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LESSONS FROM COUNTRY EXPERIENCES

EGYPT

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Developing Human Capital in Egypt through Energy Subsidy Reforms: A Case Study

April 2021

baseera بصيرة
المركز المصري لبحوث الرأي العام
the Egyptian center for public opinion research

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Abstract

Government-led economic reform programs have been an important vehicle to improve the lives of Egyptian citizens. This case study describes one of these programs, which reduced energy subsidies to enable the government to channel more investment into the human capital sectors – health, education, and social protection. This program not only provided a reliable source of funding to build Egypt's human capital but also supported longer-term economic stability. In its continued efforts to build human capital, the Government of Egypt must consider the challenges that the country is facing, especially its high fertility level and inequalities in access to services of decent quality. Therefore, this study includes an action plan to help the Egyptian government to continue making productive investments in human capital and to reach the inclusive development goals articulated in its 2030 Vision.

ABOUT THE AUTHOR

The Egyptian Center for Public Opinion Research (Baseera) is an independent, nonpartisan organization that conducts public opinion research. Established in April 2012 in the aftermath of the 25th of January Revolution, Baseera is committed to providing researchers, policymakers, business leaders, and the general public with reliable information on public attitudes and trends concerning issues and policies of public interest. The firm also prepares studies and strategies related to various fields related to development.

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1. Report Structure

This case study report is based on information and data gathered from different stakeholders, including public opinion research, and from a desk review of programs and literature related to the energy subsidy reform in Egypt. The remainder of the report is organized as follows: Section 2 presents a definition of the concept of human capital and describes the function of the World Bank Human Capital Index (HCI) and how it relates to this study; Section 3 takes a broad look at the history of Egypt's energy subsidy reforms; Sections 4 and 5 highlight the government's twin efforts to reduce energy subsidies and to increase investments in human capital; Section 6 analyzes the relationship between Egypt's energy reforms and increased investments in human capital, highlighting the social aspects, budgetary constraints, and the public perceptions of these actions; Section 7 summarizes the findings of the analysis on energy subsidy reform efforts; Section 8 discusses a few key human capital challenges that will need to be tackled in the coming years and; Section 9 proposes a Human Capital Action Plan to help the Government of Egypt in its efforts to invest more in the country's health, education, and social protection sectors.

2. Concepts and Definitions

Economic development and human capital are two inextricably linked concepts, with economic growth dependent on both human capital and physical capital. Investments in these areas complement and reinforce each other. Investing in physical capital such as infrastructure and equipment enables workers to be productive, while investing in workers' human capital (their health and education) enables them to maximize their productivity to underpin and sustain economic growth.

In principle, human capital consists of the knowledge, skills, and health that people accumulate throughout their lives, enabling them to realize their potential to become productive members of society. Investing in people through nutrition, health care, quality education, jobs, and skill development builds human capital, and this is key not only to increasing people's economic value but also to ending extreme poverty and creating a more inclusive society.

Investments in human capital have become more essential as the nature of work has evolved in response to rapid technological change. Markets are increasingly demanding workers with high levels of human capital, especially advanced cognitive and socio-behavioral skills. When people's human capital increases, they are more likely to engage in society and be tolerant, which leads to a more inclusive society with fewer social and political tensions. In the long run, investing in human capital enables social mobility and reduces the degree of inequality in society.

In 2018, the World Bank launched the Human Capital Project (HCP) with the goal of promoting effective investments in people to increase productivity and economic growth and accelerate progress toward the Sustainable Development Goals (SDGs). One of the pillars of the HCP is the Human Capital Index (HCI). The HCI is designed to capture the amount of human capital that a child born today could expect to attain by the age of 18, thus highlighting how current health and education outcomes shape the productivity of the next generation of workers.

Countries are using the HCI to calculate their human capital gaps and how much income they forego as a result and to assess how fast they can turn these losses into gains if they invest more, or more effectively, in human capital.

The components of the index (survival, learning, and health) have direct links with at least three of the SDGs that countries around the world have committed to achieving by 2030.

- *Survival to Age 5:* By including under-5 mortality, the HCI has a link with SDG 3.2 (to reduce neonatal mortality to 12 per 1,000 live births or lower and under-5 mortality to 25 per 1,000 live births or lower).
- *Learning:* The HCI includes a measure that harmonizes test scores from the major international student achievement testing programs as well as an innovative measurement of learning, learning-adjusted years of school, which supports SDG 4.1 (to ensure, among other things, the completion of equitable and good quality primary and secondary education). By tracking changes in the expected years of quality-adjusted education, countries will be able to monitor their progress towards achieving this education-related target.

- *Health:* The HCI includes both the adult survival rate and the prevalence of childhood stunting. The adult survival rate represents the probability that a 15-year-old will survive to the age of 60. To improve this indicator, countries must reduce the causes of premature mortality, which will also help them achieve SDG 3.4 (to reduce by one-third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being). The prevalence of stunting among children under the age of 5 is one of the key indicators for the achievement of SDG 2.2, which aims to end all forms of malnutrition by 2030.

The aim of the HCI is to draw attention to a wide range of actions across multiple sectors that can build human capital and accelerate progress toward the achievement of the SDGs. One of these sectors is the fuel and energy sector, which, in Egypt, has had a huge effect on the development of human capital.

3. History of Energy Subsidy Reform

Many governments devote large amounts of their annual budgets to subsidizing the consumption of energy, which diverts resources from other purposes like investments in health, education, public services, and infrastructure. These subsidies are universal, which drives their broad appeal. As such, they become politically popular and thus difficult to reduce or remove. This situation can lead to the formation of interest groups for mobilizing political support for larger and/or permanent subsidies. As a result, it becomes difficult to pass any policy reform that removes or redirects the subsidy. And if such reforms are implemented hastily or poorly or when their purpose is ineffectively communicated, social unrest can ensue.

There are many examples of countries that have attempted to implement energy sector reforms over the course of several decades, from Ghana to Indonesia to the Dominican Republic. They have had different degrees of success that has depended on a variety of factors, including the size and composition of the economy and the timing and sequencing of reforms.[1]

Jordan, an oil-importing country in the Middle East, has repeatedly attempted to reform energy subsidies which have been a constant source of external price volatility and fiscal vulnerability. This was especially the case in the late 1990s and early 2000s when Jordan went through a period of economic liberalization without reforming its existing fuel and food subsidy system. After several unsuccessful attempts to cut its public expenditure and food subsidies and to increase gasoline prices, in 2012 the Government of Jordan took a new approach by developing an intensive communications and consultation campaign to open up debate about the corrosive effects of subsidies and options for direct support to households and small businesses. The government then began gradually increasing the prices of all fuel types while simultaneously implementing a well-communicated large-scale cash compensation program that considered the distributional impact of these reforms on households in different income brackets.

4. Energy Reform in Egypt

Beginning in 2011, Egypt's economy was negatively affected by slowing economic growth, increasing poverty, a socioeconomic transition after the ouster of long-time president Hosni Mubarak, and a growing energy deficit. As energy subsidies were a major contributor to the deficit, the government made them a policy priority.[2] In 2013, spending on energy subsidies comprised a large share of Egypt's budget expenditure (22 percent), while fossil fuel subsidies amounted to 7 percent of Egypt's GDP, which was greater than the country's combined expenditures on health and education (5 percent). In addition to being highly regressive and focused on energy-intensive sectors, these subsidies also hindered transparency about the financial performance of public utilities, thus discouraging much needed private sector investment.

The discussion on subsidy reforms was part of a broader dialogue about how to rebuild the Egyptian economy amid macroeconomic and social vulnerabilities. Complementary efforts to restructure the electricity sector and promote private

[1]Inchauste and Victor (2017) The Political Economy of Energy Subsidy Reform.
[2]ESMAP (2019) Maximizing Finance for Development in Egypt's Energy Sector.

sector investment in renewable energy were also undertaken. For renewables in particular, subsidy reform would help to level the playing field and create incentives for investments in energy efficiency, providing an opportunity to shift the country's energy mix to a more sustainable and environmentally sensitive path.[3]

To make the necessary reforms, the government developed a gradual and transparent five-year scheme for cutting energy subsidies starting from 2014. They based this plan on a comprehensive study of gas pricing options and an analysis of social protection mechanisms and their ability to mitigate the impact of the loss of subsidies in the short and medium terms. The scheme was accompanied by investment in the modernization of databases to improve safety net targeting and in communication materials to explain the policy to the public. It was subsequently extended by three years in order to lessen the burden on households following the initial cut in subsidies.

In July 2014, the Cabinet issued decree no. 1257 that mandated a gradual increase in the selling price of electricity over five years starting on July 1, 2014. The decree specified the new tariff, which reduced speculation and managed expectations, so that citizens would not be surprised by these gradual price increases. In November 2016, the Cabinet issued decree no. 2807 that increased the selling price of gasoline 80, 92, and 95 (the numbers signifying different octane ratings), kerosene, and solar power.[4] Four further decrees were subsequently issued to determine the new prices of other fuel types including natural gas used for vehicles and for domestic use.

The Government of Egypt had attempted energy reform in the past but with limited success. However, these previous attempts had lacked a communication strategy to inform the media and the public about the importance of implementing the reform. The inclusion of such a strategy in 2014 helped citizens to understand and, therefore, to better tolerate the reform. The gradual introduction of the cuts and the

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[3] Much progress has been made since the subsidy reform efforts. Recently, Egypt's renewable energy program achieved financial closure for 400 MW of new wind and solar power generation, and paved the way for a pipeline of more than 1,500 MW of additional projects, as well as enhancing incentives for decentralized solar generation to realize its solar energy potential, curb its carbon footprint, and reduce its reliance on fossil fuels. Sources: ESMAP (2019); and World Bank (2017) Third Fiscal Consolidation, Sustainable Energy, and Competitiveness Programmatic Development Policy Financing Program Document.

[4] The price of gasoline 95—which tended to be used by the upper class—was allowed to continue floating to reflect global prices plus the relevant value-added tax.

transparency of the government in announcing the subsidies in advance helped the reform to succeed by sensitizing the public and managing expectations of the shocks usually associated with any economic reform.

The communication campaign used various tools including video clips for social media, advertisements for radio and television, and roadside billboards to communicate the messages to different segments of the population. Tag lines such as "I am against wasteful subsidies. I am for improvement and development" and "Targeting the subsidies in the right way equals good education" were used to help the public to understand the importance and nature of the reform.

As Egypt moved ahead with its subsidy reforms, the government was keen to mitigate the potential adverse impacts on the poorest and most vulnerable segments of the population. It therefore developed an inclusive cash transfer program, *Takaful w Karama*, that utilized targeted interventions to reach those households most in need given the reduction in subsidies. Further details on this social protection program are included in Box 1.

Box 1: Strengthening Human Capital through Takaful w Karama

In 2015, the Egyptian Ministry of Social Solidarity began a successful cash transfer program entitled *Takaful w Karama (TKP)*, which means 'Solidarity and Dignity'. The program is divided into two sub-programs. Takaful is a conditional cash transfer program providing households with children under the age of 18 with income support conditional on improvements in specific behavior related to education and health care. Karama is an unconditional cash transfer program that provides eligible beneficiaries—the elderly poor (over 65 years of age), orphans and those living with permanent and severe disabilities—with EGP 450 per month.

Under *Takaful*, households receive a baseline monthly transfer of EGP 325 if they meet the following conditions: (i) children between 6 to 18 years of age attend school on a minimum of 80 percent of all school days and (ii) mothers and their children under 6 years of age attend a minimum of three annual health care clinic visits. These visits monitor maternal and child health and

well-being, ensure that health records and immunizations are up to date, and provide mothers with important information sessions on primary health care (including pre- and postnatal care) and nutrition that have been proven to result in better health outcomes for the entire household. Households are provided with an additional EGP 60 for every child between 0 to 6 years of age, EGP 80 for primary school students, EGP 100 for preparatory school students, and EGP 140 for secondary school students.

An independent evaluation of TKP found that it had a positive impact on households' consumption.[5] In fact, *Takaful* beneficiary households increased their consumption by 8.4 percent compared to households that did not receive the transfer. Moreover, the program helped poor households to maintain their consumption in the face of rising prices and to improve the quality of their diets. It was also shown to increase household spending on school supplies and transportation to school (which not only impact attendance but can affect learning outcomes) and to considerably lower rates of stunting and wasting among beneficiaries as compared to non-beneficiaries.

As of 2021, TKP had reached 3.4 million households, or approximately 12 million individuals, 75% of whom are women. The TKP database of applicants also includes 31 million individuals, which has allowed the government to launch other targeted social protection interventions, many of which promote human capital accumulation.

5. Human Capital in Egypt

Egypt scored 0.49 on the HCI in 2020, which means that a child born in 2020 will only reach half of their potential in adulthood.[6] From an economic perspective, this means that the productivity of Egyptian workers in the future will be 51 percent below what could have been achieved with complete education and full health. Females scored higher than males (0.51 and 0.48 respectively) per Table 1. Egypt ranks 11th among 13 comparable developing countries, the other 12 being China, Vietnam,

[5] International Food Policy Research Institute (2018) Impact Evaluation Study for Egypt's Takaful w Karama Cash Transfer Program.
[6] Note that these figures were collected immediately prior to COVID-19 and are the last snapshot of the status of human capital prior to the pandemic.

Turkey, Malaysia, Mexico, Brazil, Jordan, Indonesia, Tunisia, Morocco, India, and South Africa (Table 2). After analyzing each subindex for Egypt and comparing it with these other countries, it is clear that the quality of education, measured by harmonized test score and learning-adjusted years of schooling, will be crucial for building human capital in Egypt in the future.

Table 1: Human Capital Index and Subindices, Egypt 2020

	Males	Females	Total
Human Capital Index	0.48	0.51	0.49
Survival to age 5	0.98	0.98	0.98
Expected years of school	11.4	11.6	11.5
Harmonized test scores	344	368	356
Learning Adjusted Years	6.3	6.8	6.5
Adult Survival Rate	0.82	0.90	0.86
Not Stunted Rate	0.76	0.79	0.78

Source: World Bank

Table 2: Human Capital Index and Subindices for Selected Developing Countries, 2020

Country	Human Capital Index	Survival to age 5	Expected years of school	Harmonized test score	Learning Adjusted Years	Adult Survival Rate	Not Stunted Rate
Vietnam	**0.69**	0.98	12.9	**519**	**10.7**	0.87	0.76
China	0.65	**0.99**	**13.1**	441	9.3	0.92	0.92
Turkey	0.65	**0.99**	12.1	478	9.2	0.91	**0.94**
Malaysia	0.61	**0.99**	12.5	446	8.9	0.88	0.79
Mexico	0.61	**0.99**	12.8	430	8.8	0.86	0.90
Brazil	0.55	**0.99**	11.9	413	7.9	0.86	-
Jordan	0.55	0.98	11.1	430	7.7	0.89	-
Indonesia	0.54	0.98	12.4	395	7.8	0.85	0.72
Tunisia	0.52	0.98	10.6	384	6.5	0.91	0.92
Morocco	0.50	0.98	10.4	380	6.3	**0.93**	0.85
Egypt	0.49	0.98	11.5	356	6.5	0.86	0.78
India	0.49	0.96	11.1	399	7.1	0.83	0.65
South Africa	0.43	0.97	10.2	343	5.6	0.69	0.73

Source: World Bank
Note: The highest HCI values for this subset of countries are in bold.

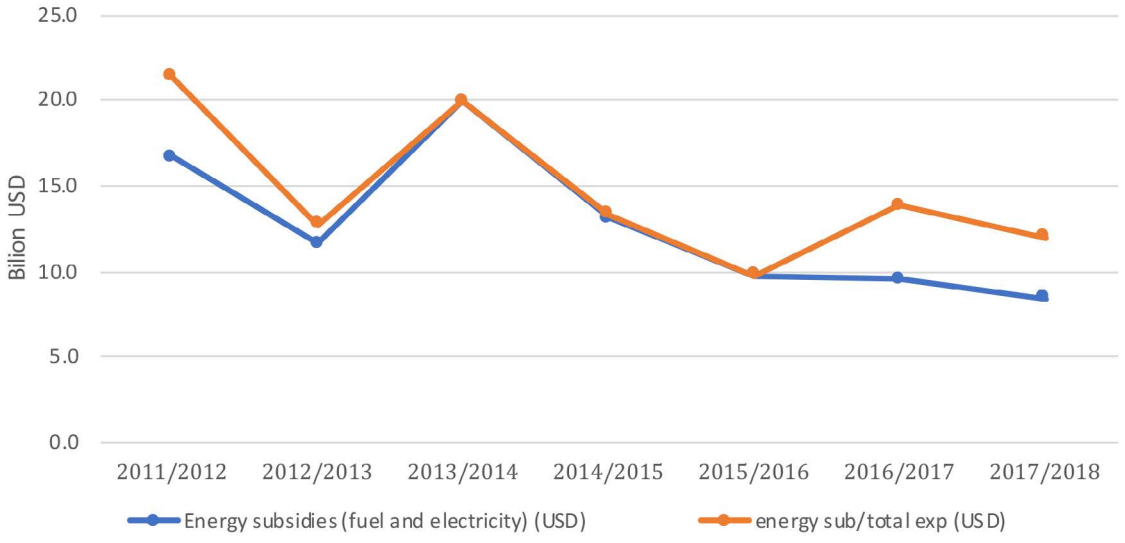
6. Energy Reform and Investing in Human Capital

6.1 Energy Subsidies and their Implications for the Budget

In developing countries, energy subsidies have been widely used by policy makers as a tool to redistribute economic wealth. However, the high increase in oil prices in the new millennium, coupled with increasing wasteful consumption of energy products in Egypt, make these subsidies untenable. In fact, these high subsidies are one of the factors that drive the high wasteful consumption of energy in Egypt. The inefficient subsidy system has been a major structural challenge in Egypt's economy. In fiscal year 2011-12, subsidies represented almost 90 percent of the country's budget deficit,[7] with nearly 80 percent of all subsidies allocated to energy.

The Government of Egypt began its subsidy reform efforts in 2014. Between 2014 and fiscal year 2017-18, energy subsidies dropped by nearly half from 6.5 percent to 3.4 percent of Egypt's total GDP. When adjusted to US dollars, the amount allocated to energy subsidies decreased from US$20 billion in 2013/2014 to US$8.4 billion in 2017/2018 (Figure 1). It should also be noted that subsidies have continued to decrease, comprising only 0.3 percent of total GDP in fiscal year 2019/2020.

Figure 1: Energy Subsidies 2011/12 to 2017/18 (USD)

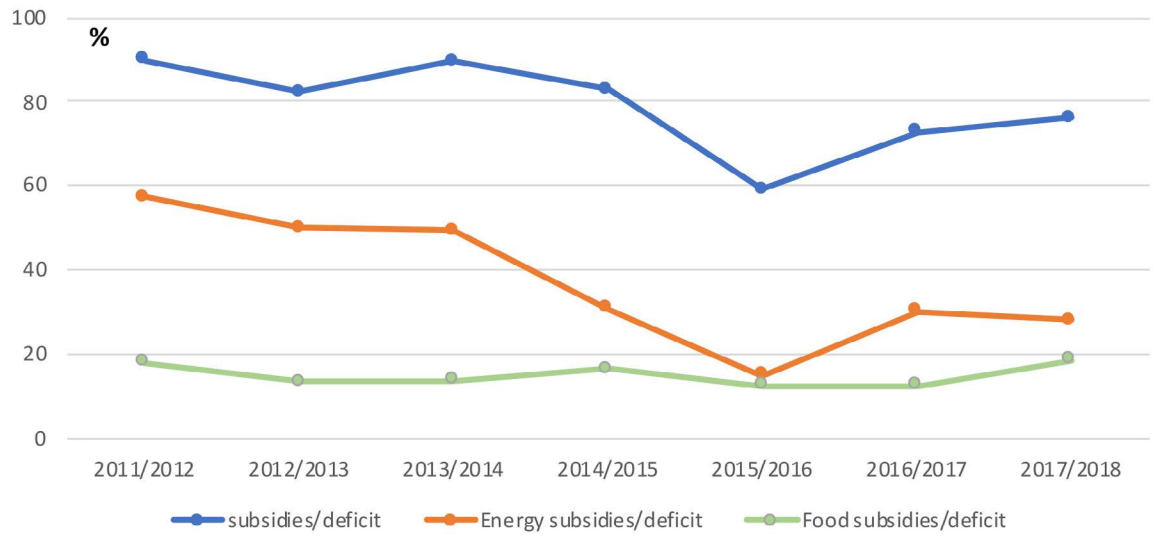


Source: World Bank

[7] The deficit in FY 2011/2012 amounted to 167 billion Egyptian Pounds, equivalent to US$27.8 billion.

The contribution of energy subsidies to the budget deficit also fell from around 57 percent in 2011/2012 to 28 percent in 2017/2018. This helped to reduce the share of total subsidies in the deficit from 90 percent in 2011/2012 to 76 percent in 2017/2018. As illustrated in Figure 2, the amount allocated to food subsidies as a percentage of the total deficit remained almost the same throughout this period.

Figure 2: Energy Versus Food Subsidies as Percentage of the Deficit, 2011/12 to 2017/18



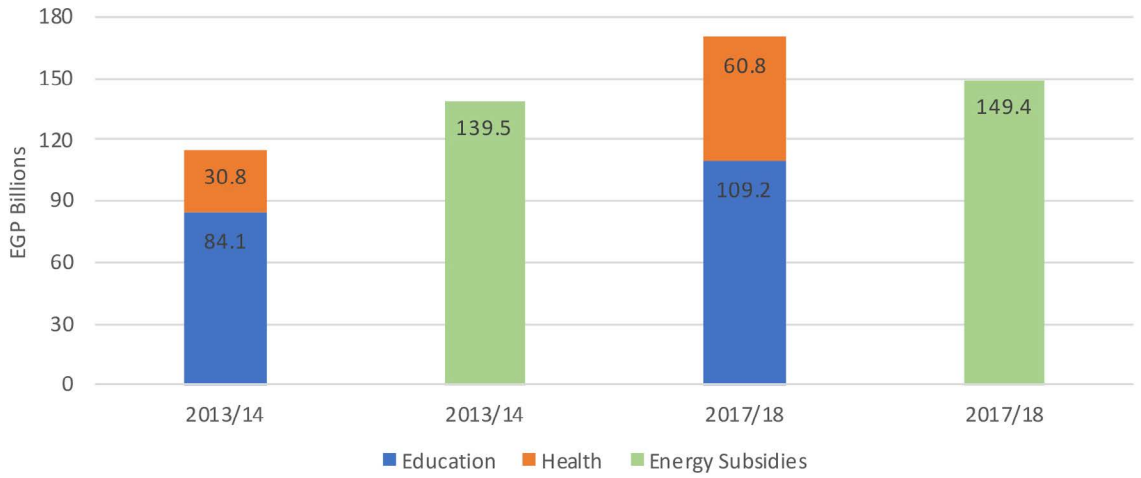
Source: World Bank

6.2 Linking the Reduction in Energy Subsidies to Increased Human Capital Investment

While Egypt's energy subsidies were being reduced between 2013/14 and 2017/18, the level of resources allocated to health and education significantly increased. Public expenditure on health doubled and increased by 30 percent for education, an average annual increase of 19 percent on health and 7 percent on education. When the amounts allocated to education and health are compared with allocations to energy subsidies, it is clear that a shift in resource allocation took place during this period. In 2013/14, the amount allocated to energy subsidies was nearly EGP 25 billion higher than the total amount allocated to education and health combined. Four years later, this relationship had switched so that the combined amount allocated to education and health surpassed energy subsidies by more than EGP 20 billion.

Although education and health resources increased significantly during these years, when compared to total public expenditure or to GDP, there is a less positive picture (Figure 3). Expenditure on health as a percentage of total public expenditure increased from 4.4 percent to 4.9 percent, but expenditure on education actually decreased from 12 percent to 8.8 percent. When measured as a percentage of GDP, health decreased slightly from 1.5 percent to 1.4 percent and education more significantly from 4.0 percent to 2.5 percent.[8]

Figure 3: Public Expenditure on Education and Health Compared to Energy Subsidies, 2013/14 and 2017/18



Source: World Bank

6.3 Mapping Egypt's Human Capital Programs

Reforming energy subsidies is a way to not only address macroeconomic imbalances but also to enhance social inclusion by increasing investments in education, health, and social protection to build human capital. Various indicators are needed to study how reducing energy subsidies can improve human capital outcomes, including input indicators, process indicators, output indicators, outcome indicators, and impact indicators. While input indicators reflect the required resources, process indicators show what is done, output indicators reflect what has been produced from the inputs, outcome indicators reflect what has been achieved, and impact indicators reflect how everything contributed to higher-level strategic goals.

[8] These figures do not include the resources available for the two sectors from loans and funds provided by international organizations.

The authors conducted a mapping exercise, shown in Table 3, to illustrate how the programs currently being implemented by the government are increasing human capital and whether they are addressing the necessary human capital components. This kind of mapping can help policy makers identify gaps, set priorities, and (re) allocate resources.

Table 3: Mapping Egypt's Human Capital Building Programs

Input Indicators (What resources are used?)	**Reducing energy subsidies freed up resources that were used to increase public spending on education, health, and social protection aimed at building human capital.**		
	Social Protection	*Health*	*Education*
Activity Indicators (What has been done?)	✪ Takaful w Karama program which provides conditional cash transfers to almost 3.1 million households with value of EGP 19.1 billion	✪ The initiative "100 million health" for comprehensive medical examination ✪ The President's initiative for the early detection of anemia, obesity, and stunting among primary school students ✪ Comprehensive health insurance ✪ The establishment, development, and equipping of 376 hospitals nationwide to treat nearly 1.4 million citizens with HIV	✪ Implementing a new educational system in kindergarten and early grades (currently rolled-out to Grade 3) ✪ Expanding the use of technology in education, including technological infrastructure for secondary schools (e.g. tablets, smart boards) and digital learning resources ✪ Developing a computer-based assessment and examination system for secondary education to go beyond memorization and instruction to instead promote higher order skills ✪ Launching professional development support to kindergarten and early grade teachers
Output Indicators (What has been produced?)	✪ Probability of surviving to the age of 5	✪ Reducing child mortality ✪ Reducing stunting among children under 5	✪ Increase in the expected number of years of schooling
Outcome Indicators (What has been achieved?)	✪ Increasing the probability of survival (15-60)	✪ Improving health status	✪ Improving education outcomes
Impact Indicators (How are these achievements contributing to increasing human capital?)	✪ Increasing human capital		

6.4 Perceptions of Egyptians toward Public Services Related to Energy and Human Capital

Economic reform programs are often met with public discontent. Public polling is therefore a useful tool for measuring the public's reactions to economic reforms and for gauging the success of the messaging about the reforms as well as the likely stability and sustainability of these reforms.

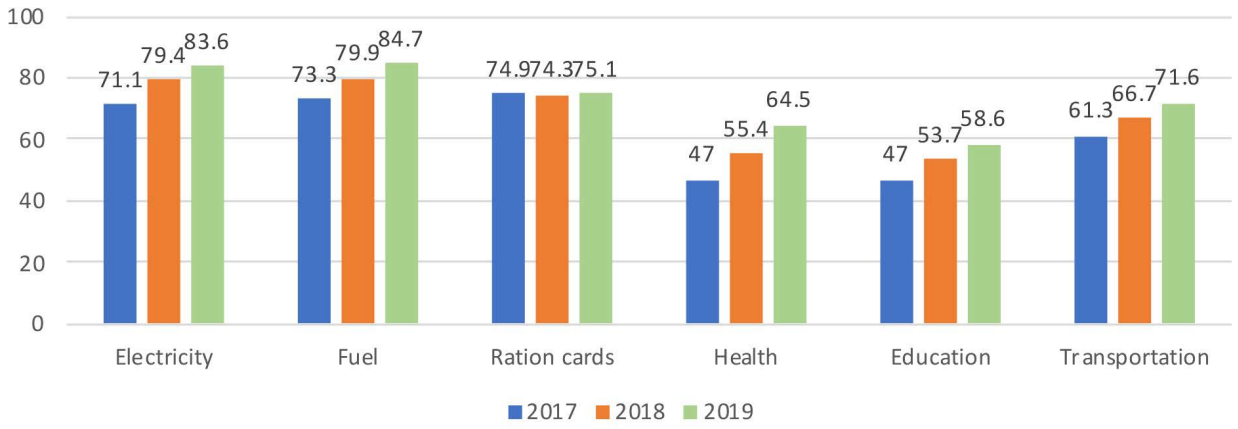
In September 2017, the Egyptian Center for Public Opinion Research (Baseera) began conducting a series of surveys about the public's satisfaction with various public services that used a national representative sample.[9] The respondents were asked to evaluate a list of public services by giving a score ranging from 0 to 5 for each of the 29 services. These polls are conducted three times a year, and the data are summarized into a single score that reflects average public satisfaction on a scale from 0 to 100. Averages for the years 2017, 2018 and 2019 have been calculated and reflect trends over time.

Perhaps unsurprisingly, the survey results show that Egyptians' satisfaction with public services varies by the type of public service in question.[10] The most recent study focuses on public services related to the energy sector and to human capital. Its findings demonstrate that, despite the phasing out of energy subsidies, public perceptions remain extremely positive towards subsidized services (electricity, fuel, and transportation[11]). In fact, between 2017 and 2019, levels of satisfaction regarding these energy-related public services rose significantly—electricity and transportation jumped by 18 percent, while fuel climbed by 16 percent (Figure 4). Such large increases in satisfaction might have been due, in part, to the expansion in electricity production that ended blackouts and the end of the fuel shortage that many areas of Egypt had experienced during the previous years.

[9] Sample size was around 1,400 and sampling error for estimates on the national level was 3 percent.
[10] In September 2017, the satisfaction index varied from 27 percent for stabilizing prices to 75 percent for security.
[11] The distribution of electricity, fuel, and ration cards is fully managed by the public sector, and transportation is partially managed by the public sector.

Although public opinion was less enthusiastic overall about public services related to human capital (education and health), the rate of satisfaction still rose substantially (albeit from a lower base) between 2017 and 2019, by nearly 40 percent for health services and over 25 percent for education (Figure 4).

Figure 4: Public Services Satisfaction Index by Type of Service, 2017-2019

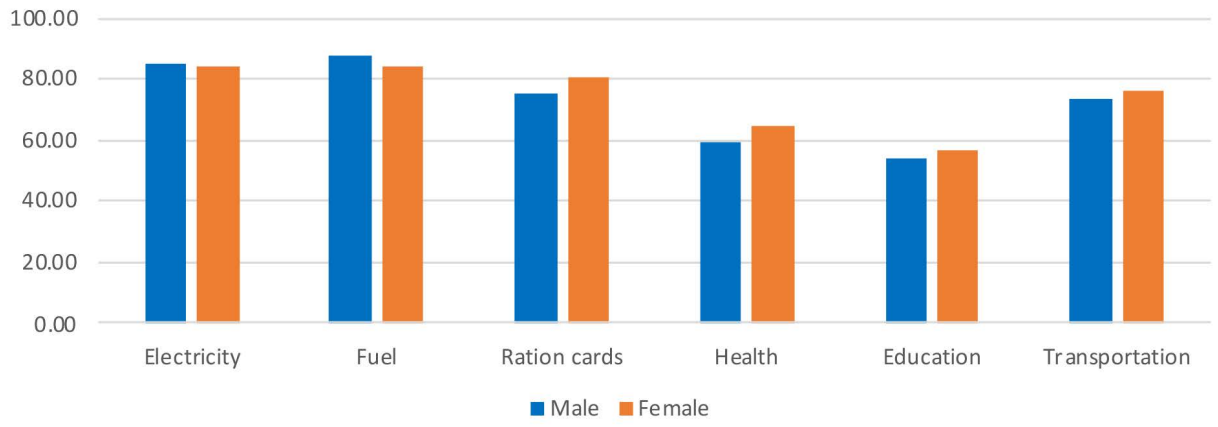


Source: Baseera Research

The survey found that satisfaction with energy-related services is higher among Egyptian males, while females are more satisfied with those related to ration cards and human capital services. Moreover, the education level of respondents is positively correlated with satisfaction with energy-related services and negatively associated with satisfaction with ration cards and human capital services (Figures 5 to 9). Notably, both men and women expressed the lowest satisfaction with education services. This suggests that there may still a time lag between the impact of energy reforms and of the government's ongoing educational reforms, which aim to equip students with cognitive, socioemotional and digital skills for 21st century jobs.[12]

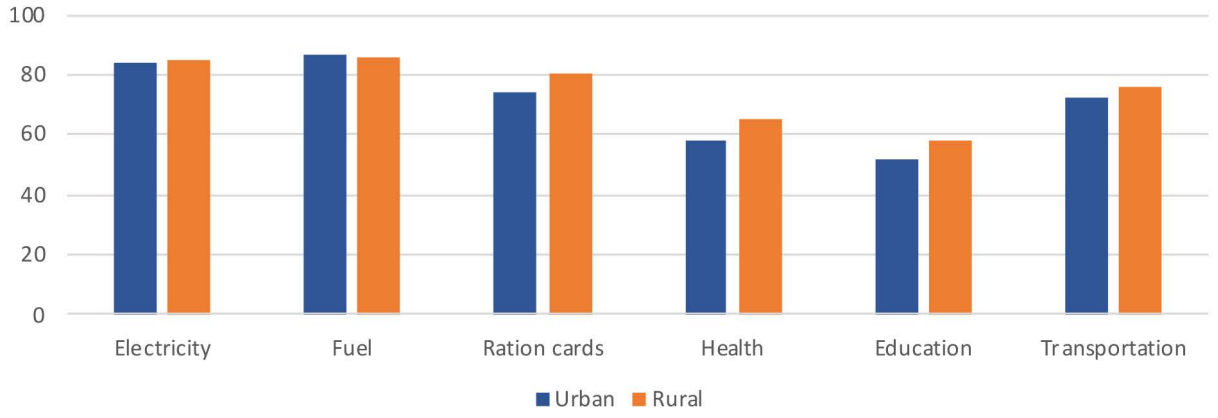
[12] In September 2018, Egypt embarked on a major education reform that aimed to "bring learning back to the classroom" and equip students with skills such as critical thinking, creativity, communication, higher-order cognitive skills and digital skills, thus preparing them for life as well as for the job market. The reform targets 22 million students, 1.6 million teachers and school administrators, and 50,000 schools. It focuses on promoting the foundations of learning in early grades and introducing a student-centered curriculum. It also leverages education technology to reform secondary education, with students benefiting from technological infrastructure and digital learning resources, as well as new computer-based assessment systems to move teaching and learning away from memorization and credentialism towards the skills that matter in the 21st century.

Figure 5: Public Services Satisfaction Index by Gender, 2019



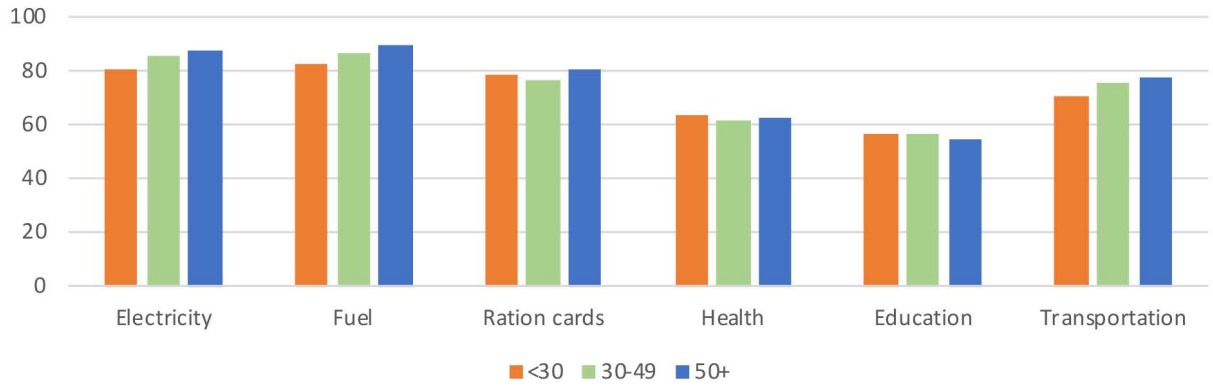
Source: Baseera Research

Figure 6: Public Services Satisfaction Index by Urban-Rural Residence, 2019



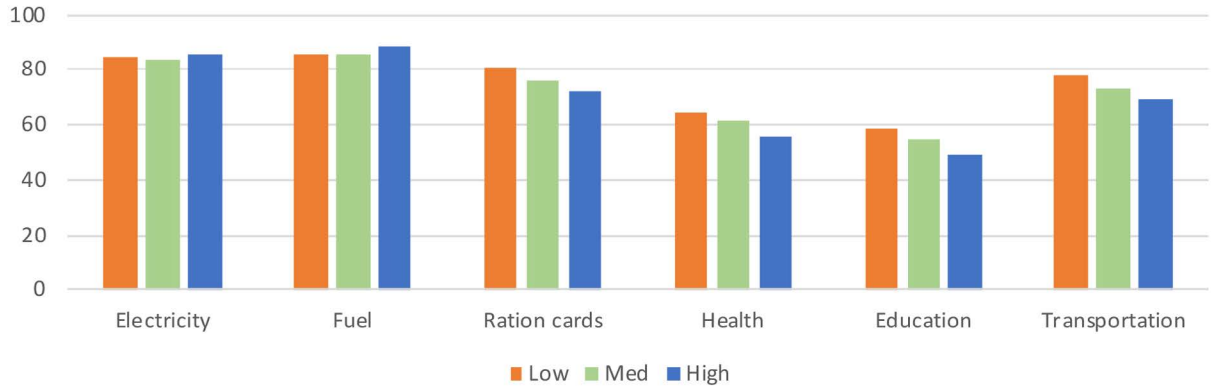
Source: Baseera Research

Figure 7: Public Services Satisfaction Index by Age Group, 2019



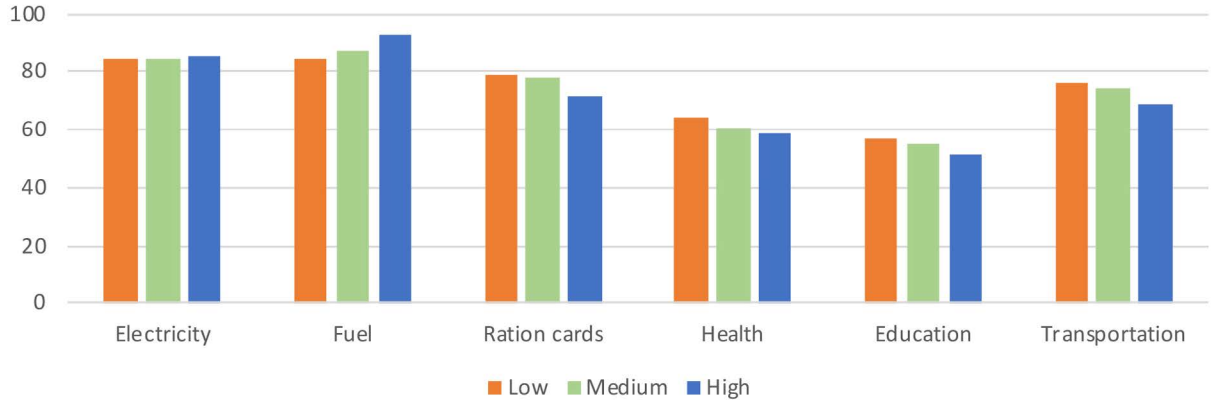
Source: Baseera Research

Figure 8: Public Services Satisfaction Index by Education Level, 2019



Source: Baseera Research

Figure 9: Public Services Satisfaction Index by Income, 2019



Source: Baseera Research

7. Lessons Learned

The Egyptian experience of reforming energy subsidies and increasing human capital investments has yielded a number of lessons that can be helpful to policy makers in other countries who are considering taking a similar path.

1. **Communicate effectively.** The government's communications and outreach efforts helped to shift public opinion in favor of reducing energy subsidies or, at the very least, reduced opposition to the reforms. These information campaigns were effective in raising awareness about the positive effects and the long-term benefits of decreasing these subsidies.

2. **Enhance social protection.** The government enhanced its social protection programs to support those most likely to be negatively affected by the removal of the subsidies. Adequate compensation schemes and other social protection measures can soften the immediate blow felt by the poorest households when subsidies are removed.

3. **Implement incrementally.** The Egyptian experience shows that taking an incremental approach to removing subsidies is preferable to a one-off action. This avoids a severe shock that may seriously damage the welfare of poor and lower middle-class households. This careful step-by-step process should be accompanied by the compensation scheme mentioned above and should be announced in a transparent way.

4. **Design equitable and flexible programs.** The design of social programs should be based on equity and fairness with a degree of flexibility to ensure that those in need can be reached a timely manner. *The Takaful w Karama* program was successful on this front as evidenced by the impact evaluation of the project (see Box 1).

5. **Change the energy mix.** A government's energy policy should aim to change the energy mix to build an environmentally sensitive society and an economy that uses sustainable sources of energy. Egypt was able to utilize its subsidy reform efforts to expand its renewable energy program and enhance private sector incentives to invest in the sector.

6. **Adopt a whole-of-government approach:** Taking a whole-of-government approach that aligns the interests and policies of different sectors and ministries is more likely to succeed than an uncoordinated approach. In the Egyptian case, the need to carefully remove energy subsidies while communicating these reforms and smoothing consumption among the poorest and most vulnerable required coordination led by the Ministry of Finance and collaboration between line ministries representing energy, development, and social protection, to name just a few.

8. Human Capital Action Plan for the Government of Egypt

It is important for the Government of Egypt to develop a plan for building human capital as this is an essential way to achieve Egypt's vision for 2030.

Identify priorities: It is key for the government to identify its priorities for human capital development as well for public spending. By using the HCI, the government can assess how much income they forego because of human capital gaps and how much faster they could turn those losses into gains if they were to act now.

Align priorities with SDGs: The components of the HCI have strong links with some of the SDGs. As illustrated in Figure 10, building human capital requires prioritizing four components: survival, health, nutrition, and education. Each of these four components are expressed in the SDGs, so the government should consider mapping their human capital priorities against the SDGs as these are becoming an integral part of their planning and monitoring process. Table 4 lists 13 SDG targets and their 17 relevant indicators that the government could consider adopting as a framework for monitoring and evaluating progress toward its own human capital development goals.

Monitor and collect data: The Government of Egypt is encouraged to design a monitoring module that includes the 17 target indicators shown in Table 4 and then periodically collect data on these indicators. Regular monitoring will yield information to help policy makers in setting priorities and allocating resources. It is also recommended to assign weights to different components based on the contribution of each to economic productivity.

Figure 10: Human Capital Framework and Sustainable Development Goals

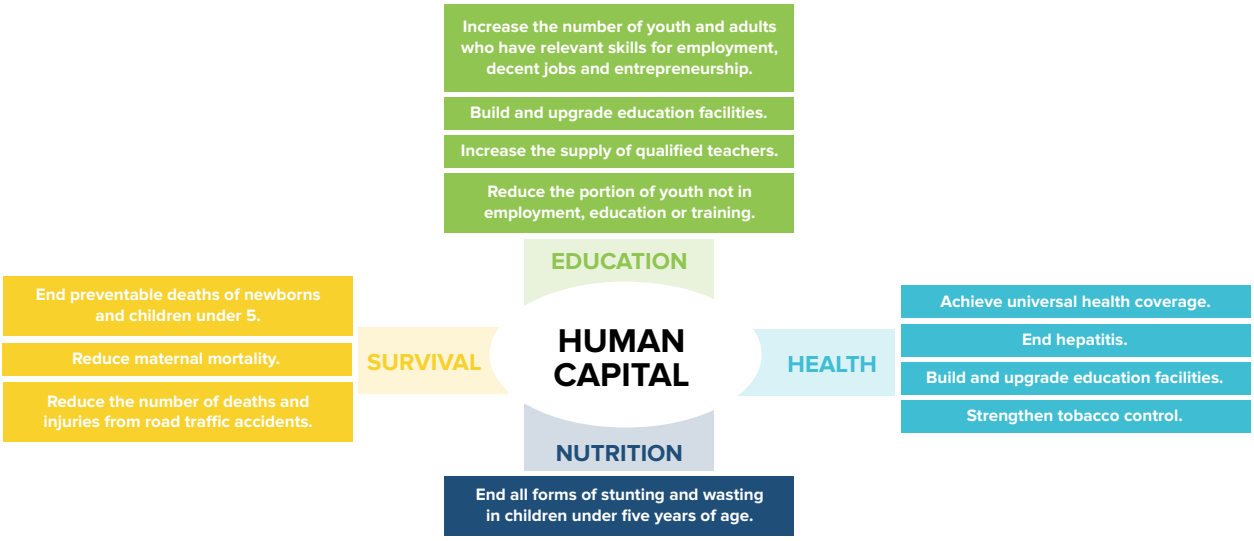


Table 4: Mapping the Components of the Human Capital Index to SDG Indicators

	Sustainable Development Goals		Relevant indicators for SDGs
Health	3.8 Achieve universal health coverage, including financial risk protection, access to quality essential health care services, and access to safe, effective, quality, and affordable essential medicines and vaccines for all	1)	3.8.1 Coverage of essential health services
	4.a Build and upgrade education facilities that are child-, disability-, and gender-sensitive and provide safe, non-violent, inclusive, and effective learning environments for all	2) 3) 4)	4.a.1 Proportion of schools with access to: • basic drinking water • single-sex basic sanitation facilities • basic handwashing facilities (as per the WASH indicator definitions)
	3.3 By 2030, end the epidemics of AIDS, tuberculosis, malaria, and neglected tropical diseases and combat hepatitis, water-borne diseases, and other communicable diseases	5)	3.3.4 Hepatitis B incidence per 100,000 population
	3.a Strengthen the implementation of the World Health Organization's Framework Convention on Tobacco Control in all countries, as appropriate	6)	3.a.1 Prevalence of current tobacco use among persons aged 15 years and older by gender and age group: (a) 15 to 19 (b) 20-29 (c) 30-44 (d) 45-59(e) 60+

Survival	3.2 By 2030, end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births and under 5 mortality to at least as low as 25 per 1,000 live births	7)	3.2.1 Under 5 mortality rate
	3.1 By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births	8)	3.1.1 Maternal mortality ratio
	3.6 By 2020, halve the number of global deaths and injuries from road traffic accidents	9)	3.6.1 Death rate due to road traffic injuries
Nutrition	2.2 By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women, and older persons	10)	2.2.1 Prevalence of stunting (height for age <-2 standard deviation from the median of the World Health Organization's Child Growth Standards) among children under 5 years of age.
		11)	2.2.2 Prevalence of malnutrition (weight for height >+2 or <-2 standard deviation from the median of the World Health Organization's Child Growth Standards) among children under 5 years of age.
Learning	4.1 By 2030, ensure that all girls and boys complete free, equitable, and quality primary and secondary education leading to relevant and effective learning outcomes	12) 13)	4.1.1 Proportion of children and young people achieving at least a minimum proficiency level in reading and mathematics for children (by gender) in: (a) grades 2/3 (b) at the end of primary school (c) at the end of lower secondary school.
	4.4 By 2030, substantially increase the number of youths and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs, and entrepreneurship	14)	4.4.1 Proportion of youths and adults with information and communications technology (ICT) skills by type of skill
	4.a Build and upgrade education facilities that are child-, disability-, and gender-sensitive and provide safe, non-violent, inclusive, and effective learning environments for all	15)	4.a.1 Proportion of schools with access to the Internet and computers for pedagogical purposes
	4.c By 2030, substantially increase the supply of qualified teachers, including through international cooperation on teacher training in developing countries, especially the least developed countries and small island developing states	16)	4.c.1 Proportion of teachers who have received at least the minimum organized teacher training (e.g. pedagogical training) pre-service or in-service required for teaching at the relevant level. For teachers in: (a) pre-primary (b) primary (c) lower secondary (d) upper secondary education.
	8.6 By 2020, substantially reduce the proportion of youths not in employment, education, or training.	17)	8.6.1 Proportion of youths (aged 15-24 years) not in education, employment, or training.

9. Select Future Human Capital Challenges[13]

The government has faced some challenges while reducing energy subsidies and increasing spending on human capital sectors. In this section, we briefly discuss a few key challenges that it will face in the future as it continues its efforts to build Egypt's human capital, namely: population dynamics, women's empowerment, and social and economic inequality. Future research will be needed to analyze these challenges in more detail.[14] Moreover, these are not the only challenges Egypt faces; there are many others, including low quality of learning, high prevalence of non-communicable disease, etc. It is beyond the scope of this paper to discuss all human capital issues in Egypt, hence, the following section endeavors to touch upon only a few of the most salient.

9.1 Population Dynamics

Population dynamics affect human, social, and economic development. The population of Egypt reached 100 million in 2020. After a period of stalled fertility, the total fertility level[15] increased from three children per woman in 2008 to 3.5 children per woman in 2014.[16] The higher fertility level led to an increase from 1.85 million births in 2006 to 2.6 million births in 2012. Most recent data point to a slight decrease in the total fertility level (3.37 in 2017), but if the rate fails to fall to replacement level in the coming decade, Egypt is likely to miss out on the benefits of a demographic dividend. With Egypt's yearly population growth being more than 2 percent, the government faces the prospect of being unable to meet the basic needs of its citizens, including adequate housing, sanitation, health care, education, and jobs, or to narrow the gaps in health and economic security between rich and poor. Moreover, Egypt is experiencing decreasing per-capita levels of fresh water, which is necessary for sustaining

[13] This analysis was conducted before the outbreak of the COVID-19 pandemic, which has severely negatively impacted the Egyptian economy and reduced government revenues, thereby limiting the fiscal space needed to invest in human capital and creating yet another challenge going forward.

[14] One additional, overarching challenge is the lack of available data. For example, there is little recent data on Age 5 Survival and the Not Stunted Rate, both important indicators related to the HCI. Therefore, the authors have estimated these two indicators using data from the Demographic and Health Survey, the most recent round of which was conducted in 2014. If no new data using the same methodology are collected, then the future HCI for Egypt will be based on old data and will, therefore, not reflect any potential recent improvement in human capital.

[15] Calculated for the three-year period preceding the survey.

[16] Demographic and Health Survey 2014.

human health, food production, and economic development. The current fertility rate is an obstacle not only to achieving universal school enrollment but to improving the quality of education. The government is currently embarking on its ambitious education reform program at a time when the education system is struggling to accommodate the largest cohort of children ever to enter the school system.

9.2 Women's Empowerment

Egypt's achievement in closing the gender gap in education is well documented.[17] However, investing in girls' education does not seem to be adequately contributing to economic growth. Male labor force participation rate is nearly three times higher than the female rate (66.8 percent versus 21.9 percent). Also, as of 2018, the unemployment rate for women was 21.4 percent compared to 6.8 percent among males.[18] The root cause of women's low labor force participation rates and high unemployment rates is cultural as many Egyptians are not gender-sensitive.[19] Furthermore, high rates of violence against women and girls is limiting the role that women play in the public space.[20] Although the percentages of female parliamentarians (25 percent) and of female ministers in the current government (20 percent) are unprecedented in Egypt's history, they are still a small minority, and only 2 percent of judges are women. This limited representation of women in policy making is likely to constrain gender-sensitive legislation.

To support gender equality, the government could measure early marriage and violence against women, both of which are relevant to younger women and prevent them from fulfilling their potential. This can be measured by the proportion of women aged 20 to 24 years old who were married before the age of 18 (SDG 5.3.1) and the proportion of women and girls aged 15 years and older who have reported being subjected to sexual violence by people other than an intimate partner in the previous 12 months

[17] Zeitoun, Nahla Ahmed Mohamed Salaheldin (2018) Women Economic Empowerment Study; and World Bank (2019) Expectations and Aspirations: A New Framework for Education in the Middle East and North Africa.
[18] World Bank and ILO figures.
[19] As defined by the ILO, to be gender-sensitive is to be "aware of the different needs, roles, and responsibilities of women and men and understanding that these differences can result in differences for women and men in access and control over resources, [and] level of participation in and benefit from resources and development."
[20] Approximately 46 percent of women age 18-64 years have experienced some form of intimate partner violence. Sexual harassment is another key challenge, with 99.3 percent of girls and women reporting that they have experienced some form of sexual harassment in their lifetime. Source: United Nations Population Fund.

(SDG 5.2.2).[21] There are, of course, additional measures the Government can take to promote women's empowerment that are not tethered to SDGs, for example, efforts to increase female labor force participation via safer transportation, more affordable childcare, etc. with strong linkages to the demographics challenge articulated above.

9.3 Inequality

Several indices produced by international organizations show that inequality is increasing worldwide. The United Nations Development Program (UNDP) created the Inequality-adjusted Human Development Index (IHDI) to measure how equally a country's gains in the areas of health, education, and income are distributed within a country's population, with each dimension's average value being estimated according to its level of inequality. Under perfect equality, the IHDI is equal to the Human Development Index (HDI), and the higher the level of inequality, the lower the IHDI value is compared to the HDI.

In 2018, Egypt was classified as having a high level of human development according to its HDI value (70 percent). However, its corresponding IHDI value was 29.7 percent lower at 49.2 percent. Inequality was found to have reduced the health sub-index by nearly 12 percent, the income sub-index by about 37 percent, and the education sub-index by about 38 percent.[22] This shows that inequality has significantly hampered Egypt's human development and that the government must make reducing inequality a high priority.

This degree of inequality in education is consistent with recent World Bank findings on learning poverty, defined as being unable to read and understand a simple text by the age of 10. Learning poverty is measured by a combination of schooling and learning indicators.[23] The World Bank has estimated that in 2016 learning poverty was 40 percent worldwide and significantly higher in Egypt at nearly 70 percent.[24] Based on these figures, the education reform program in Egypt is the right intervention to increase the country's human capital.

[21] There are, of course, additional measures the Government could take to promote women's empowerment that are not tethered to SDGs, including, for example, efforts to increase female labor force participation via safer transportation, more affordable childcare, etc.
[22] UNDP (2019).
[23] World Bank (2019) Ending Learning Poverty.
[24] These WB figures were calculated prior to the launch of education reforms at the pre-tertiary level. Moreover, the most recent international testing for Grade 8 students in Egypt showed an improvement; yet these results may not be attributed to ongoing reforms.

To overcome the rising challenge of inequality, all indicators should be disaggregated by geographical area, gender, and income.

Box 2: COVID-19 and Human Capital

Although this paper is primarily backward-looking, seeking to articulate lessons from the Egyptian experience reforming energy subsidies and investing in human capital, the backdrop of a generationally defining global pandemic such as COVID-19 cannot be ignored.

The COVID-19 pandemic has underscored the imperative of protecting human capital in times of crisis. In addition to the loss of life and income, the pandemic poses risks to human capital through disruptions in access to essential services, a rise in food prices and breakdowns in supply chains. Households have seen a rise in poverty, stress, malnutrition and infectious diseases, affecting development outcomes including child and maternal mortality. Many children have missed long periods of schooling and learning that will never be recovered. At the same time, some children, girls in particular, are at risk of never returning to the classroom. As a result, the COVID crisis poses significant setbacks to hard-won gains in human capital, with lasting implications for years to come.

This situation makes sustained investments in human capital even more necessary. The profound impacts of the crisis underscore the urgency of achieving goals such as universal health coverage, robust educational systems, and the availability of strong and adaptable social protection programs and policies that allow countries to quickly and effectively mitigate the effects of shocks and lay the foundations for future resilience.

Though not listed as a specific human capital challenge, the COVID-19 pandemic is an overarching challenge that looms over Egypt, as it does most other countries. Critically, and for the purposes of this paper, the lessons from Egypt's subsidy reform efforts are all the more relevant given the limited fiscal space and difficult choices that many countries face in responding to the pandemic and its aftermath.

10. Conclusion

Egypt's energy subsidy reform efforts are a useful exemplar demonstrating the possibility and promise of building human capital while also laying the foundation for longer-term economic stability and growth. The country's most recent reform efforts were carefully sequenced and sustained through a coordinated approach across key government ministries. The government raised awareness, managed expectations, and built credibility with the public by clearly communicating its efforts and through a simultaneous strengthening of the social safety net. After reducing these regressive subsidies that had significantly contributed to its budget deficit, Egypt was able to allocate greater resources toward more productive investments that support human capital growth as well as make the transition toward a more sustainable energy mix. As it continues in its efforts, the Government of Egypt must consider several key challenges to continue making productive human capital investments to ensure the achievement of its long-term development goals.

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