



**FREDERICK S. PARDEE CENTER  
FOR INTERNATIONAL FUTURES**

JOSEF KORBEL SCHOOL OF INTERNATIONAL STUDIES

UNIVERSITY of DENVER



# **SUSTAINABLE DEVELOPMENT GOALS REPORT: Egypt 2030**

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# Sustainable Development Goals Report: Egypt 2030

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## Executive Summary

Over the past few decades, Egypt has realized major improvements in human development, including expanding access to education, reducing the burden of communicable diseases, and increasing life expectancy. Today, Egypt is one of the largest economies in the Arab world and home to one of the fastest growing middle classes in the Middle East and North Africa region. This growth has created its own challenges, typical of developing and growing countries. For instance, an expanding middle class will have higher expectations for public service delivery and a more educated population will expect better jobs. Further, these challenges are compounded in Egypt by a number of factors: economic growth slowed after the social unrest beginning in 2011; high levels of both unemployment and informality persist; the population is still relatively young and growing; and the ability of the government to provide services is constrained by low levels of capacity and transparency.

This report explores Egypt's current development trajectory to 2030 across areas of human and economic development. It then presents five alternative scenarios designed to help explore the impact of different policies on economic and social development indicators. Using the International Futures (IFs) modeling platform, these scenarios are evaluated in terms of their ability to accelerate progress towards achieving many of the targets set in the United Nation's Sustainable Development Goals (SDGs) and Egypt's Sustainable Development Strategy (SDS), referred to as Vision 2030 (Ministry of Planning, Monitoring and Administrative Reform, 2016).

The IFs model forecasts 94 variables that are related to SDG indicators. 47 of these variables include explicit, numeric targets that allow us to assess Egypt's progress. Of these indicators, Egypt has already met or is projected to meet the targets for 12 (26 percent). But a number of SDG targets are not forecast to be met by 2030. In 2030, 13 percent of the population is projected to be living in poverty (defined as living on less than \$3.10 a day), failing to meet the goal of halving poverty from the 2015 level of 22.3 percent (SDG 1). The premature death rate from noncommunicable diseases (NCDs) is forecast to increase somewhat, failing to meet targets for NCD health indicators (SDG 3). And enrollment and graduation rates for both lower and upper secondary education are on track to improve but not to hit universal targets set by SDG 4.

Alongside an exploration of Egypt's current development trajectory, referred to as the Current Path, this report contains the following alternative scenarios: (1) Economic Development models a pursuit of economic growth in line with traditional strategies of increased trade and investment along with efforts to boost the productivity, opportunity, and capabilities of the country's workforce. (2) Social Justice simulates a package of policies designed to alleviate poverty and improve the livelihoods and capabilities of the population through a focus on health and education. (3) Female Empowerment models a focus on greater gender equality. (4) Governance models a concentration on improving the effectiveness, efficiency, and transparency of the government and its institutions. Each of these scenarios simulates an ambitious yet achievable effort to improve economic and social outcomes beyond what is projected in the Current Path.

Table 1 shows projections of a select set of indicators for the individual scenarios in 2030 and 2050. By 2030, GDP is nearly 10 percent higher under Economic Development than it is along the Current Path. Economic Development also delivers the best results in terms of government revenue. Social Justice, on the other hand, results in the largest gains in terms of human development indicators. Egypt moves up three places in the global rankings of the Human Development Index (HDI) and life expectancy is extended by a full year. Social Justice assumes higher educational attainment by 2030. But, because it takes time for children to age through the education system, its impact on the economy is more apparent by 2050.

By 2030, Governance results in considerable improvements, though it does not lead the rest of the scenarios in any of the selected indicators. But by 2050, Governance yields even greater GDP gains than Economic Development, resulting in an economy which is 26 percent larger than the Current Path (6 percent larger than in Economic Development). Compared to the Current Path, the average GDP growth rate through 2030 is nearly a full percentage point higher and government revenue in 2030 is 29 percent greater.

	2015	2030					2050				
	Current Path	Current Path	Econ	Soc	Fem	Gov	Current Path	Econ	Soc	Fem	Gov
<b>Education</b> <i>average years (pop 15+)</i>	7.1	8.5	8.5	8.6	8.5	8.5	9.9	10.0	10.4	10.3	10.0
<b>GDP at MER</b> <i>billion USD</i>	268	577	633	595	614	612	1,376	1,638	1,586	1,403	1,739
<b>Share of Global GDP</b> <i>percent</i>	0.33	0.45	0.49	0.46	0.48	0.48	0.57	0.67	0.65	0.58	0.72
<b>GDP per capita</b> <i>thousand USD</i>	10.1	13.3	14.2	13.5	14.2	13.8	18.0	20.3	19.9	20.4	21.2
<b>GDP growth rate</b> <i>annual percent change</i>	4.4	5.4	6.4	5.8	6.2	6.4	3.5	3.8	4.1	3.0	4.4
<b>Government revenue</b> <i>billion USD</i>	67	170	187	180	182	182	452	545	543	477	581
<b>HDI</b> <i>index</i>	0.69	0.73	0.74	0.75	0.74	0.74	0.79	0.8	0.81	0.81	0.8
<b>HDI ranking</b> <i>out of 186 countries</i>	103	104	104	100	104	104	112	107	103	104	106
<b>Poverty</b> <i>million people</i>	20.9	16.7	13.9	14.1	12.9	15.1	16.3	11.1	9.8	8.0	9.6
<b>Poverty</b> <i>percent of population</i>	22.3	13.7	11.3	11.5	11.0	12.3	10.0	6.8	6.0	5.8	5.9
<b>Life expectancy</b> <i>years</i>	71.3	73.8	74.0	75.0	74.0	73.9	76.6	76.9	77.8	77.0	77.0

Table 1. Effects of different scenarios on selected indicators in 2030 and 2050 for Egypt. Darker colors represent more “positive” outcomes. Coloring compares each scenario outcome to the Current Path in the specified year. Scenario abbreviations are as follows: ‘Econ’ is Economic Development, ‘Soc’ is Social Justice, ‘Fem’ is Female Empowerment, and ‘Gov’ is Governance. Source: IFs 7.36. Note: GDP and GDP per capita figures represented in 2011 US Dollars. HDI is the Human Development Index, a UN composite index measuring achievement across life expectancy, average years of education, and gross national income (GNI) per capita. HDI rankings displayed are for the designated year (2015, 2030, or 2050) and out of the 186 countries forecast in IFs. Poverty refers to the population living on less than \$3.10/day.

The targets identified in the SDGs as well as Egypt’s own Vision 2030 are considered to be integrated and indivisible. They are meant to be pursued using a comprehensive approach to development, taking advantage of interlinkages and synergies between goals. With this in mind, a fifth scenario, Integrated Push, combines the interventions in each of the other four scenarios. The Integrated Push scenario allows us to illustrate the benefits of a comprehensive development program that attempts to target multiple aspects of development simultaneously. As can be seen in the sections below, Integrated Push yields the most significant gains across all presented indicators. In some cases, the gains achieved with an Integrated Push exceed the sum of those made under alternative scenarios on their own, emphasizing that intervention packages may work together, generating synergies and unlocking higher levels of development.

While Egypt is projected to meet a number of its goals by 2030, achieving others will require a more transformative effort even beyond that of the Integrated Push. For instance, even this combined scenario only achieves a GDP growth rate of 8.6 percent in 2030, well below the 12 percent targeted in Vision 2030. Successful achievement of the targets established in the SDGs and Vision 2030 will require an integrated, long-term approach. This report aims to equip readers with a picture of Egypt’s development path as well as the potential outcomes and trade-offs from different development scenarios. The policy choices made in Egypt today will shape what the country looks like tomorrow and its ability to meet the development goals outlined in the SDGs and Vision 2030.

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## The Frederick S. Pardee Center for International Futures

The Frederick S. Pardee Center for International Futures is based at the Josef Korbel School of International Studies at the University of Denver. The Pardee Center specializes in helping governments, international organizations, and private sector organizations think strategically about the future. The Pardee Center focuses on exploring past development trends, understanding the inter-relationships that drive development outcomes, and shaping policies that achieve development outcomes.

International Futures (IFs) is a free and open-source quantitative tool for thinking about long-term futures. The platform helps users to understand dynamics within and across global systems, and to think systematically about potential trends, development goals and targets. While no software can reliably predict the future, IFs forecasts — which are calculated using data and a mix of quantitative modelling approaches — offer a broad and transparent way to think about the trade-offs in policymaking.

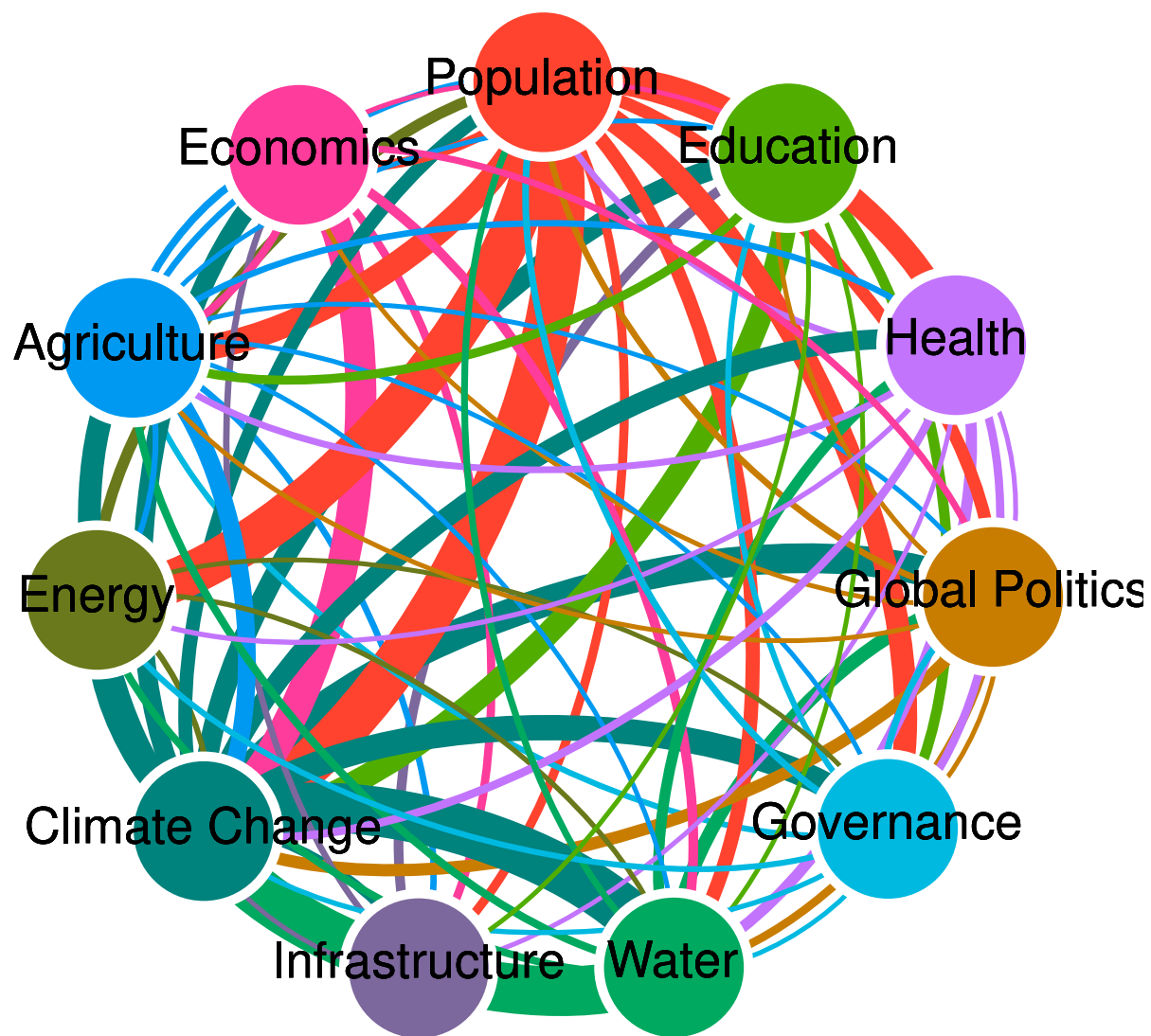


Figure 1. Stylistic representation of models in IFs. Source: Authors.

There are three main avenues for analysis in IFs: historical data analysis (cross-sectional and longitudinal) of more than 4,000 series, Current Path analysis (how dynamic global systems seem to be developing), and alternative scenario development (exploring if-then statements about the future). To do this, IFs integrates relationships across 186 countries and 12 core systems: agriculture, demographics, economics, education, energy, environment, finance, governance, health, infrastructure, international politics, and technology. The sub-models for each system are dynamically connected, so IFs can simulate how changes in one system may lead to changes across all others. As a result, IFs endogenizes more variables and relationships from a wider range of key development systems than any other model in the world.

IFs is developed by The Frederick S. Pardee Center for International Futures, based at the Josef Korbel School of International Studies at the University of Denver in Colorado, USA. It was originally created by Professor Barry B. Hughes. Learn more about IFs or download the tool for free at [pardee.du.edu](http://pardee.du.edu).

## Pardee Center and UNDP SDG collaboration

This report is part of a broader, long-term collaboration between the Pardee Center and UNDP to assess SDG attainment and prospects across a variety of countries using IFs. These reports will feed into the country-level MAPS analysis conducted by the UN. The Pardee Center has also worked with UNDP Moldova and Brazil. As part of this collaboration, the Pardee Center has developed a new [SDG dashboard](#) in IFs that shows Current Path forecasts for SDG indicators for 186 countries and the prospects for meeting those targets at the country level. While not every SDG indicator is forecast in IFs, Pardee has also pulled in over 200 data series that align directly with every SDG indicator across the 17 major SDG goals. This allows users to see a current (2015) value for every SDG indicator in all 186 countries. For more information on the SDG dashboard and instructions on its use see our [wiki](#).<sup>1</sup>

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<sup>1</sup> The Pardee Center's SDG dashboard can be found at [www.ifs.du.edu/ifs/frm\\_SDGset.aspx](http://www.ifs.du.edu/ifs/frm_SDGset.aspx) and the accompanying wiki is located at [https://pardee.du.edu/wiki/SDG\\_Dashboard](https://pardee.du.edu/wiki/SDG_Dashboard)

## Background

Egypt is the most populous country in the Arab world and one of the largest economies. While the economy was centralized and state-led under President Gamal Abdel Nasser (1956-1973), reforms in the 1990s aimed to reduce the role of the state in the economy, adopt market-oriented economic principles, and integrate Egypt into the global economy (Sufyan, 2007). Between 2000 and 2010, Egypt's economy grew an average of 4.9 percent per annum, and the country's gross domestic product (GDP) expanded from \$144 billion to over \$231 billion by 2010.<sup>23</sup> Over the same period, per capita GDP grew from around \$7,400 to \$9,800, around 3 percent per year, while Egypt's Gini index, a measure of inequality, remained consistently low.<sup>4</sup>

Egypt was successful in achieving most of the Millennium Development Goals (MDGs), a set of eight global goals in operation from 2000 to 2015 that ranged from halving extreme poverty to reversing the spread of HIV/AIDS and achieving universal primary education. According to its MDG country snapshot (UNDESA, 2017a), Egypt reduced extreme poverty (the population living on less than \$1.25 per day) by over 62 percent between 1990 and 2008, successfully meeting targets under MDG goal 1. Egypt's net primary enrollment rate reached 97 percent by 2010. Under-five mortality fell by over 74 percent between 1990 and 2013. The tuberculosis death rate fell by more than 81 percent. And clean water and sanitation were extended to over 95 percent of the population. But some targets remained unmet, particularly those related to MDG Goal 3, "Promote Gender Equality and Empower Women." Primary school enrollment, measured as the ratio of boys to girls in primary education, approached but did not reach the target of gender parity by 2013. During the same timeframe, the share of women employed in the non-agriculture sector fell by 9 percent, down to around 19 percent in 2013.

Between 2011 and 2014, per capita growth was negative and unemployment rates remained between 12 and 13.5 percent. In 2016, the Egyptian government implemented a series of ambitious reforms designed to restore macroeconomic stability and sustainable public finance. These included raising taxes, reducing energy subsidies, and floating the Egyptian pound, all of which led the IMF to allocate \$12 billion in loans for the Egyptian government (IMF, 2016). These represent important reforms to stabilize Egypt's economic system and they have been seen by the IMF as allowing the Egyptian economy to gather strength (IMF, 2017). These reforms are also meant to feed into Egypt's Sustainable Development Strategy (SDS), the government's national development plan to 2030, referred to as Vision 2030.

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<sup>2</sup> Throughout this report, GDP and other currency figures are measured in 2011 US dollars. There are two ways to measure GDP and/or per capita output. Market exchange rates (MER) measure the value of output in local currencies against prevailing market exchange rates for the US dollar (in 2011 dollars). Purchasing power parity (PPP) is calculated for each country relative to its cost of living and inflation rates. It considers how much of one currency would have to be converted into that of another country to buy a comparable basket of goods and services in that country. GDP measurements in PPP tend to be higher, particularly for developing countries. Unless otherwise noted, GDP measurements are in MER and GDP per capita measurements are in PPP.

<sup>3</sup> The IFs model and database are the most frequently cited sources of data and forecasts in this report. If no external attribution is provided for an in-text statistical reference, the source is: *International Futures (IFs) modeling system, Version 7.36*. Frederick S. Pardee Center for International Futures, Josef Korbel School of International Studies, University of Denver, Denver, CO. The IFs historical database houses over 4,500 data series. Primary sources and metadata can be found by accessing the IFs system.

<sup>4</sup> The Gini index measures inequality on a scale of 0 to 1, where 0 represents perfect equality and 1 represents perfect inequality.



## Structure of the report

This report analyzes Egypt's Current Path trajectory to 2030 and explores prospects for meeting identified development targets under the Sustainable Development Goals (SDGs). The SDGs represent the most recent global commitment to end poverty, enhance prosperity, and ensure sustainable development with a horizon to 2030. Organized around 17 broad goals and with the commitment of 193 countries through the United Nations, the SDGs represent a global development agenda and an important consideration of Egypt's own national development strategy, Egypt's Vision 2030 (also referred to as its Sustainable Development Strategy, or SDS), both outlines the country's approach to achieving the SDGs and sets additional targets for the country.

The report is organized as follows: First, a summary of the Current Path presents forecasts of Egypt's expected development to the year 2030. The following development trends sections focus in on important and interlinked challenges for the country. These sections explore Egypt's development path thus far, including recent successes and major remaining challenges, and provide the foundation for the scenarios constructed and analyzed for this report. The Scenarios section presents the five alternative scenarios constructed for the report: (1) Economic Development, (2) Social Justice, (3) Female Empowerment, (4) Governance, and (5) Integrated Push. Finally, the Discussion section explores scenario outcomes in relation to each other and their broader implications for Egypt's development.

## Egypt's Current Path and development trends

The Current Path provides a necessary starting point for any alternative scenario analysis. It represents a continuation of Egypt's current development trajectory, assuming no major policy changes, no unforeseen man-made or natural disasters, and no technological breakthroughs that would fundamentally change the course of its development.<sup>5</sup> The alternative scenarios outlined later in the report will be analyzed in relation to the Current Path. This section begins with a summary of Current Path forecasts along important development indicators, outlining Egypt's development trajectory to 2030. This summary is then followed by several sections adding further context, description, and analysis of the Current Path development trends.

### Current Path summary

Egypt is already the most populous country in the Arab world, and its population is projected to grow around 24 percent from 93.8 million in 2015 to 122.6 million in 2030.<sup>6</sup> With this growth, the country will remain fairly young. In 2030, 30 percent of the population will be under 15 and over 60 percent will be of working age (from 15 to 64). Egypt's economy is projected to grow between 5 and 6 percent annually across the forecast horizon, reaching a GDP

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<sup>5</sup> Traditionally, the Current Path is the output of the IFs model with no exogenous assumptions beyond the default initial conditions, formulations, and parameterizations. As such, policy outcomes of the economic reforms started in 2016 may not be fully taken into account. However, after consultations, adjustments were made to accommodate: (1) a slower reduction in fertility rates than the current trend, and (2) increased gas production resulting from the recent discovery of additional reserves.

<sup>6</sup> IFs forecasts begin in 2015 (the Base Year). Values reported in this year are initialized by one of many methods. First, when available, IFs uses data from international sources. When data is not available or, in some cases, when more recent values are not present, IFs will impute using regression estimates or extrapolation. In some cases, empirical values may be adjusted in order to maintain internal model consistency. For information on the source and coverage of recent historical values, please consult the IFs database. For more information the techniques and algorithms used to initialize Base Year values please see Hughes and Irfan (2013) and the Pardee Wiki at <https://pardee.du.edu/wiki/preprocessor>.

of \$571 billion by 2030. GDP per capita is projected to grow from \$10,250 in 2015 to \$14,270 by 2030, or roughly the level of Brazil in 2018.

This growth is forecast to lead to a reduction in poverty and an expansion of the middle class. Ten million fewer people will be living in poverty (as defined by the population living on Egypt's current national poverty line, equivalent to less than \$3.40 per day in 2011 US dollars) in 2030 compared with 2015, while the middle-class population (those living on between \$10 and \$50 per day) is forecast to more than double by 2030.

Egypt may also be faced with economic challenges such as informality, unemployment, and low female labor force participation. Informal labor is forecast to decline as a percent of the non-agricultural labor force from 47 percent today to 36 percent in 2030. But, due to population growth, and additional 2.5 million people are expected to be employed in the informal sector. Female labor participation, around 20 percent today, is not projected to grow significantly.

Human development, in terms of the health and education of the population, is projected to improve steadily. Educational attainment, as measured by the average Egyptian's years of schooling, increases from 7.1 years in 2015 (6.5 for women and 7.8 for men) to 8.5 years in 2030 (8 for women and 9 for men). Thus, even while educational attainment increases across the board, female attainment continues to lag behind. Life expectancy increases from 71.3 years to 74 by 2030. And the under-5 mortality rate falls from 22 deaths per 1,000 live births in 2015 to 14.7 by 2030.

A growing middle class often expects better public service delivery and quality as well as greater transparency and inclusion in the government (Wietzke & Sumner, 2014). However, in many of these areas Egypt ranks fairly low among similarly developed countries, and is forecast to improve only marginally through 2030. In terms of transparency, Egypt ranks 115<sup>th</sup> (out of 186 countries) and is forecast to reach only 109<sup>th</sup> by 2030 (behind China today).<sup>7</sup> Government revenues, currently between 23 and 24 percent of GDP, are projected to rise through 2030, reaching 29 percent, but will remain among the lowest in the region.

The following sections explore Egypt's development history and trajectory in greater detail with the intent of providing greater context for the Current Path forecasts.

## Growth will continue to alleviate poverty and double the middle class

Between 2000 and 2010, Egypt's GDP grew at around 5 percent per annum, peaking at 7.2 percent in 2008, while per capita growth increased an average of 3 percent every year. Between 2010 and 2015, average annual GDP growth slipped to 2.9 percent, and during that period per capita growth averaged an anemic 0.5 percent per annum. Despite the recent slow-down, Egypt's economy remains one of the largest in the Arab World. The country's GDP, estimated at around \$268 billion in 2015, is projected to more than double, reaching \$577 billion by 2030.

Table 2 provides a picture of Egypt's economic trajectory in both GDP and GDP per capita terms to 2030. GDP is projected to grow between 5 and 6 percent annually. Per capita growth is projected to slow from rates seen in the

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<sup>7</sup> IFs uses the Corruption Perceptions Index (CPI) from Transparency International (TI) to initialize and forecast quantitative measures of governance corruption because it contains information on perceived corruption from over 180 countries derived from multiple sources and institutions. In 2012, TI simplified the CPI computation to allow for analysis across time. An alternative measure, control of corruption, is produced by the World Bank's Worldwide Governance Indicators (WGI) project but is not forecast in IFs. According to the World Bank measure, in 2016 Egypt ranked 143 out of 209 countries (1 being the least corrupt). In comparison, TI places Egypt as the 108th least corrupt of 176 countries in the index.

previous decade; Egypt's GDP per capita could grow from \$10,100 in 2015 to \$13,280 by 2030, reaching the level of Libya today.

	GDP growth rates (%)		GDP (MER) (billions)		GDP per capita growth rates (%)		GDP per capita (PPP) (thousands)	
	2000-2010	2017-2030	2015	2030	2000-2010	2017-2030	2015	2030
<b>Egypt</b>	4.9	5.3	268	577	3.0	1.9	10,100	13,280
<b>Algeria</b>	3.8	2.2	228	319	2.4	0.2	13,720	14,230
<b>Lebanon</b>	5.5	1.9	43	57	2.5	0.8	13,350	14,390
<b>Jordan</b>	6.1	2.9	32	49	2.7	1.1	8,490	9,750
<b>Morocco</b>	4.7	3.5	115	188	3.4	1.6	7,300	9,025
<b>Malaysia</b>	5.0	5.2	356.4	754.5	3.0	2.3	25,000	34,750

Table 2. Economic growth in select countries to 2030. Source: Historical data from IMF (2018), forecast from IFs 7.36.

Over the past several decades, extreme poverty has declined. The percent of the population living on less than \$1.90 per day (the international extreme poverty line) has declined from 7.4 percent in 1990 to 1.3 percent in 2015. However, IFs estimates that roughly 22 percent of the population lives on less than \$3.10 per day. And according to the Central Agency for Public Mobilization and Statistics (CAPMAS), Egypt's statistics office, 27.8 percent of the population lived below Egypt's own national poverty line in 2015 (Ministry of Social Solidarity Arab Republic of Egypt, CAPMAS, & UNICEF Egypt, 2017). Along the Current Path, poverty is projected to decline by 2030, both in relative and absolute terms. Egypt's large population, however, means that in 2030 as many as 16.7 million people could be living on less than \$3.10 a day by 2030 and over 340,000 may still be living in extreme poverty.

Poverty Rates	Percent of Population			Headcount (Millions)		
	1990	2015	2030	1990	2015	2030
<b>Less than \$1.90 per day</b>	7.4	1.3	0.66	4.2	1.2	0.82
<b>Less than \$3.10 per day</b>	37.9*	22.3	13.7	21.8*	20.9	16.7
<b>Current national poverty line**</b>	NA	27.3	17.2	NA	25.6	21.1

Table 3. Poverty rates (in 2011 US dollars) in Egypt as a percent of the population and headcount (millions) in 1990, 2015, and 2030. \*As historical data is unavailable for the \$3.10 threshold, these figures denote populations living on less than \$3.20 a day. \*\*Because the national poverty line changes throughout time, we can only forecast the population below today's national poverty line, which is roughly equivalent to those living on less than \$3.40 per day in 2011 US dollars. Source: Historical data from the World Bank (2017), forecasts from IFs 7.36.

IFs estimates that approximately 8.8 million Egyptians (9.4 percent of the population) were in the middle class (between \$10 and \$50 per day according to international standards) in 2015. This is projected to almost triple to 24.4 million (19.9 percent) by 2030. Similarly, the population approaching a middle-class threshold (defined here as living on between \$3.10 and \$10 per day) is projected to increase from 49 million to over 66 million by 2030.

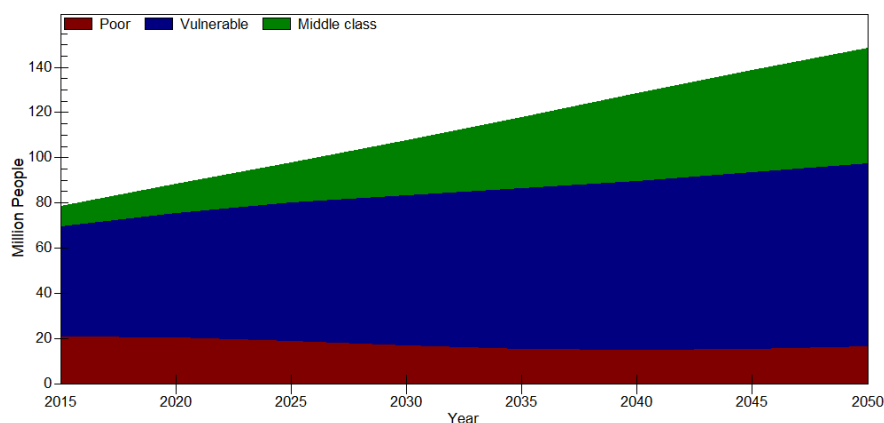


Figure 2. Egypt's income distribution for 2015 through 2050 in millions of people. Middle class refers the population living on between \$10 and \$50 per day. Vulnerable refers to the population living on between \$3.10 and \$10 per day. Poor refers to the population living on less than \$3.10 per day. Source: Initialized using data from the World Bank (2017), forecast from IFs 7.36.

## Difficult economic challenges will remain, including inequality, unemployment, and women's labor participation

Along traditional measures, such as the Gini index, Egypt's inequality is relatively low (Hassine, 2015). Data from the World Bank (2017) finds the Gini index fell by 9 percent in Egypt between 1999 and 2012 before reversing direction and increasing between 2012 and 2015. Despite low inequality, perceptions of inequality among Egyptians are changing: Egypt's period of positive GDP growth from 2000-2010 did not necessarily translate into greater household consumption. Rather, it accrued to private enterprises and nongovernmental organizations, accentuating people's perceptions of a stagnant social situation and growing inequality (Verme et al., 2014). Other research exploring elements of inequality, using data from the Trends in Mathematics and Science Study (TIMS) in the Middle East and North Africa region, found that educational attainment among Egyptian citizens depended heavily on where and to whom someone was born (Salehi-Isfahani, Hassine, & Assaad, 2014). A separate study by Assaad et al. (2017) found that between 1988 and 2012, wages and income levels of families from a middle-class background converged downward towards wage levels of families from a poorer background, while wages of those from the most privileged backgrounds have remained consistently higher. This is to point out that economic inequality, while far from approaching levels seen in Latin America or Southern Africa, remains a socioeconomic challenge, and that Egyptians have become more aware of its role. Factoring in changing patterns of economic growth, the skilled/unskilled labor distribution, and other factors such as household transfers, IFs forecasts inequality (as measured by the Gini index) to increase from 0.318 in 2015 to 0.336 in 2030. If not adequately addressed, this represents a potential vulnerability for Egypt's rising middle class and poverty reduction narrative.

Alongside poverty and changing perceptions of inequality, unemployment has also remained a persistent challenge. The unemployment rate has been steadily climbing over the past several decades, from around 5.2 percent in 1980 to 11.2 percent in 2005. Though unemployment declined between 2005 and 2010, the events of 2011 brought it back up to between 12 and 13 percent. Youth unemployment rates (between ages of 15 and 24), are even higher; the World Bank estimates that youth unemployment was around 31 percent in 2015. Along the Current Path, the unemployment rate is forecast to remain near current levels across the horizon to 2030, making it one of the highest in the region (see Figure 3).

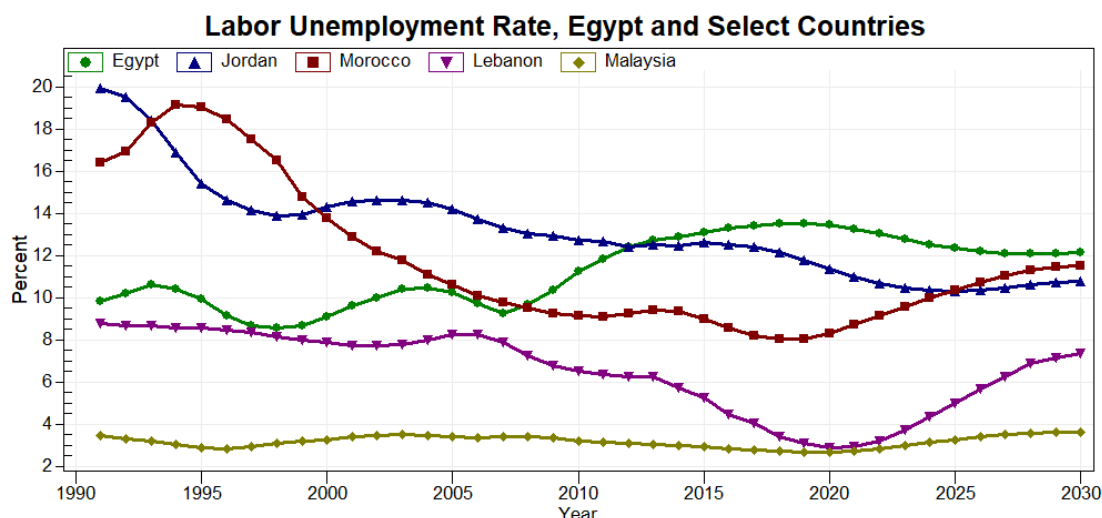


Figure 3. Unemployment rate (5-year moving average) for select countries, 1990-2030. Source: Historical data from ILO (2018), forecast from IFs 7.36.

Unemployment is increasingly a challenge for educated Egyptians. By one estimate, the number of Egyptians enrolled in public universities increased from 1.49 million in 2001 to 1.93 million in 2009 (Buckner, 2013). Yet, as a 2014 report from the ILO found, 44 percent of the youth population with a tertiary education was unemployed, compared to 2.3 percent among those who had not completed primary education (Barsoum, Ramadan, & Mostafa, 2014).

A 2016 report from the Brookings Institute advances several potential explanations for high rates of unemployment in Egypt (Ghafar, 2016). Egypt remains young and the economy has been unable to absorb new labor market entrants. Egypt's labor force (those aged 15-64) has grown from around 13.2 million in 1980 to 31 million in 2015 and is projected to reach 41 million individuals along the Current Path by 2030. These workers will need to be absorbed into the economy, and IFs suggests that most job creation will occur in the services and manufacturing sectors. A report prepared for the European Union in 2015 found that some of the fastest growing sectors in Egypt between 2006 and 2012 were in telecommunications, construction, and tourism-related services like hotels and restaurants (Said, 2015). The International Trade Administration at the U.S. Commerce Department highlights renewable and traditional energy sectors, the construction industry, and healthcare as important market opportunities. (International Trade Administration, 2017).

Egypt's labor market has traditionally been dominated by the public sector, a product of policies beginning in the 1950s and 1960s that promoted public sector employment and guaranteed a government job for university graduates (Richards, 1992). Labor demand stagnated over time as it became evident that the public sector could not sustainably absorb a growing number of university graduates (Assaad, 1995). Moreover, these policies harmed employment in the private sector, which has been hurt by the lack of a strong entrepreneurial culture, limited available financing options, opaque licensing regulations, and weak antitrust laws that favor large firms and politically connected companies while failing to protect small and medium-sized firms (Ghafar, 2016; World Bank, 2014).

In the place of formal labor employment, many market entrants have been forced to find informal, irregular work (Assaad & Krafft, 2013). IFs estimates that in 2015, 51 percent of Egypt's non-agricultural labor operates informally,

and the informal economy makes up 20 percent of GDP.<sup>8</sup> By 2030, 40 percent of non-agricultural labor is still expected to find employment in the informal sector.<sup>9</sup> This represents a significant obstacle to both economic productivity and government revenue generation.

Economic opportunity is also very limited for many Egyptian women. Among women, labor force participation rates, or the proportion of the population who are economically active (aged 15 and older), have hovered at just over 20 percent for the better part of the past decade and a half. In 2015 females made up 23 percent of Egypt's labor force, one of the lowest shares in the world (ranked 171 out of 186 countries). Low female labor force participation is a common trend in the Middle East and North Africa (MENA) region; Muslim countries outside of MENA such as Malaysia and Indonesia have higher rates of female labor employment, around 37 percent of the labor force. IFs projects that by 2030 female labor participation will grow only slightly, to 25 percent.

Women's unemployment rates in Egypt have also been consistently higher than men's; in 2017 the female unemployment rate was estimated at 24.6 percent, compared to 8.3 percent among males. This trend has persisted even as female education and access to health care has expanded. Low levels of female participation in labor markets have been attributed to a number of interrelated factors, including legal and regulatory frameworks that place restrictions on women's mobility, social and cultural norms that favor males in the workplace, skills and private sector labor demand mismatches, and female concerns about safety in the workplace (World Bank, 2013).

Bringing women into the formal labor sector could accelerate economic growth over the coming decades. Expanding the female share of the labor force will have positive economic benefits for Egypt, although doing so requires sufficient availability of jobs to absorb these additional women laborers. While informal employment offers the opportunity for wages, it offers limited social benefits or protections to ameliorate women's concerns about safety in the workplace. This underscores the need for Egypt to concentrate on expanding formal employment opportunities in tandem with policies that enable women to enter the labor force. Moreover, labor has historically been a stable contributor to growth, particularly since productivity or technology's contribution has declined over the past decade and a half.

Egypt has a young population, an expanding labor force, and an opportunity to bring more women into the labor force, all of which could be important drivers of economic growth over the long term. The capacity of the Egyptian economy to absorb a growing and increasingly educated and increasingly female labor force will be an important determinant of Egypt's trajectory towards sustainable inclusive development as well as its prospects for achieving the SDGs.

## Human development indicators continue to improve, albeit at a slowing pace

With respect to human development, Egypt has seen important improvements. Average years of education across the adult population (aged 15 and older) have risen from 4.4 years in 1990 to around 7.1 in 2015, though slightly

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<sup>8</sup> In IFs, informal labor is initialized using data from the International Labour Organization (ILO), and is driven by measures of adult education, business regulation, and corruption. More information about how informality is dealt with in IFs can be found in Bohl et al. (2015) and in the [Pardee Wiki](#).

<sup>9</sup> The informal economy is a broad term for enterprises and/or employment relationships that are not legally regulated, incorporated, or protected (Alter Chen, 2005). The informal sector does provide many laborers with a basic wage but does not offer benefits or social protection to workers, and it costs governments in the form of lost tax revenue. The informal sector is decisively less productive than the formal sector. But in developing countries a large portion of the population depends on informal activity for their livelihoods (La Porta & Shleifer, 2014).



below the expected level of education for a country at Egypt's GDP per capita (8 years). There is also a disparity in attainment by gender. Females (6.5 years) have just over a full year of education less than males (7.8 years) in 2015. Along the forecast horizon, educational attainment is projected to increase to 8.5 years, but the gap between males (9.0 years) and females (8.0 years) is projected to close only marginally. Net primary enrollment rates in 2015 reached around 95 percent for males and 94 percent for females, and net secondary enrollment (both lower and upper) is around 82 percent. Gross secondary enrollment rates are similarly high, around 99 percent for lower secondary and 73 percent at the upper secondary level. Of those students who enroll in lower secondary, close to 80 percent graduate, and of those enrolling at the upper secondary level, 70 percent graduate. Lower enrollment and graduation rates at upper secondary constrain the flow of students to tertiary education, where enrollment rates are estimated to be around 36 percent, behind countries like Jordan (45 percent) and Lebanon (43 percent) but ahead of Tunisia (35 percent) and Morocco (28 percent).

Life expectancy has increased from an average of 64.5 years in 1990 to 71.3 in 2015 (73.6 for females, 69.1 for males), on par with Egypt's level of development. By 2030, Egypt's life expectancy is projected to reach 74 years. Under-5 mortality rates are projected to decline from around 22 in 2015 to 14.7 by 2030.

Table 4 shows how Egypt scores along these human development indicators against several comparison countries in 2015 and in 2030 along the Current Path. With respect to average educational attainment, Egypt is ahead of Morocco and roughly on par with Algeria but behind other comparison countries. Notably, Egypt has one of the largest disparities in educational gender parity, ahead of only Morocco. Egypt's life expectancy is behind that of other Arab States.

	Average years of education (15+)		Education gender parity ratio (females/males)		Life expectancy		Noncommunicable disease death rate (total per 1,000)		Under-5 mortality (deaths per 1,000 births)	
	2015	2030	2015	2030	2015	2030	2015	2030	2015	2030
<b>Egypt</b>	7.1	8.5	0.76	0.83	71.3	73.9	4.8	5.1	22	14.7
<b>Algeria</b>	7.1	8.4	0.87	0.93	75.8	77.9	3.7	4.6	29.5	24.4
<b>Lebanon</b>	8.1	8.7	0.91	0.94	79.5	80.9	4.1	5.8	10.2	8.9
<b>Jordan</b>	10	11	0.91	0.94	74.2	75.9	3.0	3.8	18.5	14.8
<b>Morocco</b>	5.7	7.1	0.67	0.79	75.5	78	3.8	5.0	29.1	19
<b>Malaysia</b>	10.9	11.9	0.96	0.99	75.2	78.1	3.6	4.8	7.5	5.6

Table 4. Select human development indicators in health and education for 2015 and 2030. Source: Education figures initialized using data from Barro and Lee (2013). Life expectancy and under-5 mortality initialized using data from the United Nations World Population Prospects (UNDESA, 2017b). NCD death rates initialized using data from the Global Burden of Disease Study (GBD, 2017). Forecasts from IFs 7.36.

These improvements are recognized as important achievements in human development in Egypt. It also bears pointing out that progress along some indicators has slowed in recent decades. Between 1990 and 2000, average education increased from 4.4 years to 6, but only increased from 6 to 7.2 years between 2000 and 2010. Similarly, life expectancy grew from 64 to 68 years between 1990 and 2000, but only from 68 years to 70 years between 2000 and 2010. Data from the UN World Population Prospects (UNDESA, 2017b) shows fertility rates have also reversed direction in Egypt in the past decade, falling from 4.6 children per woman in 1990 to 3.1 in 2005, before climbing back slightly to 3.3 by 2015. These fertility patterns have been attributed to declining contraceptive use and women becoming childbearing at younger ages (Khalifa, Soliman, & Sakr, 2017; Radovich, el-Shitany, Sholkamy, & Benova, 2018; The Economist, 2015).

Egypt has also made important strides in reducing the communicable disease death rate. The country met targets set by MDG Goal 6 to reduce the burden of HIV/AIDS, tuberculosis, and other infectious diseases (UNDESA, 2017a). According to data from the Global Burden of Disease study (GBD, 2017), the total communicable disease death rate

fell from around 2.5 (per 1,000) in 1990 to 0.67 (per 1,000) in 2015.<sup>10</sup> Noncommunicable diseases by contrast remain the leading cause of death in Egypt; death rates have grown from an estimated 4.6 per thousand in 1990 to 4.8 in 2015, with the greatest share coming from cardiovascular disease (2.5 deaths per 1,000). In addition to a growing noncommunicable disease burden, Egypt also has some of the highest levels of adult obesity in the world, with over 35 percent of adults (19 million individuals) classified as obese (Afshin, 2017), a trend that is projected to continue rising along the Current Path. IFs estimates that 45 percent of adults (aged 30 or older) could be obese by 2030. Studies have attributed Egypt's high obesity rates in part to the food subsidy system, which encouraged consumption of cheap, calorie-rich foods and unbalanced diets (Ecker, Al-Riffai, Breisinger, & El-Batrawy, 2016).

## The key contribution of improved governance

Egypt's governance capacity and effectiveness, or the ability to provide and deliver services, has not kept pace with its level of development. A population's unmet expectations can be a source of potential social tension and an obstacle to sustained and equitable economic development. The events of 2011 demonstrated this and brought to light pressing issues around rising costs of living, opportunity, and public service delivery, and corruption. Governance will be a key determinant, either positive and negative, in the country's development prospects.

The underlying tensions that resulted in the 2011 protests existed in spite of improvements in human development outcomes and steady economic growth. Egypt's governance and service delivery failed to keep pace with the expectations of an increasingly healthy and educated society, resulting, for example, in price subsidies that were often poorly targeted and a growing economy that paradoxically struggled with high rates of unemployment (Abdel-Khalek, 2014; Galal, 2002; Mohamed, 2014; Talaat, 2018).

Moreover, with a growing population and rising incomes projected across the horizon, the government's capacity to deliver public services equitably and inclusively is important for Egypt to preserve stability and accelerate its development. Governance thus remains a crucial nexus around which movement toward the SDG targets will depend for Egypt.

Government capacity, conceived here as the ability to raise revenues and administer public services, remains a challenge. In 2015, IFs estimates that government revenues (excluding aid), account for 25 percent of GDP, which puts it behind neighboring countries like Algeria (40 percent), Tunisia (31 percent), and Morocco (30 percent). Capacity is further hindered by corruption. In 2011, roughly 79 percent of Egyptians surveyed felt corruption was a significant problem at state agencies; by 2014 that figure had increased to 83.4 percent (Teti, Abbott, & Cavatorta, 2018). A significant body of literature has examined the negative consequences of corruption on economic growth and development (Bardhan, 1997; Mauro, 1995; Nye, 1967; Tanzi, 1998). Corruption has been found to lower per capita GDP growth and investment rates (Mauro, 1995), reduce the quality of spending on public services, bias state expenditure on health and education, and lower public revenue generation (Davoodi & Vito, 2002). High levels of corruption are also linked to higher levels of income inequality (Dreher & Herzfeld, 2005; Herzfeld & Weiss, 2003).

Egypt's government revenues (as a share of GDP) are projected to rise through 2030 but will remain among the lowest in the region. In addition to affecting government revenue streams directly, corruption can drive economic activity into the informal sector (Friedman, Johnson, Kaufmann, & Zoido-Lobaton, 2000; Johnson, Kaufmann, Shleifer,

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<sup>10</sup> IFs forecasts data on mortality and morbidity for 15 specific causes of death. These causes are grouped according to the WHO International Classification of Disease (ICD) across three categories: communicable (infectious) disease, noncommunicable disease, and accidents/injuries. Data on mortality and morbidity are available from 1990 to 2015 from the Global Burden of Disease (GBD) Project from the Institute for Health Metrics and Evaluation at the University of Washington. The GBD measures mortality and morbidity across hundreds of categories. For forecasting purposes, IFs consolidates this data into 15 major causes. For more information on the IFs health system, see Hughes et al. (2011).



Goldman, & Weitzman, 1997). In 2015, IFs estimated that 51 percent of Egypt's non-agricultural labor force was in the informal sector, behind only Palestine (56.2 percent) among Arab States. By 2030, the share informal employment is projected to fall to 40 percent, though the number of people working informally continues to grow.

#### Box 1. Forecasting Governance in IFs

Governance can be defined as the ability of the government to secure and administer the territory it governs through effective delivery of basic human services across the population. Governance in IFs is conceptualized across three dimensions: security, capacity, and inclusion. Security accounts for the establishment of peace and stability without repression. Government capacity, the ability of governments to raise revenues and effectively provide public goods and services, comprises measures of government revenues, corruption, and effectiveness. And inclusion refers to the greater inclusion of the population in political and economic processes.

The diagram below illustrates the conceptualization of the governance model, the interconnectedness of the three components, and how governance interacts with other modules in IFs. When all three dimensions are strong and reinforcing, we expect each to lead to mutually reinforcing positive development cycles. Imbalances between the three systems, governance challenges like predatory elites, a lack of accountability measures, or domestic instability can lead to vicious cycles of poor governance, limited human development, and reduced well-being. More information about the governance model in IFs is available in Hughes et al. (2014).

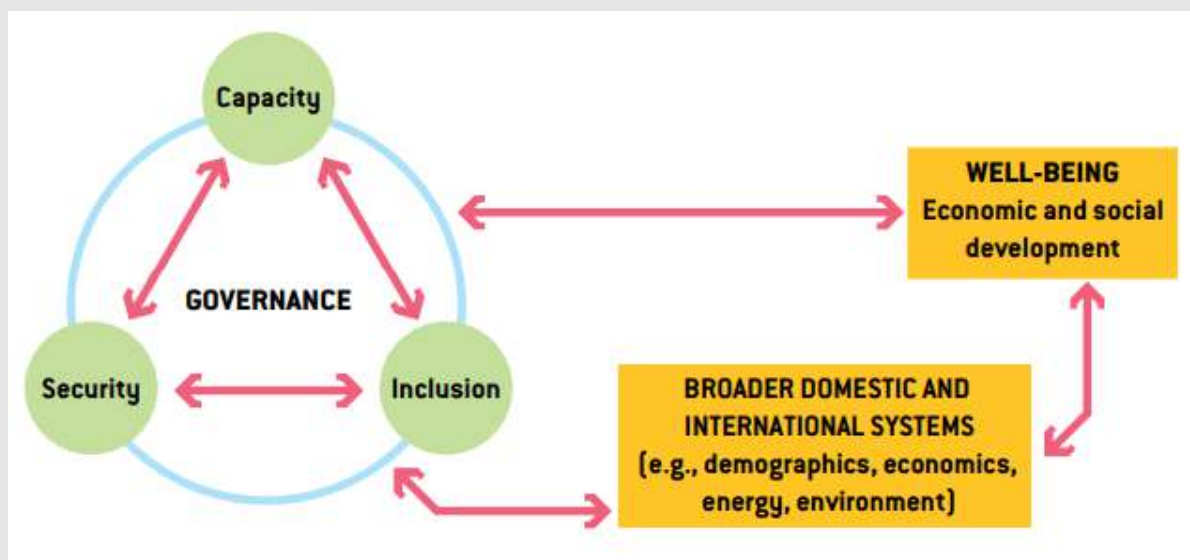


Figure 4. Stylistic representation of governance model in IFs. Source: Hughes et al. (2014).

Government effectiveness captures the quality of public services, the civil service, the policy formulation process, and the government's commitment to these policies (Kaufmann, Kraay, & Mastruzzi, 2010).<sup>11</sup> In 2015, Egypt had a government effectiveness score of 1.68, ranking 146<sup>th</sup> globally (of 186 countries in IFs) and at the same level as Pakistan, which is at a significantly lower level of development. Along the Current Path, effectiveness is projected to improve somewhat to a score of 2.1 by 2030, at the level of Algeria today. But as effectiveness in other countries is also expected to improve, Egypt is projected to remain in the bottom 25 percent of countries, ranked 143<sup>rd</sup> of 186.

IFs measures and forecasts government transparency (defined as the absence of corruption) initialized from the Corruptions Perceptions Index from Transparency International. In 2015, Egypt ranked 115 (out of 186 countries in IFs) with respect to its level of transparency, just ahead of Moldova. Under this measure of transparency, Egypt's levels of transparency are forecast to improve such that its global transparency ranking improves marginally, to 109 out of 186 in 2030, but will still be below that of its peers.

The economic and social dimensions of the Current Path discussed above provide the background for the alternative scenarios explored later in this report. The environmental dimension is also important and its Current Path is discussed below.

## Natural systems in the Current Path: the food, water, and energy nexus

Egypt today is already facing intersecting challenges at the nexus of food, energy, and water. The elements of these challenges are all affected by rising demand. Egypt's population (97.7 million in 2017) is projected to grow to around 122 million by 2030, accompanied by urbanization and rising incomes. According to data from the FAO (2017b), Egypt already has some of the highest agriculture yields in the world, much of that from irrigated cropland. IFs estimates that approximately 86 percent of Egypt's water goes to agriculture. Rising incomes and growing urban populations drive up electricity demand, which requires water for generation. With a limited and already over exploited supply, these trends are expected to increase stress on Egypt's water systems. Egypt's state statistics agency has estimated that water supply per capita has declined 60 percent, from over 1,672 cubic meters in 1970 to only 663 cubic meters in 2013 (Ezz & Arafat, 2015). Much of the per capita decline is driven by a rising population against a limited supply (The Economist, 2016).

Managing these options involves a trade-off between balancing high yields and domestic food production, coupled with rising energy demands, against water-intensive agricultural practices and a shrinking water supply. While these challenges exist under current conditions, their effects could be mitigated through agricultural efficiency improvements and investments in renewable energy.

Egypt's agricultural yields in 2015 are estimated to be nearly 25.5 tons per hectare, the 5<sup>th</sup> highest globally and 3<sup>rd</sup> highest in Africa (behind Mauritius and Swaziland). These yields have risen from around 17.4 tons per hectare in 1990. Over the same time period, land under cultivation for crops has increased from around 2.6 million hectares to 3.8 million hectares. Along the forecast horizon, the amount of land under cultivation for agriculture is not projected to grow significantly, due to costs required to convert Egypt's unfavorable desert climate to arable land. Given Egypt's already high yield, there is limited room to continue expanding yields, which are projected to grow to only about 28 million tons per hectare by 2030, largely driven by technological improvements and efficiency.

Consequently, Egypt is projected to become increasingly reliant on imports of food to supply its rising population, even taking into account projected improvements in yield and agricultural efficiency (see Table 5). Egypt is able to

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<sup>11</sup> Government effectiveness is initialized using data from the World Bank's World Governance Indicators (WGI). The aggregate WGI indicators are measured on a scale from -2.5 to 2.5. IFs takes these figures and converts them to a scale ranging from 0 to 5, with 0 representing very low government effectiveness and 5 representing high levels of government effectiveness.

provide only about 81 percent of total agricultural demand through domestic production, a figure that is projected to fall to around 69 percent by 2030. An increasingly large percentage of Egypt's agricultural demand must be met with imports. In 2015, IFs estimates that net imports (imports less exports) are required to meet roughly 19 percent of total demand; along the forecast horizon, net imports could reach nearly 32 percent of demand by 2030.

Similarly, Egypt is projected to be increasingly dependent on imports to meet its energy demands. Along the Current Path, IFs projects energy demand to continue to outstrip energy production and domestic supply. This Current Path forecast includes energy production adjustments made to account for new potential gas fields in 2015.<sup>12</sup> Though historically a net oil exporter, Egypt has been dependent on oil imports since the mid-2000s due to declining production and rising demand (Adly, 2016). In 2003, Egypt began exporting natural gas to neighboring countries in the Middle East, and yet by 2015 it had become a net importer of gas. Gas has become increasingly important to Egypt's energy mix, accounting for around 50 percent of the country's total energy use. As much as 60 percent of Egypt's gas supplies go to power generation, with the remainder feeding industrial, residential, and commercial needs (Tsafos, 2015). Total domestic energy production, while able to meet Egypt's demand today, is projected to meet less and less of Egypt's total energy demand through 2030.<sup>13</sup> Renewable energy production, which has averaged only around 2 percent of Egypt's total production over the past two decades, is projected to grow slowly, reaching 2.5 percent of total production by 2030.

Growing demand for food and energy will increasingly run up against challenges stemming from a dwindling supply of water along the Current Path. Egypt is almost entirely water dependent on the Nile (accounting for 84 percent of Egypt's water supply), with most of the country's remaining water demand met through groundwater (FAO, 2017a). The Current Path suggests that Egypt is already overexploiting both its surface and groundwater resources.

To realistically account for limited supply, the Current Path trajectory for water in Egypt is one of declining supply and rising demand. Overall, total water supply in Egypt is projected to decrease from 78 km<sup>3</sup> in 2015 to 72.6 km<sup>3</sup> by 2030, before falling to 68.5 km<sup>3</sup> in 2050. IFs estimates that Egypt is already overexploiting its renewable water resources (surface and groundwater). Due to current levels of overexploitation, IFs forecasts that water withdrawals from both surface and groundwater will decline to bring the water sector into a more sustainable pattern. This reduction requires that water demand is met through other forms of supply, leading to an increase in both desalination and wastewater treatment. Desalination increases to over 0.4 km<sup>3</sup> by 2030 and nearly 6 km<sup>3</sup> of wastewater is treated by 2030. Even accounting for projected increases, desalinated water and treated wastewater are still projected to account for only about 8 percent of total water demand by 2030.

IFs measures water demand in three categories: municipal, industrial, and agricultural. Projected urbanization and rising incomes mean a growing demand for water for the purposes of municipal and residential services. At the same time, IFs projects rising nonrenewable electricity generation and demand, in part a result of rising incomes, leading to a greater demand for water for industrial purposes. Thus, the only sector capable of effectively responding to Egypt's rising demand is the agriculture sector. Along the Current Path, agricultural water demand decreases from 67 km<sup>3</sup> to 56 km<sup>3</sup> by 2030 and continues declining to 45 km<sup>3</sup> by 2050. Declining water demand for agriculture is a function of restrictions on the expansion of irrigated land and projected efficiency improvements in the application of Egypt's irrigation. Still, overexploitation will remain under the Current Path.

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<sup>12</sup> The Current Path used in this report includes adjustments made to account for planned production and recent discoveries of natural gas in Egypt. Even with these adjustments, IFs does not project Egypt to be able to meet its energy demands along the horizon with domestic production.

<sup>13</sup> Total energy production in IFs is measured across six main types of energy: oil, gas, coal, hydropower, nuclear, and other renewable energy (a group that includes production from geothermal, wind, solar, tides, biodiesel, and biogas). Energy production data are taken from the International Energy Agency (IEA, 2017) and measured in billion barrels of oil equivalent (BBOE).

		2000	2015	2030
<b>Agriculture</b> <i>(million metric tons)</i>	<b>Agricultural production</b>	70.3	100.7	116.7
	<b>Agricultural demand</b>	81.3	124.3	167.9
	<b>Production/demand ratio</b>	0.87	0.81	0.69
<b>Energy</b> <i>(billion barrels of oil equivalent)</i>	<b>Total energy production</b>	0.369	0.537	0.705
	<b>Total energy demand</b>	0.308	0.537	1.031
	<b>Production/demand ratio</b>	1.2	1.0	0.68
<b>Water</b> <i>(cubic kilometers)</i>	<b>Water supply</b>	NA	78	72.6
	<b>Water demand</b>	68.3	78	74.2
	<b>Supply/demand ratio</b>	NA	1.00	0.98

Table 5. Supply and demand of agriculture, energy, and water in Egypt in 2000, 2015 and 2030. Source: Historical agriculture data from FAO (2017b), energy data from IEA (2017), and water data from AQUASTAT (FAO, 2016). Forecasts from IFs 7.36.

Across each of these natural systems (food, water, and energy), Egypt is facing a series of choices that will shape future trends. Rising population growth and incomes mean that Egypt is unlikely to produce enough energy domestically to meet demand. And renewables, while an opportunity to diversify supply, are not projected to come online quickly enough cover the shortfall in fossil fuels. At the same time, despite having some of the highest levels of agricultural yields in the world, domestic food production is not projected to meet rising demand for food. Thus, in order to ensure sufficient access to food, and in doing so ensure greater food security, greater dependence on the global market for food imports is a likely outcome. Enhancing irrigation may allow Egypt to increase yields more rapidly than projected by the Current Path, providing more domestic food sources and greater control over price volatility that comes with dependence on the international market. At the same time, expanding irrigation will place even more strain on the Nile River, Egypt's only source of freshwater. Egypt already overexploits renewable water resources and shares water from the Nile River basin with ten other countries in the region. Intensifying irrigation may be an unsustainable option for Egypt in this context over the long term. The choice is one between food and energy security, from domestic production and subsidized access, and the long-term threat of water scarcity and conservation. Under the current modelling, water overexploitation is assumed to be partially circumvented by new sources and increased water-efficiency, while insufficient food and energy production will be covered by imports.

## Alternative scenarios

While the Current Path represents the “most likely” path of development, the Sustainable Development Strategy as well as the 2016 reforms signal a commitment from the Egyptian government to forge a new path towards greater human, social, and economic development by 2030. Presented here are five scenarios designed to explore potential development narratives for Egypt: (1) Economic Development, (2) Social Justice, (3) Female Empowerment, (4) Governance, and (5) Integrated Push. The scenario design was informed by the analysis of Current Path development trends and priorities elaborated by the UNDP and Egyptian government. Scenarios were selected and further refined through collaboration with the UNDP Egypt Country Office, Egypt's Ministry of Planning, Monitoring, and Administrative Reform (MoPMAR), and other stakeholders during a workshop held in Cairo in July of 2018. It should be noted that concerns about food, water, and energy security are undeniably important and were strongly considered for an additional scenario. Ultimately, due to modeling constraints, it was decided that we were unable to

address the issue with sufficient adequacy and it was not incorporated. The Current Path trajectory of these systems is explored in the preceding section.

Rather than explicitly representing new policies, these scenarios simulate the outcomes of the successful implementation of various elements of Vision 2030. Independently, the scenarios each represent a unique pathway toward accelerating Egyptian development. In concert, they portray a plausible future in which Egypt achieves or makes considerable progress toward select goals outlined in Vision 2030.

In developing specific interventions, we seek to model improvements which are ambitious but achievable. They should be ambitious enough to represent a significant change from the Current Path but reasonable in the sense that their achievement is possible within the Egyptian context. To this end, several strategies were used to determine the magnitude of each intervention. In some cases, interventions may model the successful achievement of an explicit target set by Vision 2030. Where historical data are available on a global scale, we look to examples of development in Egypt's own history as well as that of countries that share important similarities. Finally, where historical data are unavailable or not applicable, we can use benchmarking: comparing the end result of the intervention with the that of other relevant countries, such as Egypt's regional neighbors or economic peers. In this way, we attempt to construct scenarios that are relevant to Egypt and where no one intervention is entirely unrealistic.

## **Box 2. Scenario Analysis with IFs**

A scenario is a "coherent, internally consistent, and plausible description of a possible future state of the world" (Carter et al., 2001, p. 147). Scenarios are an important tool for exploring potential future developments of complex systems and environments. IFs scenario analysis is commonly used to provide coherent, alternative stories of the future, help to frame long-term uncertainty, and allow detailed exploration of possible trade-offs across different alternative futures (Hughes, 2005).

In the context of this report, scenarios are used to elaborate plausible future pathways of Egypt's development informed by the trends analysis in the preceding sections. The scenarios help to frame possible outcomes of distinct development pathways on specific SDG indicators as well as some of the policy choices facing Egypt today.

Each scenario comprises interventions lasting the duration of the SDG time horizon (2018 to 2030). In most cases we do not model a specific policy implementation. Instead, we model the outcome of what happens if a policy is successful in reaching its goal. For example, to simulate an improvement in education quality, we model an increase in test scores (see Scenario 2: Social Justice), but the policies implemented to achieve this (e.g. improvements in curriculum, teacher training, or the classroom environment) are not specified.

The following sections describe the assumptions made in each scenario independently, followed by their results. Note that it is important to differentiate between the two: Assumptions are the inputs into the IFs modeling process while the results are the broader outcomes of that modeling effort. A more detailed table of scenario assumptions and the magnitude of each intervention relative to the Current Path is available in Annex 1.

## **Scenario 1: Economic Development**

### **Assumptions**

The Economic Development scenario focuses on objectives described in the Economic Development Pillar of Egypt's Vision 2030, modeling a future in which Egypt takes a traditional approach to pursuing economic growth. By 2030, the Egyptian economy is more open and attractive to foreign investors, resulting in increases in trade and inflows of FDI. The government is focused on improving the business environment as well as expanding investments in research and development (R&D). And finally, the population is better equipped for the employment opportunities of

tomorrow, with increased enrollment in vocational programs and in science and engineering fields at the tertiary level.

In this scenario, trade increases from 34 percent of GDP in 2018 to nearly 40 percent by 2030, compared to the Current Path projection of 33 percent.<sup>14</sup> The stock of foreign direct investment grows from 43 percent of GDP to 55 percent in 2030, compared to 46 percent in the Current Path. Among Egypt's labor force challenges are high rates of unemployment and a mismatch between the skills of graduates and those desired by employers. Economic Development addresses these by increasing vocational enrollment among lower and upper secondary students each by ten percentage points, bringing upper secondary vocational enrollment back to 2002 levels, and by increasing the percentage of tertiary graduates in science and engineering fields from 20 to 30 percent. The scenario models a reduction in unemployment rates from 12.6 percent today to 4.6 percent by 2030, meeting Egypt's Vision 2030 target of less than 5 percent. It also models over a four-fold increase in government spending on R&D, from 0.04 percent of GDP in 2018 to 0.19 percent of GDP in 2030. Finally, government regulation of business and commerce improves, reaching the level of Moldova today.<sup>15</sup>

## Results

Of the four individual scenarios, Economic Development leads to the greatest growth in GDP, reaching over \$630 billion by 2030. Improving business regulation means that businesses have less incentive to operate and hire informally, leading to a 31 percent drop in informality from 2018 levels – the greatest reduction of the four scenarios. Increases in vocational enrollment as well as science and engineering graduates make for a more capable and productive workforce while investments in R&D and higher levels of trade and foreign investment fuel more productive industries. One outcome of a more capable and formalized workforce is higher labor productivity, increasing to \$15,440, 9 percent higher than the projected Current Path value of \$14,060. Moreover, economic growth and job formalization lead to an expansion in the tax base, resulting in an annual \$17 billion increase in government revenues and a \$77 billion cumulative increase relative to the Current Path by 2030. This means the government can invest more in social services and physical infrastructure.

## Scenario 2: Social Justice

### Assumptions

In Vision 2030, Egypt's Social Justice Pillar aims to ensure “equal rights and opportunities among all Egyptians and [the] effective elimination of all sorts of social gaps” (Ministry of Planning, Monitoring and Administrative Reform, 2016, p. 143). It incorporates objectives focusing on issues such as education, access to social services, and the protection of the most marginalized populations. In this report, the Social Justice scenario models increases in access to and quality of education, improvements in health outcomes, and provides additional income (via transfers) to poorer households.

This scenario models a greater emphasis on government spending on health, education, and infrastructure, relative to the Current Path. With a particular focus on tertiary education, graduation rates rise from 14 percent in 2018 to 24 percent by 2030 (compared with the Current Path projection of 15 percent). To achieve this, the intervention assumes greater student throughput at lower levels as well. Education quality improves according to the OECD's Programme for International Student Assessment. Average test scores increase from 32 to 39 at the primary level and from 44 to 49 at the secondary level, reaching the levels of Jordan and Turkey today, respectively. The scenario simulates health improvements via a reduction in the death rate from noncommunicable disease to 4.7 in 2030, compared to 5.1

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<sup>14</sup> Note that 2018 is reported as a reference year. While typically informed by most recent data, this value represents an estimate from IFs. For most recent historical values, please consult the IFs database.

<sup>15</sup> Measures of government business regulation include measures of the business environment, of the regulatory burden placed on businesses, and the World Bank's Regulatory Quality Index.



along the Current Path. This includes a reduction in the burdens of child and maternal mortality from 22 to 12 deaths per 1,000 children born and from 1.9 to 1.4 deaths per 1,000 adult women. Finally, the scenario increases welfare transfers to unskilled households from 9.5 to 10 percent of GDP by 2030, instead of falling to 8.6 percent of GDP in the Current Path.

## Results

As expected given its assumptions, Social Justice has the greatest impact on human development and related outcomes. Life expectancy grows due to reductions in the burdens of noncommunicable diseases and child and maternal mortality. By 2030, life expectancy in Social Justice increases to 75 years, compared to 73.8 in the Current Path and 74 years in the next highest scenarios, Economic Development and Female Empowerment. It is also the only individual scenario which leads to a notable change in average education years by 2030, reaching 8.6 compared to 8.5 in the Current Path. Although this increase is just one tenth of one year, it is a measure which takes considerable time to change significantly, as children must age through the education system. Finally, Social Justice is the only scenario which leads to a change in Egypt's global HDI ranking, moving from 103<sup>rd</sup> out of 186 in 2015 to 100<sup>th</sup> in 2030.<sup>16</sup>

## Scenario 3: Female Empowerment

### Assumptions

The Female Empowerment scenario models the creation of a more equitable environment for women. Objectives related to female empowerment are included in both the Economic Development and Social Justice Pillars of Egypt's Vision 2030. But by featuring these objectives as a separate scenario, this report aims to single out the significant impact that improvements in gender equity may have on Egypt's development.

In this scenario, gender empowerment broadly, as measured by the United Nations Development Program's Gender Empowerment Measure (GEM), improves from a score of 0.3 in 2018 to 0.5 by 2030, a level similar to that of Oman and Qatar today. The scenario simulates increased access to family planning services via a reduction in fertility from 3.3 to 2 children per woman, similar to that which occurred in Azerbaijan from the 1990s to mid-2000s. And female labor participation increases from 23 percent in 2018, one of the lowest shares in the world, to 38 percent in 2030. This expansion in female labor participation parallels that achieved by Qatar and Spain over a similar period. Both the reduction in fertility rates and increase in female labor force participation assume the successful achievement of targets set by Egypt's Ministry of Planning in the Economic Development Pillar of Vision 2030.

### Results

Notably, Female Empowerment achieves the greatest growth in GDP per capita, reaching \$14,230 by 2030 – a 7 percent improvement over the Current Path. This is thanks to a combination of a smaller population due to lower fertility rates and high levels of economic growth achieved by more women entering the labor force. For these reasons, Female Empowerment also achieves the greatest reduction in poverty (measured by the population living on less than \$3.10 a day), from 22 percent in 2018 to 11 percent in 2030, closely followed by Economic Development and Social Justice (11.3 and 11.5 percent in 2030, respectively). In addition, the fertility reductions in Female Empowerment lead to a significant reduction in the economically dependent population. By 2030, this demographic bonus is close to 12 percent larger than in the Current Path, and by 2040 Egypt's demographic dividend is 30 percent larger. And though per capita demand is higher than in the Current Path, agricultural and energy import dependence is lower than all other scenarios by 2030.

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<sup>16</sup> Egypt in 2030 under this scenario would rank 79<sup>th</sup> according to 2015 values of HDI.

## Scenario 4: Governance

### Assumptions

The objective of Governance is to promote security, transparency, and effectiveness to better align governance with public expectations. Good governance and the ability for the government to deliver public services is likely to play a crucial role in accelerating Egypt's progress toward achieving economic and sustainable development goals. This scenario corresponds to the Fourth Pillar of Egypt's Vision 2030: Transparency and Efficiency of Government Institutions.

The Governance scenario models an improvement in three facets of governance: security, effectiveness, and transparency. Government effectiveness, as measured by the World Bank's Governance Effectiveness Index, improves from a score of 1.76 today to 2.9 in 2030, reaching roughly the level of Italy today. Transparency (the lack of corruption) improves according to Transparency International's Corruption Perception Index from a score of 3 today to 4.5 by 2030, reaching roughly the level of Oman and Jordan today. Finally, the threat of widespread internal conflict is effectually eliminated, whereas in the Current Path it remains a looming possibility through 2030.

### Results

Improving governance affects all aspects of economic and social development through a more productive economy and higher government revenues, both of which enhance the government's ability to provide health and education services and improve the country's infrastructure. Thus, it is unsurprising that Governance results in many positive outcomes in 2030, such as GDP growth to \$612 billion, a 6 percent improvement over the Current Path. But in areas of governance, it can take some time for improvements to be fully realized across all areas of the economy and society. This is made clear by looking at the outcomes of Governance in the long run. By 2050, Governance results in the greatest improvements in GDP (26 percent greater than under the Current Path) and GDP per capita (18 percent greater) of all four individual scenarios. Labor productivity doubles from its 2030 projected value to over \$31,000 per worker in 2050. And the government has \$129 billion more in annual revenues (\$1.2 trillion cumulatively) than it would in the absence of intervention in 2050. In this sense, good governance acts as a multiplier on development improvements and can take some time to show its true potential.

## Scenario 5: An Integrated Push

### Assumptions

While each of the first four scenarios model specific packages of development priorities, Integrated Push models a combination of all of the interventions described above. This scenario allows us to understand the possibilities of a comprehensive development program and explore the trade-offs and synergies both within and between scenarios.

### Results

Broadly, Integrated Push has the strongest impact across nearly all indicators examined in this report. By 2030, Egypt's GDP grows to \$727 billion – the 28<sup>th</sup> highest in the world and a 26 percent improvement over the Current Path. In terms of GDP per capita, Egypt moves from the 100<sup>th</sup> highest GDP per capita in 2015 to the 88<sup>th</sup>, where it is projected to reach \$16,000, roughly the level of Thailand today. 16.2 million fewer people are in poverty in 2030 than in 2015 and 7.6 million fewer than would be in poverty in 2030 along the Current Path. In some cases, the improvement shown in Integrated Push far exceeds the sum of improvements in other scenarios. For instance, in Integrated Push by 2030, GDP is \$150 billion higher than under the Current Path, whereas the sum of the gains in the other four scenarios is only \$145 billion. This demonstrates that intervention packages are working together to produce synergies that are only achievable in combination.

## 2030 Scenario results summary

The following table details Egypt's performance on select SDG indicators under the Current Path as well as each of the five scenarios described.



Description	Target Value	Current Path 2015	Current Path 2030	Econ 2030	Social 2030	Gov 2030	Fem 2030	Integrated Push 2030
<b>Goal 1: Poverty</b>								
Percentage of population below \$1.90 (2011\$ PPP) per day; lognormal	1.3	1.3	0.7	0.5	0.4	0.5	0.4	0.1
Percentage of population below \$3.10 (2011\$ PPP) per day; lognormal	11.1	22.3	13.7	11.3	11.5	12.3	11.0	6.1
Percentage of total government spending on essential services (education, health)		18.0	18.7	18.6	24.0	18.7	18.8	22.8
Transfers as a percent of GDP		16.9	17.1	17.2	18.7	17.1	17.3	19.7
<b>Goal 2: Hunger</b>								
Percentage of population undernourished	3.0	4.5	3.2	3.0	3.1	3.1	3.1	2.8
Percentage of malnutrition (weight for height <-2 SD) among children under 5	3.0	7.0	5.9	5.8	5.7	5.8	5.8	5.4
Severe acute malnutrition (weight for height <-3 SD) among children under 5	1.0	4.8	3.0	2.8	2.9	2.1	2.6	1.6
<b>Goal 3: Health</b>								
Infant mortality rate in deaths per thousand newborns	12.0	17.5	11.4	10.9	9.3	11.1	10.9	8.5
Contraception use as percentage of fertile women	97.0	58.5	68.6	69.9	69.0	69.4	70.0	72.4
<b>Goal 4: Education</b>								
Lower secondary education graduation rate	97.0	78.8	82.2	83.5	85.4	83.1	83.7	88.2
Primary education gross completion rate	97.7	97.7	100.0	100.5	100.5	100.3	100.5	101.7
Upper secondary education graduation rate	97.0	69.2	73.1	74.6	77.3	74.1	74.7	80.2
<b>Goal 6: Water and Sanitation</b>								
Percentage of people with access to improved water	98.8	98.8	99.0	99.0	100.0	99.1	99.0	100.0
Percentage of people with access to sanitation services	98.0	93.2	94.8	94.9	97.6	95.0	94.9	97.8
Percentage of people connected to wastewater collection system	98.0	44.3	45.8	46.0	49.2	45.9	46.1	50.3
Level of water stress: freshwater withdrawal as a percentage of available freshwater resources	74.4	148.8	138.5	138.5	138.5	138.6	138.3	138.3

Description	Target Value	Current Path 2015	Current Path 2030	Econ 2030	Social 2030	Gov 2030	Fem 2030	Integrated Push 2030
<b>Goal 7: Energy</b>								
Percentage of population with access to electricity	99.9	99.9	99.0	99.0	100.0	99.1	98.9	100.0
Renewable energy as percentage of total final energy consumption		1.9	1.7	1.7	1.7	1.7	1.7	1.6
<b>Goal 8: Growth and Employment</b>								
Annual growth rate of real GDP per capita		2.3	3.8	4.8	4.3	4.8	5.3	7.7
Percentage of informal employment (non-agricultural)		51.2	39.6	33.2	36.4	39.3	38.9	28.2
<b>Goal 9: Infrastructure, Industrialization, and Innovation</b>								
Manufacturing employment as a percentage of total employment		11.0	12.8	13.7	12.9	12.9	12.7	13.6
Manufacturing value added as a percent of GDP		22.8	25.6	25.2	25.7	25.8	25.7	25.5
Connections per hundred people to fixed broadband technology		4.6	17.1	19.0	36.8	17.3	17.5	39.8
Connections per hundred people to mobile broadband technology		40.6	139.1	142.1	140.7	139.4	140.0	144.6
<b>Goal 11: Cities and Settlements</b>								
Urban-population weighted PM2.5 levels in residential areas of cities with more than 100k residents		99.3	71.1	70.7	63.6	70.8	70.6	63.8
<b>Goal 12: Consumption and Production</b>								
Loss at the production level as a percent of agricultural production		8.1	7.3	7.1	7.2	7.1	7.0	6.6
Loss at the supply chain level as a percent of agricultural production		10.3	11.6	11.5	11.4	11.5	11.0	10.7

Table 6. Effects of alternative scenarios on select SDG indicators in 2030 for Egypt. A missing target value denotes that there was no explicit and numeric target provided in the SDGs. Darker coloring represents a more positive outcome. Coloring scheme compares scenario outcomes and the Current Path for each indicator individually. Source: IFs 7.36.

## Discussion

As is evident from the scenario results, no one policy or pathway will act as a panacea for Egypt's development. The evaluation of successful strategies depends on the definitions used and outcomes desired. All policy decisions come with trade-offs in resources and capacity that should be considered. For example, while some scenarios result in better outcomes for the economy, they may perform less well in terms of human development outcomes like health and education. On the other hand, some interventions are complementary, revealing synergies that can be taken

advantage of by using a more integrated approach. IFs allows us to explore not just the potential results of intervention packages in Egypt but also their trade-offs and synergies.

## Comparing the short and long run highlights scenario differences and SDG challenges

While this report is focused on outcomes in 2030, there is value in looking beyond this horizon. Some important aspects of development, particularly those related to human capital investments, take longer to show results. For instance, it takes time for students to work through the education system, leading to considerable lags between an education intervention and demonstrable results. There is little difference among the alternative scenarios in Egypt's average education years (the number of years of education the average Egyptian adult has obtained) by 2030. But by 2050, Social Justice has increased average education over half of a year relative to the Current Path, a feat difficult to achieve given the existing level of attainment. Similarly, compared with other scenarios, Governance does not result in the greatest gains in any major outcome indicator by 2030. But by 2050, it outperforms even Economic Development in terms of GDP, GDP per capita, and government revenues.

Even with a highly ambitious transformative effort, as modeled here, many SDG and Vision 2030 goals are not met. Under Integrated Push, still two thirds of the targets measurable in IFs are unmet by 2030.<sup>17</sup> Looking at these results also illustrates the effort required to hit some of the more ambitious targets in Vision 2030. One of the targets in the Economic Development Pillar is to grow the economy such that Egypt's share of the global GDP is one percent. But this is like trying to hit a moving target – as Egypt's GDP grows so does that of many other countries. Today, Egypt accounts for 0.33 percent of the world's GDP, a value which is projected to grow to 0.45 percent by 2030 under the Current Path. Under Integrated Push, Egypt's GDP in 2030 would almost reach the target (0.9 percent) in terms of global GDP today, but in 2030 it is only projected to reach 0.57 percent. Under all of the scenarios explored in this report, the target of one percent is only met in the Integrated Push scenario in 2050.

## Exploring trade-offs and synergies across scenarios

These scenarios also reveal some trade-offs. For one, Female Empowerment leads to broadly positive outcomes in areas of the economy and in aspects of human development. But it is also associated with an increase in the unemployment rate, due to more people entering the labor force. Thus, gains from a push to expand female participation in the labor force could be amplified when combined with policies encouraging job creation. Trade-offs also occur between all of the elaborated scenarios and environmental goals. Nearly all of the scenarios show an increase in carbon emissions, with Integrated Push increasing emissions nearly 8 percent relative to the Current Path by 2030 and over 20 percent by 2050, for a cumulative 400 million tons of additional carbon emissions (an amount similar to what was produced by Egypt between 1960 to 1995). The exception to this is Female Empowerment which, by slowing population growth, is actually associated with a reduction in carbon emissions by 2050 relative to the Current Path.

Similar trade-offs can be seen in scenarios which prioritize certain areas of government spending over others. In the short to medium run this budget reallocation can slow service provision. For example, in Economic Development, increased spending in R&D can reduce expenditures in other areas, like health and education, through 2030. However, due to the broad improvements in the economy, expenditures across all areas end up exceeding those in the Current Path by 2050.

But Integrated Push also highlights how synergies can reduce trade-off pressures. For example, greater government revenues (resulting from higher economic growth and a larger taxable base, thanks to reduced informality) enable simultaneous increases in spending on health, education, infrastructure, and welfare transfers. This works in concert with enhanced government effectiveness and lowered fertility rates which, by slowing population growth, reduce the cost of expanding public services to all. This is especially evident when looking at Egypt's Human Development Index (HDI) ranking. The HDI score itself is projected to improve somewhat along the Current Path and across all scenarios. But its global ranking will not change much. In 2015, Egypt's HDI of 0.69 ranks 103<sup>rd</sup> out of 186 countries in IFs. In

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<sup>17</sup> It should be emphasized that the SDG indicators which can be modeled in IFs represent a small selection of total SDG indicators and are biased toward a few easily forecast sets of variables; many SDG targets are difficult or even impossible to forecast in the model. In addition, targets set in Agenda 2030 may not adequately reflect realistic aspirations for Egypt.

2030, despite improving to 0.73 in the Current Path, it falls in rank to 104<sup>th</sup> and by 2050 to 112<sup>th</sup> (with a score of 0.79). This is not only true for the Current Path but also for all of the individual scenarios: Egypt's 2050 HDI ranking remains at 103 in Social Justice and falls to 104 in Female Empowerment, to 106 in Governance, and 107 in Economic Development. Despite improvements in human development absolutely, other countries are forecast to surpass Egypt even with the simulated reforms. However, in Integrated Push, Egypt's HDI improves to 0.85 and it jumps in rank to 77<sup>th</sup> globally. This vast leap in the rankings between the individual scenarios and Integrated Push illustrates the transformative impact of harnessing developmental synergies.

## Conclusion

This report has sought to unpack development trends in Egypt and illuminate policy trade-offs in the context of progress toward achieving the SDGs. As is often the case, focusing solely on economic growth may lead to overlooking areas of human development. Similarly, pursuit of human development in isolation may not generate as much economic growth, which could limit the potential for future improvements. A focus on female empowerment, through the lowering of fertility rates and growth of female participation in the labor force, has a remarkable impact on its own, which should not be understated. This illustrates both that development gains are easier to achieve with a smaller population and that raising female labor participation opens immense growth possibilities. The results also demonstrate the value of a long-term outlook. Specifically, improvements in governance may not yield immediately impressive results, in comparison with the other scenarios. But because improvements in governance change the way that elements of economic and human development interact, a focus on governance today has the potential to pay off considerably in the long run.

Ultimately, pursuing an integrated development strategy, a central tenet of the Sustainable Development Goals and Egypt's Vision 2030, can generate returns that are greater than the sum of their individual effects and result in striking advancement across all aspects of development. While the trade-offs seen in the individual scenarios are still present, the interventions work together so that trade-offs become less constraining. The successful implementation of this comprehensive approach sets up the country to achieve many more of its SDG and Vision 2030 goals. But beyond that, it places Egypt on an entirely different development path: In 2050, the Integrated Push Egypt, compared to projections of Egypt along its Current Path, has an economy which is 80 percent larger, has reduced poverty by more than 90 percent, and ranks in the top half of countries globally in terms of GDP per capita.

Egypt has made considerable improvements in areas of human development over the past several decades. Still, important challenges remain, including stalling fertility rates, high unemployment, growing inequality, a large informal sector, and low female labor participation. Overcoming these challenges will require no small effort on the part of policymakers and institutions. But by implementing widespread and strategic policies today, Egypt has the potential to bring about transformative and lasting change.

## Annex 1: Table of scenario assumptions

Scenario	Assumptions
<b>Economic Development</b> (Econ)	Unemployment falls from 12.6 percent in 2018 to 4.6 in 2030, achieving Egypt's 2030 target. <i>(Current Path value in 2030: 12.2 percent)</i>
	Lower secondary vocational enrollment (as a percentage of enrollment in all programs) increases from 3 percent in 2018 to 13 percent in 2030 and upper secondary vocational enrollment increases from 47 percent in 2018 to 67 percent in 2030. <i>(Current Path value in 2030: 3 percent for lower and 47 percent for upper secondary)</i>
	The percent of tertiary graduates in science and engineering fields increases from 20 percent in 2018 to 30 percent in 2030. <i>(Current Path value in 2030: 21 percent)</i>
	Exports as a percent of GDP increase from 12 percent in 2018 to 15.7 percent in 2030. <i>(Current Path value in 2030: 13.3 percent)</i>
	FDI as a percent of GDP increases from 43 percent in 2018 to 55 percent in 2030. <i>(Current Path value in 2030: 46 percent)</i>
	Government spending on research and development increases from 0.04 percent of GDP in 2018 to 0.19 percent in 2030. <i>(Current Path value in 2030: 0.04 percent)</i>
	Government regulation improves, according to the World Bank's Governance Regulatory Quality indicator, from a score of 1.8 in 2018 to 2.5 in 2030, roughly the level of Morocco today. <i>(Current Path value in 2030: score of 2.06)</i>
<b>Social Justice</b> (Soc)	Welfare transfers to unskilled households increases slightly from 9.5 percent of GDP in 2018 to 10 percent of GDP in 2030, whereas along the Current Path it falls to 8.6 percent of GDP. <i>(Current Path value in 2030: 8.6 percent)</i>
	Tertiary graduation rates increase from 14 percent of tertiary students in 2018 to 24 percent in 2030. <i>(Current Path value in 2030: 15 percent)</i>
	The death rate from noncommunicable diseases falls slightly from 4.8 per 1,000 in 2018 to 4.7 in 2030. <i>(Current Path value in 2030: 5.08 deaths per 1,000)</i>
	The burdens of child and maternal mortality fall so that child mortality falls from 22 deaths per thousand in 2018 to 12 in 2030 and adult female mortality falls from 1.9 to 1.4 deaths per thousand by 2030. <i>(Current Path value in 2030: 15 deaths per 1,000 for children and 1.6 for adult women)</i>
	Government spending on education increases from 3.7 percent of GDP in 2018 to 5 percent in 2030. <i>(Current Path value in 2030: 3.71 percent)</i>
	Government spending on health increases from 2.1 percent of GDP in 2018 to 2.8 percent in 2030. <i>(Current Path value in 2030: 2.21 percent)</i>
	Government spending on infrastructure, as a percent of GDP, remains at the same level, whereas along the Current Path it drops one percentage point by 2030. <i>(Current Path value in 2030: 3.04 percent)</i>
	Educational quality improves, bringing average primary test scores from 32 in 2018 to 39 in 2030 (at the level of Jordan today) and average secondary test scores from 44 in 2018 to 49 in 2030. <i>(Current Path value in 2030: average scores of 36 for primary and 45 for secondary)</i>
<b>Governance</b> (Gov)	Government effectiveness improves, according to the World Bank's Governance Effectiveness index, from 1.76 in 2018 to 2.9 in 2030, roughly the level of Italy and Botswana today. <i>(Current Path value in 2030: score of 2.05)</i>
	Government transparency improves, along Transparency International's Corruption Perception Index, from a score of 3 in 2018 to 4.5 in 2030, roughly the level of Oman and Jordan today. <i>(Current Path value in 2030: score of 3.4)</i>
	The threat of internal conflict is effectually eliminated, moving along the IFs Internal War Index from a score of 0.4 in 2018 to 0.05 in 2030. <i>(Current Path value in 2030: score of 0.19)</i>
<b>Female Empowerment</b> (Fem)	Female labor participation increases from 23 percent in 2018 to 38 percent in 2030, exceeding Egypt's 2030 target of 35 percent. <i>(Current Path value in 2030: 25 percent)</i>
	By 2030, gender empowerment improves, according to the UNDP's Gender Empowerment Measure (GEM) from 0.29 in 2018 to 0.5 in 2030, roughly the level of Oman and Qatar today. <i>(Current Path value in 2030: score of 0.3)</i>
	Fertility falls from 3.3 to 2 children per woman by 2030. <i>(Current Path value in 2030: 3 children per woman)</i>

## Annex 2: Current Path scorecard

The table below lays out Egypt's 2015 scores along select SDG indicators and 2030 values along the Current Path. It is designed to provide an overview of Egypt's progress to date and establish progress toward meeting the SDGs. Many of these Current Path indicators helped to inform the construction of the scenarios used in this report. Forecast values come from IFs 7.36. Note that this table only includes indicators which are forecast in IFs and are related to SDG indicators. Where available, the 2030 SDG target value is provided.

SDG Goal and Indicator(s) Description	Most recent data or IFs estimate	Current Path 2030	Egypt Vision 2030 Target	SDG 2030 Target (UN)
<b>Goal 1. End poverty in all its forms everywhere</b>				
<i>SDG Indicator 1.2.1b:</i> Percentage of population below \$3.10 (2011 \$ PPP) per day; Lognormal	22.3	13.7		11.1
<i>SDG Indicator 1.1.1b:</i> Percent of the population living on less than \$1.90 (2011 USD) per day	1.3	0.7	0	3
<i>SDS Economic Development Indicator 4:</i> Proportion of population living below Egypt's current national poverty line <sup>18</sup>	25.6	21.1	0	
<b>Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture</b>				
<i>SDG Indicator 2.1.1a:</i> Percentage of undernourished population	4.5	3.2		3
<i>SDG Indicator 2.2.2a:</i> Percentage of malnutrition (weight for height <-2 SD) among children under 5	7	5.9		3

<sup>18</sup> Because the national poverty line changes throughout time, we can only forecast the population below today's national poverty line, which is roughly equivalent to those living on less than \$3.40 per day in 2011 US dollars.

SDG Goal and Indicator(s) Description	Most recent data or IFs estimate	Current Path 2030	Egypt Vision 2030 Target	SDG 2030 Target (UN)
<b>Goal 3. Ensure healthy lives and promote well-being for all at all ages</b>				
SDG Indicator 3.2.2: Infant mortality rate (within first year of birth) in deaths per thousand newborns	17.5	11.4		12
SDG Indicator 3.2.1: Under-5 mortality rate	22	14.7		24
SDG Indicator 3.7.1: Contraception Use (percent of fertile women)	58.5	68.6		97
<b>Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all</b>				
SDG Indicator 4.1.1a: Primary education net enrollment rate - Total	94.4	98.3		97
SDG Indicator 4.1.1b: Primary education gross enrollment rate – Total	103.9	101.6		100
SDG Indicator 4.1.1c: Primary education gross completion rate - Total	97.7	100.0		97
SDG Indicator 4.1.1d: Lower secondary education gross enrollment rate - Total	99.2	95.0		100
SDG Indicator 4.1.1e: Lower secondary education graduation rate - Total	78.8	82.2		97
SDG Indicator 4.1.1f: Upper secondary education gross enrollment rate - Total	72.5	76.0		97
SDG Indicator 4.1.1g: Upper secondary education graduation rate – Total	69.2	73.1		97
SDG Indicator 4.5.1k: Years of education obtained by population 15+ parity index-(female/male)	0.84	0.88		1

SDG Goal and Indicator(s) Description	Most recent data or IFs estimate	Current Path 2030	Egypt Vision 2030 Target	SDG 2030 Target (UN)
<b>Goal 5. Achieve gender equality and empower all women and girls</b>				
<i>SDS Economic Development Indicator 11:</i> Total Fertility Rate	3.3	3	2.4	
<i>SDS Economic Development Indicator 12:</i> Female Labor Force Participation Rate	22.8	25.3	35	
<b>Goal 6. Ensure availability and sustainable management of water and sanitation for all</b>				
<i>SDG Indicator 6.1.1:</i> Percentage of people with access to safe water	98.8	99		97
<i>SDG Indicator 6.2.1:</i> Percentage of people with access to sanitation services – Improved	93.2	95		97
<i>SDG Indicator 6.3.1a:</i> Percentage of people connected to wastewater collection system	44.3	45.8		97
<i>SDG Indicator 6.3.1b:</i> Percentage of people connected to wastewater treatment system	30.6	33.7		98
<i>SDG Indicator 6.4.2:</i> Freshwater withdrawal as a percentage of available freshwater resources	148.8	138.5		74.4
<b>Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all</b>				
<i>SDG Indicator 7.1.1:</i> Percentage of population with access to electricity - Total	99.9	99.9		97
<i>SDG Indicator 7.2.1:</i> Renewable energy as percentage of total final energy consumption	1.9	1.7		



SDG Goal and Indicator(s) Description	Most recent data or IFs estimate	Current Path 2030	Egypt Vision 2030 Target	SDG 2030 Target (UN)
<b>Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all</b>				
<i>SDG Indicator 8.1.1:</i> Annual growth rate of real GDP per capita-percentage	2.3	3.8		
<i>SDS Economic Development Indicator 1:</i> Real GDP growth rate-percentage	4.4	5.4	12	
<i>SDG Indicator 8.5.2g:</i> Percentage of the total labor force that is 15 years old and over and unemployed	12.8	12.7	5	
<i>SDG Indicator 8.3.1:</i> Percentage of informal employment (non-agricultural)	51.2	39.6		
<b>Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation</b>				
<i>SDG Indicator 9.2.1a:</i> Manufacturing value-added as % of GDP	22.8	25.6	18	
<i>SDG Indicator 9.c.1a:</i> Connections per hundred people to fixed broadband technology	4.6	17.1		
<i>SDG Indicator 9.c.1b:</i> Connections per hundred people to mobile broadband technology	40.6	139.1		
<b>Goal 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels</b>				
<i>SDG Indicator 16.1.1b:</i> Years of life lost to intentional injuries per thousand	1.86	1.98		

SDG Goal and Indicator(s) Description	Most recent data or IFs estimate	Current Path 2030	Egypt Vision 2030 Target	SDG 2030 Target (UN)
<b>Goal 17. Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development</b>				
SDG Indicator 17.1.1a: Total government revenue as % of GDP	25	29.5		
SDG Indicator 17.1.2: Percentage of domestic budget funded by domestic taxes	75.9	92.6		
SDG Indicator 17.1.1e: Social security and welfare taxes as % of GDP	2.3	3.5		

Table 7. SDG evaluation for selected SDG indicators for Egypt in 2015 and 2030, along the Current Path. The specific SDG or SDS indicator refers to that which either matches exactly or serves as a close proxy for the indicator listed. For indicators with absolute targets (poverty below 3 percent) the value itself is included. For indicators with relative targets, (reduce premature noncommunicable deaths by one third) the calculated value is included. Where relevant, targets from the Egypt SDS 2030 are also included for reference. Source for forecasts: IFs 7.36.

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