSP2 2050, BNPPARIBAS

According to healthcare, food or status criteria). This level is moderate. In fact, even though the downturn in the economic environment in recent years has had negative consequences on the living conditions of Egyptian households, the main indicators of human development, inequality and healthcare place Egypt in an intermediate position in international terms.



The capacity to deal with the consequences of climate change reflects a certain level of resilience. In particular, this indicator is made up of governance and infrastructure quality variables and is at a moderate level. Egypt actually enjoys relatively good quality telecommunication, physical and healthcare network infrastructures. For their part, indicators of governance and perception of corruption are somewhat lower than international averages.

Overall, by 2050 and according to the two scenarios SSP2-4.5 and SSP5-8.5, the synthetic climate risk exposure indicator classifies Egypt as a moderate risk (5 on a scale of 10), the average level of vulnerability and resilience indicators making it possible to compensate, at least in part, for the high level of exposure to climate risk, given the calculation method for this indicator (equally weighted average). However, we might raise certain objections to this conclusion, in order to put this relative optimism into perspective. In fact, whichever scenario and time horizon are considered, the outlook is challenging. Given the intensification of climate change, significant progress in reducing vulnerability factors and increasing resilience capacities is needed just to keep risk at its current level. Two factors in particular are making this goal of risk stability difficult to reach. First, the extreme value of exposure to drought risk, in our opinion, translates into over-vulnerability beyond the model's forecasts, particularly if we consider the very general nature of the variables taken into account in vulnerability and resilience indicators. Second, the negative dynamics of certain variables of vulnerability and resilience indicators. The improvement in trends of human development indicators (HDI) and governance effectiveness indicators (calculated by the World Bank) has reversed since 2019, as a result of the country's economic and political upheavals over the 2010s.

## ENERGY TRANSITION

Globally, Egypt contributes little to greenhouse gas (GHG) emissions (around 0.6% of global emissions), but these emissions are rising due to economic growth. The primary energy mix is dominated by hydrocarbon fuels. According to the International Energy Agency, in 2019, around 55% of the energy supply came from natural gas, 38% from oil and less than 3% from coal. The share of renewable energies is therefore marginal for the time being (around 5%). In the medium term, the energy mix is not expected to change significantly. In fact, production capacity is, for the time being, much higher than peak use (according to the Ministry of Electricity, this difference was 25 GW in 2021 out of a total installed capacity of 59 GW), and relies in particular on recent thermal power plants which are energy efficient. Nevertheless, the expected growth in energy consumption and the need to reduce GHG emissions involves an increasing role of renewables in the energy mix. The target set by the Nationally Determined Contributions (NDC) report is to reach 42% of electricity produced thanks to new and renewable energy sources (including nuclear and green hydrogen in different forms) by 2035, compared to around 9% in 2021. However, according to the projections of the World Bank central scenario<sup>3</sup>, the proportion of renewables in the energy mix should only reach around 27% by 2050. In the short term, renewable energy generation capacity is expected to increase by 50% to 4.9 GW by 2025. Part of this increase comes from the commitments made under the NWEF Program<sup>4</sup> launched by the government at COP27 and which provide for the decommissioning of thermal generation capacities (5 GW) and the financing of new renewable energy production capacities.

EGYPT: TOTAL PRIMARY ENERGY SUPPLY BY SOURCE

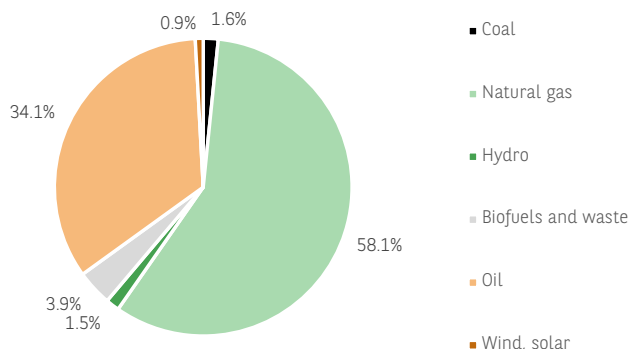


CHART 2

SOURCE: IEA, BNP PARIBAS

## A SIGNIFICANT FINANCING REQUIREMENT, BUT WEAK MACROECONOMIC METRICS

It is currently difficult to establish a comprehensive estimate of the funding requirement linked to the prevention of the climate change and its consequences. However, it is possible to provide some sector-based estimates (which may overlap). According to the NDCs, all climate change mitigation and adaptation measures represent a cost of USD 246 billion between now and 2030, i.e., approximately 52% of 2022 GDP. The cost of implementing an urban GHG mitigation and reduction policy (43% of the total population) is estimated by the World Bank to be USD 105 billion (22% of GDP 2022) between now and 2030. Furthermore, the investments required to change the energy mix are estimated at USD 113 billion (24% of GDP 2022) by 2050, according to the World Bank central scenario (approximately, implementation of the NDCs). These amounts are very high and raise a number of questions about the capacity to meet such a financing requirement. The situation of public finances and external accounts is in fact very weak and, in both cases, there is no financial leeway. In fact, despite a proactive policy of reducing energy subsidies and increasing the tax base, budget deficits are recurrent and high (7.5% of GDP on average between 2018 and 2022). The recent rise in interest rates against a backdrop of high inflationary pressures will further increase the government's debt interest burden, which is currently equivalent to around 50% of total revenue. This situation is therefore significantly constraining investments in improving the capacity for resilience to climate change. The total of government green bond issues is, for the time being, very limited (USD 1.5 billion issued in 2020), and the development of renewable energies is based on private and public funding from multilateral donors.

Pascal DEVAUX

[pascal.devaux@bnpparibas.com](mailto:pascal.devaux@bnpparibas.com)

<sup>3</sup> Egypt Country Climate and Development Report ([worldbank.org](http://worldbank.org))

<sup>4</sup> NWEF: Nexus Water Food Energy is a coordinated promotion mechanism for green projects in the water, food and energy sectors through international mixed private-public funding.