Egypt

Sectoral scenarios

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The Current Path analysis has outlined the challenges and opportunities faced by Egypt on its current development trajectory. A central concern is the country’s rapid population growth given its resource constraints. Demographic problems combined with Egypt’s water scarcity and the impact of climate change will continue to be a major challenge in achieving sustainable development. Thus, the management of shared natural resources with other riparian states, and particularly resolving the controversy over the GERD, is crucial for improving Egypt’s water security situation.
Also, economic drawbacks like the high unemployment rate, the health sector crisis that has been accentuated by COVID-19, agricultural import dependence, and challenges relating to good governance and stability need to be carefully managed.

In this section, we complement the Current Path forecast of Egypt’s likely future trajectory by simulating the potential impact(s) of seven sectoral interventions to demonstrate the alternative development pathways that Egypt could adopt towards a more prosperous future. The interventions are predicated on successful reforms and the ability of the Government of Egypt to unlock socio-economic opportunities in manufacturing, agriculture, energy and telecommunications as outlined in its National Structural Reform Programme.

The scenarios consist of interventions in demography; economy and trade; governance and stability; leapfrogging, energy and climate change; health and WaSH; and education — each of which is then compared against the Current Path forecast.

The sectoral interventions need to all happen concurrently and will complement one another. Thus, in the final section, the seven scenario components are combined in an ambitious integrated development agenda that illustrates the impact of a sustained push across all sectors.

In line with the second ten-year implementation plan of the African Union’s Agenda 2063 long-term vision for the future of Africa, the interventions are from 2024 to 2033, simulating a concerted push in that period, after which the level of performance is maintained out to 2050.

All the interventions are benchmarked against ambitious but reasonable targets that have been achieved by countries at similar levels of development or had the same challenges as Egypt (see annex).

Chart 30 gives an overview of the sectoral scenarios.
Demography

Chart 31: Impact of Demography cluster on population (millions)

This scenario increases access to modern family planning (contraception) and the rate of female labour participation. Modern contraception is an immediate way to manage and reduce the rapid population growth in Egypt.

Increasing the rate of female labour participation is a proxy for boosting the availability of more economic and labour opportunities for women. This factor has been identified as a driver for increased total fertility rate of women within the childbearing age. Increasing the labour participation rate for women would also have positive economic effects.

The scenario simulates a 20% increase in access to modern contraception for women of childbearing age (this should be accompanied by greater awareness campaigns and programmes on family planning for both men and women) and an aggressive 50% increase in the rate of female labour participation.

As a result, Egypt’s female participation rate in the economy performs better than the other North African countries and surpasses the average rate of lower middle-income countries globally (41.6%) at 44.5% in 2033 compared to nearly 30% in the Current Path. By 2050, the female labour participation rate will be 50.7% relative to 33.9% in the Current Path.

The outcome is that by 2033, TFR reduces to approximately 2.15 births per woman compared to 2.6 in the Current Path. Egypt therefore reaches the replacement level by 2033 instead of 2043 in the Current Path forecast. By 2050, Egypt’s population will be approximately 142.9 million people compared to 149.9 million, a difference of seven million fewer
Improvements in the female labour participation rate will require enforcement of anti-discriminatory policies against hiring women, particularly in the private sector. Investments in childcare and early childhood services would also allow women to pursue productive economic activities. Finally, promoting the growth of industries that can increase demand for female labour is a strategy the government should pursue. [1]
In the Economy and Trade scenario, the government incentivises manufacturing, energy and agricultural exports. It encourages greater private sector competition through good business regulatory practices, reduces the cost of starting a business, and increases economic freedom.

These interventions reduce the barriers to participating in the economy and encourage entrepreneurship and the creation and survival of businesses. The interventions facilitate a reduction in the size of the informal sector with accompanying improvements in tax revenues and productivity.

The scenario also increases FDI inflows and domestic investment in the economy to stimulate growth and competition in key sectors. Additionally, owing to the importance of remittances to the Egyptian economy, the government incentivises its large diaspora community to increase remittances to the country, and also encourages more injection of productive investment instruments like diaspora bonds to complement household consumption expenses.

According to the 2021 ITUC Global Rights Index, Egypt ranks as the fifth worst country for workers out of 149 countries globally. To further address the challenge of informality caused by non-compliance of firms to labour standards and worker benefits, the scenario boosts social insurance and welfare, which in turn boosts households’ tax contributions. This facilitates greater formalisation of all economic actors and provides workers with the associated benefits, including retirement plans.
The result is increased tax revenue, greater formalisation of the economy, and increased protection of workers’ rights and conditions. In addition, this would have the spillover effect of raising funds required for welfare and social safety net programmes for the vulnerable population.

In this cluster, energy, manufacturing and agricultural exports are increased by a magnitude of 30% and 10% respectively over a ten-year period to 2033. FDI inflows and worker remittances also rise by 20% respectively, and social security and welfare tax increases by 15% (a full list of interventions is in the annex).

As a result, revenue from all tax categories (firms, households, indirect and social security welfare tax) will improve. Indirect taxes record the highest increase. Specifically, social security welfare tax increases to US$26.2 billion in 2033 compared to US$20 billion in the Current Path forecast. Also, Egypt’s GDP is US$26.3 billion larger than in the Current Path at US$645 billion in 2033. By 2050, the size of the economy will be nearly US$1.5 trillion compared to US$1.3 trillion in the Current Path, a difference of nearly US$170 billion.

Improved business regulations, increased economic freedom and better labour standards have a very positive impact on reducing the size of the informal economy in this scenario. By 2033, the informal economy will be about 42% of GDP compared to 49% in the Current Path. By 2050, it will be 27% compared to 42% in the Current Path.
Governance and Stability

The Governance and Stability scenario envisions a more effective government that efficiently provides basic services with increased capacity to adequately collect revenue. This also involves less wastage of resources in the form of reduced corruption and greater transparency and accountability.

Egypt can leverage the potential of the private sector if it can reduce corruption and cronyism, thus improving efficiency, and taking advantage of its capable human capital to achieve its Vision 2030 and 2050 for sustainable development.[4]

The Governance and Stability scenario also improves the level of democracy and promotes greater inclusion, in this case, gender empowerment for women. Furthermore, it simulates a decreased active role of the military in public life and day-to-day governance by reducing the level of military expenditure without jeopardising the country’s security situation.

It also promotes the continued reform of the subsidy system by reducing and eventually phasing out subsidy packages that benefit the wealthy. It redirects some of these resources towards more efficient social policy programmes that better target the vulnerable population for more effective poverty alleviation.

For example, food subsidy reforms in Egypt have the potential to accelerate economic growth and reduce poverty if the government can reduce the number of beneficiaries and better target Tamween recipients. Apart from better targeting, moving to a cash-based subsidy system would be more efficient in reducing poverty. It would stimulate economic growth
because it is easier to administer and produces better nutritional health outcomes.[5]

In this scenario, over the ten-year intervention period from 2024 to 2033, government effectiveness is boosted to simulate a 20% improvement. Corruption is reduced by 30%[6] and government to household welfare to the most vulnerable is increased by 10%, while other subsidies, such as on fuel, are reduced (full list in annex).

The Government Effectiveness Index improves to 2.65 over the Current Path's 2.15 in 2033, and by 2050, the index will measure 3.2 against 2.5 in the Current Path. The Corruption Perceptions Index score (old score) improves from 3.4 in the Current Path to 4.8 and by 2050 records a score of 6.[7] Owing to overall improvement in this governance cluster, GDP per capita is about US$382 and US$2,398 more than in the Current Path in 2033 and 2050, respectively.
Leapfrogging, Energy and Climate Change

In the Leapfrogging, Energy and Climate Change scenario, Egypt uses its considerable ICT and energy potential towards the adoption of modern systems across all spheres of its economy. The country takes advantage of the transformative role of technology and innovation to facilitate healthy competition with the government acting as a regulator to encourage a more conducive business and innovation environment.

COVID-19 has created an opportunity for Egypt to improve its competitiveness and productivity through support of digital transformation by improving associated infrastructure and skills.

The scenario thus makes a push for expansion in the road network to facilitate physical connectivity, particularly in rural areas where even unpaved roads would accelerate movement of people and goods and the penetration of other technological infrastructure. It also improves ICT infrastructure, Internet access and the ability of the government and Egyptians at large to increase integration of technology in business and government services. This would enhance efficiency and effectiveness in the economy.

Egypt's carbon dioxide (CO\textsubscript{2}) emissions are related to the energy industry (fossil fuels) and cement production. In 2018, Egypt emitted about 250 million tons of CO\textsubscript{2} and ranked 27th globally in terms of energy-related CO\textsubscript{2} emissions.[8]

The Leapfrogging, Energy and Climate Change scenario introduces a carbon tax and increases the role of renewables in
Egypt's transition to a greener economy and cleaner energy.[9] The scenario simulates a future where smart innovations eventually reduce the rate of capital investment required for renewables and nuclear energy and increase the cost of investing in fossil fuels to facilitate greater uptake of renewables.

In this scenario, mobile and fixed Internet access expands by 20% over the ten years of intervention, the capital investment on renewables and nuclear energy decreases by 20% and that of coal increases to simulate divestment in that sector. A carbon tax cost of US$50 is also instituted in line with Egypt's commitments to reduce carbon emissions.

By 2033, the number of people with fixed broadband will be approximately 32.8 million compared to 28 million in the Current Path forecast. And by 2050, 11.6 million more people will have fixed broadband connections relative to the Current Path's 63 million. Carbon emissions will increase to 116 million tons (Mt) compared to 118 Mt in the Current Path in 2033. And by 2050, it will be 154 Mt compared to 162 Mt in the Current Path forecast.
Health and WaSH

In the Health and WaSH scenario, Egypt reduces deaths of children under five (mostly due to communicable diseases) as well as mortality due to NCDs (cancer, cardiovascular-related illnesses, diabetes and respiratory infections). It promotes better awareness, diagnosis and management of NCDs to reduce deaths related to them.

The scenario also reduces the prevalence of smoking, which is quite high and is associated with most cases of cardiovascular-related complications and other major NCDs in the country. It also reduces the rate of traffic-related deaths.

Egypt also increases the portion of treated wastewater to promote reuse and better water management in a country projected to face a continued crisis. This water crisis is due to climate change and controversy over the use of the Nile water with other riparian states. Wastewater that is treated and reused is also increased by 50% over the intervention period.

In this scenario, NCD deaths are reduced by 30% (full list in annex). Wastewater that is treated and reused is also increased by 50% over the intervention period (full list in annex).

The rate of NCD deaths per 1 000 people reduces to about 4 511 deaths compared to 5 196 in the Current Path in 2033 and by 2050, 5 748 against the Current Path’s 6 210. Treated wastewater rises to over 9.5 km$^3$ compared to 6.4 km$^3$ in the...
Current Path by 2033 and by 2050, 12.7 km$^3$ against 8.9 km$^3$ in the Current Path forecast. Wastewater that is treated and reused increases from 2.2 km$^3$ in the Current Path relative to this scenario at 5.1 km$^3$ by 2050.
The Education scenario improves educational outcomes especially at secondary and tertiary levels where bottlenecks have started to emerge. A good stock of education through a well-trained population would allow Egypt to increase its human capital and promote advancement of the economy by adequately taking advantage of technology and innovation.

In addition, the scenario increases enrolment in science and engineering, and expands the scope and intake for technical skills through more vocational training. The scenario simulates a 20% increase in major educational attainment indicators. Vocational training is expanded to five times the current level.

Beyond quantity, the education scenario improves the quality of education at primary and secondary levels by 20% and 10% respectively. Gender parity is also achieved by 2033 at all levels of the education system in the scenario.

In 2033, relative to the Current Path, the quality of secondary education improves by over four points compared to 45 in the Current Path and by 2050 Egypt records 53 points in the quality index relative to 48 in the Current Path. The rate of tertiary graduation increases to 33% compared to 28% in the Current Path in 2050.
Agriculture

Chart 37: Impact of Agriculture scenario on yield (tons/hectare)

The Agriculture scenario increases agricultural yields and the land area actually irrigated to facilitate stable and reliable agricultural production while restricting increases in water use to emulate greater efficiency and better management of water in the sector.

Agriculture already consumes about 85% of the country’s freshwater resources. It simulates an increase in land under cultivation according to Egypt’s efforts to reclaim some of the desert land for crop farming.[10] It also reduces agricultural and food loss.

In this scenario, agricultural yields are boosted by 15% and loss of agricultural produce in the transmission process and at consumer level is reduced by 20% and 30% respectively (full list in annex). Additionally, this scenario increases per capita demand to ensure there is enough food in the country to meet domestic demand (a proxy to ensure that not all agricultural produce is exported).

By 2033, yields will improve from 29.4 tons/hectare in the Current Path to 32.9. The forecast shows a slight gradual decline of yields after 2033, and by 2050, Egypt records 32.1 tons/hectare compared to 28.5 in the Current Path forecast. Additionally, by 2050, agricultural import dependence on crops declines to about 44.5% compared to nearly 46% in the Current Path forecast.
The impact of the Agriculture scenario is an increase in crop production by 12.6 million tons in 2033 and 12.8 million tons by 2050 compared to the Current Path forecast. As a result, Egypt’s import dependence as a per cent of net demand drops by 1.2% in 2050.
Comparing scenario impacts

Chart 38: GDP size by scenario compared to the Current Path (US$ billions, 2017)

<table>
<thead>
<tr>
<th></th>
<th>Current Path</th>
<th>Demography</th>
<th>Economy &amp; Trade</th>
<th>Education</th>
<th>Governance and stability</th>
<th>Health and Basic infrastructure</th>
<th>Leapfrogging, energy and climate change</th>
<th>Agriculture</th>
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<tr>
<td>2030</td>
<td>561.6</td>
<td>590.6</td>
<td>570.9</td>
<td>562.8</td>
<td>571.5</td>
<td>566.3</td>
<td>562.1</td>
<td>568.3</td>
</tr>
<tr>
<td>2033</td>
<td>645.7</td>
<td>697.1</td>
<td>672.1</td>
<td>649.9</td>
<td>670.9</td>
<td>657.8</td>
<td>646.9</td>
<td>654.8</td>
</tr>
<tr>
<td>2040</td>
<td>889.5</td>
<td>973.4</td>
<td>963.9</td>
<td>914.4</td>
<td>981.3</td>
<td>933.1</td>
<td>893.7</td>
<td>897.9</td>
</tr>
<tr>
<td>2043</td>
<td>1,003.0</td>
<td>1,102.0</td>
<td>1,103.1</td>
<td>1,050.0</td>
<td>1,136.9</td>
<td>1,067.0</td>
<td>1,015.0</td>
<td>1,017.0</td>
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<tr>
<td>2050</td>
<td>1,326.5</td>
<td>1,434.4</td>
<td>1,495.5</td>
<td>1,433.4</td>
<td>1,576.1</td>
<td>1,436.6</td>
<td>1,338.5</td>
<td>1,332.0</td>
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Source: IFS version 7.63, historical data from International Monetary Fund, World Development Indicators

When compared with one another, the Demographic scenario makes the greatest contribution to GDP by 2033. In the Demographic scenario, by 2033, the Egyptian economy would increase by about US$51.3 billion more than the Current Path forecast to approximately US$697 billion.

The results illustrate the impact of a significantly higher female labour participation rate and shows how Egypt's rapid population rise constrains growth and development in the country. A reduction in the absolute number of people would therefore promote sustainable growth and development in Egypt.

After the Demographic scenario, the Economy and Trade and the Governance and Stability scenarios make the greatest improvements in GDP in 2033, respectively. From 2037, the Governance and Stability scenario outpaces the Economy and Trade scenario in its impact on the size of the economy.

These results highlight Egypt's key challenges and show the importance of good, accountable and inclusive governance to stability and sustainable development once economic reform has been achieved.
The Health and WaSH and Agriculture scenarios will also contribute a significant portion to GDP by 2033. This not only illustrates the importance of increased water supply and its efficient management, but also the ability of agriculture to contribute to growth, especially for Egypt’s large rural population.

From 2040, the Governance and Stability scenario makes the greatest contribution to the size of GDP until the end of the forecast horizon. By 2050 the Governance and Stability scenario is followed by the Economy and Trade, Health and WaSH, Demographic, Education, Leapfrogging, Energy and Climate Change, and Agriculture scenarios. The performance of the Agriculture scenario over the forecast horizon reflects the declining role of agriculture as Egypt’s economy goes through a structural transformation and the impact of constraints on water supply.

The Demographic scenario records the largest improvement in GDP per capita to 2045. Given that Egypt’s population is already beyond the boundaries of sustainable development, fewer people means that the ratio of dependence will drop, and in absolute terms there will be a larger share of the Egyptian national cake to distribute.

Moreover, Egypt already has a sizable portion of human capital that is underutilised. Therefore investing in relevant and useful skills, promoting female participation in the labour market and reducing the barriers to formalising its large informal sector are important factors in boosting the productivity and dynamism of its economy.

After the Demographic scenario, increases in GDP per capita are followed by the Economy and Trade and the Governance and Stability scenarios, and by 2050, the Governance and Stability scenario achieves the best outcome in improving GDP per capita. The improvements in the Governance and Stability scenario demonstrate the significant contribution that good

<table>
<thead>
<tr>
<th>Year</th>
<th>Current Path</th>
<th>Demography</th>
<th>Economy &amp; Trade</th>
<th>Education</th>
<th>Governance and stability</th>
<th>Health and Basic infrastructure</th>
<th>Leapfrogging, energy and climate change</th>
<th>Agriculture</th>
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<td>2030</td>
<td>13,734</td>
<td>14,279</td>
<td>13,876</td>
<td>13,756</td>
<td>13,896</td>
<td>13,799</td>
<td>13,745</td>
<td>13,854</td>
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<td>2033</td>
<td>14,508</td>
<td>15,445</td>
<td>14,900</td>
<td>14,573</td>
<td>14,889</td>
<td>14,661</td>
<td>14,530</td>
<td>14,650</td>
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<td>2040</td>
<td>16,481</td>
<td>17,986</td>
<td>17,342</td>
<td>16,619</td>
<td>17,625</td>
<td>16,950</td>
<td>16,535</td>
<td>16,612</td>
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<tr>
<td>2043</td>
<td>17,309</td>
<td>18,944</td>
<td>18,268</td>
<td>17,811</td>
<td>18,770</td>
<td>17,876</td>
<td>17,386</td>
<td>17,429</td>
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<tr>
<td>2050</td>
<td>19,315</td>
<td>21,059</td>
<td>20,775</td>
<td>20,416</td>
<td>21,713</td>
<td>20,252</td>
<td>19,446</td>
<td>19,413</td>
</tr>
</tbody>
</table>

Source: IFS version 7.63, historical data from International Monetary Fund, World Development Indicators.
governance could make to the welfare of Egyptians, especially with better targeted social safety nets for the vulnerable population.

Improvements in GDP per capita in 2050 from the Governance and Stability scenario are followed by the Demographic, Economy and Trade, Education, Health and WaSH, Leapfrogging, Energy and Climate Change, and Agriculture scenarios.

**Chart 40: Impact on extreme poverty (US$3.20) relative to the Current Path**

The Demographic scenario also has the greatest impact on reducing extreme poverty by 2033. In absolute terms, Egypt would have fewer people therefore reducing the incidence of poverty. Moreover, increased female participation in the economy would ensure that more people are economically productive and earning an income.

Using the US$3.20 threshold for low middle-income countries, by 2033 about 15.8% of the population (19.5 million people) is projected to be living in extreme poverty compared to 18.4% (approximately 23 million people) in the Current Path in the same year.

The Governance and Stability scenario has the second greatest impact on extreme poverty alleviation at 16.4% in 2033. It is followed by the Agriculture scenario, reflecting the short- to medium-term importance of agriculture in extreme poverty alleviation, especially for Egypt’s rural poor. Thereafter, reduction in extreme poverty will be followed by the Education, Leapfrogging, Energy and Climate Change, Health and WaSH, and Agriculture scenarios.

However, the Economy and Trade scenario and Health and WaSH scenarios would, by 2033, modestly increase extreme poverty owing to the massive resources required to invest in the economy to promote industries in manufacturing and
exports and other basic infrastructure. Eventually, by 2050, all the scenarios yield positive reductions in extreme poverty compared to the Current Path forecast. But the Governance and Stability scenario will have the greatest impact with only 8.2 million Egyptians surviving on income below US$3.20 compared to 12.8 million on the Current Path forecast.

Overall, this reiterates the need for good and efficient governance, even in the management of Egypt’s resources as the country invests in other sectors in light of its rapidly growing population and limited resources.

The Demographic scenario has the most significant achievement in propelling Egypt towards an increased demographic dividend — i.e. the economic benefits derived from change in a country’s population age structure. In this case, fewer births would reduce the level of dependence in relation to the working-age population. Deceleration in population growth would avail more resources and encourage households to save more and invest in themselves and the economy.

On informality, the Economy and Trade scenario makes the greatest impact on reducing the size of the informal economy as a share of GDP. By 2050, the Economy and Trade scenario reduces the share of the informal economy to about 27.4% relative to 42.4% in the Current Path forecast. Improvements are then followed by the Demographic, Education, Governance and Stability, Health and WaSH, Agriculture, and Leapfrogging, Energy and Climate Change scenarios.

Finally, the Health and WaSH scenario has the greatest impact on increasing Egypt’s water supply by 2033. It is followed by the Demographic scenario, which illustrates the pressure that Egypt’s large and rising population puts on the country’s ability to adequately and sustainably meet the water demands of its people. However, by 2038, the Governance and Stability scenario outpaces the Economy and Stability scenario in this regard.

Egypt has dedicated significant resources to undertake projects like desalination, but the country faces financial limitations in realising consistent and sustainable water supply for an extended period of time owing to the costly nature of desalination. These efforts must therefore be supplemented with aspects of good and efficient governance and service delivery that ultimately impact conservation and better use of resources like water.
Endnotes

1. World Bank, Women Economic Empowerment Study, May 2018
3. World Bank, Egypt: World Bank Issues Brief No. 2, Informal is the new normal. Egypt’s Informal Sector is on the Rise, but careful Regulatory Innovation Can Help Turn the Tide
4. MF Mabrouk et al, Rethinking Egypt’s Economy, MEI@75, 7 October 2020
5. H El-Enbaby et al, What’s the future of food subsidies in Egypt?, IFPRI, 16 July 2019
6. Egypt generally scores well in the Government Effectiveness Index and Corruption Perceptions Index (although this is Transparency International’s old scoring system in IFs). However, the large informal sector and slum settlements, poor labour standards, rampant corruption, and other economic challenges belie the relatively good score. As such, the improvements on these two governance indices are benchmarked to simulate aggressive but realistic interventions. The expert workshop on this study confirmed that these interventions are appropriate and reasonable for the kind of improvements that are needed and achievable for Egypt in the forecast horizon.
7. These results put Egypt’s score slightly above the average of upper middle-income economies. However, based on current data on the indices, this is not odd because Egypt seemingly scored better/coming off a higher base than the perception of the reality by experts on the state of Egypt’s governance.
9. UN-PAGE, May – Egypt launches a national strategy for green economy at AMCEN; UN Environment Programme, Egypt
10. Based on Egypt’s land profile in IFs (land types categorised as crop, grazing, forest, urban and other), and considering the portion of arable land, this intervention does not increase land under cultivation because the model does not see scope for increasing land under cultivation in Egypt. However, this might be possible under the desert reclamation efforts by the Government of Egypt.

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Dr Jakkie Cilliers is the ISS's founder and former executive director of the ISS. He currently serves as chair of the ISS Board of Trustees and head of the African Futures and Innovation (AFI) programme at the Pretoria office of the ISS. His 2017 best-seller Fate of the Nation addresses South Africa's futures from political, economic and social perspectives. His three most recent books, Africa First! Igniting a Growth Revolution (March 2020), The Future of Africa: Challenges and Opportunities (April 2021), and Africa Tomorrow: Pathways to Prosperity (June 2022) take a rigorous look at the continent as a whole.

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