ISS AFRICAN FUTURES



Jakkie Cilliers and Stellah Kwasi

Last updated 08 June 2023 using IFs v7.53

Agriculture, climate change and access to water

Owing to the vast expanse of the Sahara Desert, Algeria has only about 8.4 million ha of arable land—less than 4% of the total land area. Just over 50% of arable land is dedicated to the cultivation of crops, mostly cereals and pulses.

In 2016, the sector was estimated to employ nearly 20% of the rural population. Approximately 70% of farming activities are small-scale and families depend on farming for food security, but productivity is low.[1]

The sector contributes a modest 11–12% of GDP, having declined in importance after independence as successive governments favoured industrialisation.[2] Lack of investment, years of government restructuring, limited water resources and dependence on rainwater, and state-controlled land ownership policies have constrained improvements in agricultural production.[3]

Although agriculture's contribution to GDP is projected to decline steadily out to 2040, the sector's absolute contribution (estimated at €40.9 billion in 2020) is forecast to increase to €50.2 billion by 2040.

Through various National Agricultural Development Plans (PNDAs) since 2000, agricultural yields have improved although the sector is generally less productive than that of its income peers. Algeria's average yield of 3 metric tons per hectare is closer to the average for low-income African countries (2.6 tons per hectare) than the rest of lower middle-income Africa (5.2 tons per hectare).

Algeria's heavy reliance on commodity exports (aka the Dutch disease) makes agriculture and manufacturing less competitive.[4]

Moreover, global warming is causing serious drought concerns in the region. The year 2020 has been marked by below-average rainfall, with pockets of drought constraining yields.[5]

Although Algeria's yields are projected to improve to 3.6 metric tons by 2040, they will still be significantly below the average for OLMICs and UMICs. Currently the gap is 3.7 and 4.7 metric tons respectively, which will stay more or less the same until 2040.

Since there is limited scope to increase land under cultivation, intensification is the most viable pathway to improve efficiency in agriculture. This involves increasing land under irrigation, using better seeds and fertilisers, and introducing modern farming practices, including urban, indoor and vertical farming.

Additionally, reductions in loss and waste from production to consumption could help to meet food demand.

Because of poor yields, agricultural demand has outstripped supply since the 1970s, making Algeria heavily dependent on food imports. According to the Algerian Customs' National Centre of Data Processing and Statistics (CNIS), in 2017 the country imported foodstuffs worth about ≤ 6.7 billion, reflecting a 3% increase from 2016.[6]

This heavy import dependence exposes the country to disruptions in international supply chains, price shocks and other related risks. This is particularly becoming evident with the COVID-19 crisis amid the depletion of the country's foreign reserves.

Algeria thus faces an interlinked double risk of commodity vulnerability: one from food imports and a second from

hydrocarbons. A slump in oil prices from over US\$100 a barrel in 2014 to roughly US\$20 in 2020 has left it struggling to fund its approximately €46 billion annual import bill, of which food comprises about 20%.

Chart 11 shows the excess demand for crops that is likely met through imports.



Chart 11: Agricultural supply and demand

Water is under great stress. It is central to agriculture - the sector that also uses the most water (5.4 km³ of total water demand of 8.3 km³). This is despite the fact that Algeria straddles large non-renewable fossil water reserves that were vigorously exploited in neighbouring Libya before the civil war.

Currently, Algeria withdraws about 1.7 km³ fossil water, while about 11% of its water supply is from expensive desalination plants. It is therefore ironic that it is one of the most wasted resources in the country owing to the subsidy policies. Subsidised electricity (which also stalls the transition to cleaner energy)[7] is used to produce desalinated water, to which a second round of subsidies is then applied.

In turn, any food wastage squanders all the previous energy and water inputs that went into its production, cultivation, processing and packaging. It is very likely that the current water subsidy policy is unsustainable[7] and the Current Path forecast is that water prices will increase through 2040.

Apart from a difficult agricultural ecosystem, North Africa is highly vulnerable to the impact of climate change, which is expected to significantly undermine water supplies and food security, in turn threatening regional stability and creating security concerns.[8]

Chart 12: Impact of climate change

In July 2018 the people of Ourgla, Algeria experienced the hottest temperature ever reliably recorded in Africa, at 51.3 °C.[9] Analysis of climate data from 1931–1990 shows that northern Algeria has already recorded a temperature rise of 0.5 °C and could see an increase of 1 °C by 2020,[10] while rainfall will reduce by 5–13%.^[6] A 2 °C rise is expected by 2050.[11]

Rising temperatures associated with climate change will reduce the area of land available for agriculture, shorten the length of growing seasons, reduce yields, and affect freshwater availability and population growth. The expected drop in annual precipitation will aggravate these effects. Studies show that sea-level rise, droughts and floods are also direct threats. They will potentially affect livelihoods and have devastating socio-economic impacts.

Sea-level rise will likely have a negative impact on livelihoods along the coast, where the main economic and social activities are concentrated. Nearly 69% of Algeria's population lives within 100 km of the coast. Apart from disruption in incomes from activities such as tourism, rising sea levels and the impact of storms will cause considerable population displacement.[12]

Climate change will have cross-cutting effects beyond agriculture and should be taken into account in development planning in Algeria.

Climate change's possible impacts in North Africa are not fully understood, but what is clear is that many factors interact and amplify other drivers and impacts. Nonetheless, the relationship between climate change, stresses on natural resources and increased risk of internal conflict is well established.[13]

Endnotes

- 1. Food and Agriculture Organization (FAO), Family Farming Knowledge Platform: Algeria
- 2. Tin Hinane El Kadi, Peer reviewer, London School of Economics, 15 June 2020. After independence Algeria's industrial policy was based on an import substitution industrialisation (ISI) strategy and focused on the promotion of unbalanced growth, favouring heavy manufacturing over agriculture and investment over consumption.
- 3. Encyclopedia of the Nations, Algeria: Agriculture
- 4. Tin Hinane El Kadi, Peer reviewer, London School of Economics, 15 June 2020
- 5. OCHA-ReliefWeb, GIEWS Country Brief: Algeria, 30 April 2020
- 6. Global Islamic Economic Gateway, Algeria's food imports increase, January 2018
- 7. Tin Hinane El Kadi, Peer reviewer, London School of Economics, 15 June 2020; Subsidies in traditional sources of energy stall the transition towards cleaner sources of energy. State subsidies of electricity generated by fossil fuel create a disincentive to move towards solar energy. The government should accelerate its energy transition by decreasing its subsidies of traditional energy sources and supporting renewable energies.
- 8. S Haddoum, H Bennour and T Ahmed Zaïd, Algerian Energy Policy: Perspectives, Barriers and Missed Opportunities, Global Challenges, 2:8, 2018
- 9. J Samenow, Africa's record high temperature likely set as city in Algeria hits 124 degrees, The Washington Post, 6 July 2018
- 10. F Sahnoune et al., Climate Change in Algeria: Vulnerability and Strategy of Mitigation and Adaptation, Energy Procedia, 36, 2013
- 11. T Mohammed and AQ Al-Amin, Climate Change and Water Resources in Algeria: Vulnerability, Impact and Adaptation Strategy, Economic and Environmental Studies, 18:1, 45/2018, 411–429.
- 12. T Al-Olaimy, Climate change impacts in North Africa, ECOMENA, 30 August 2017
- 13. CE Werrell and F Femia, Climate change raises conflict concerns, The UNESCO Courier, 2018-2

Donors and sponsors



Reuse our work

- All visualizations, data, and text produced by African Futures are completely open access under the Creative Commons BY license. You have the permission to use, distribute, and reproduce these in any medium, provided the source and authors are credited.
- The data produced by third parties and made available by African Futures is subject to the license terms from the original third-party authors. We will always indicate the original source of the data in our documentation, so you should always check the license of any such third-party data before use and redistribution.
- All of our charts can be embedded in any site.

Cite this research

Jakkie Cilliers and Stellah Kwasi (2025) Stagnation or Growth? Algeria's development pathway to 2040. Published online at futures.issafrica.org. Retrieved from https://futures.issafrica.org/special-reports/country/algeria/ [Online Resource] Updated 08 June 2023.



About the authors

Dr Jakkie Cilliers is the ISS's founder and former executive director. He currently serves as chair of the ISS Board of Trustees, head of the African Futures and Innovation (AFI) programme at the Pretoria oce of the Institute, and is an extraodinary professor at the University of Pretoria. 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.

About African Futures & Innovation

Scenarios and forecasting can help Africa identify and respond to opportunities and threats. The work of the African Futures & Innovation (AFI) program at the Institute for Security Studies aims to understand and address a widening gap between indices of wellbeing in Africa and elsewhere in the world. The AFI helps stakeholders understand likely future developments. Research findings and their policy implications are widely disseminated, often in collaboration with in-country partners. Forecasting tools inspire debate and provide insights into possible trajectories that inform planning, prioritisation and effective resource allocation. Africa's future depends on today's choices and actions by governments and their non-governmental and international partners. The AFI provides empirical data that informs short- and medium-term decisions with long-term implications. The AFI enhances Africa's capacity to prepare for and respond to future challenges. The program is headed by Dr Jakkie Cilliers.

The opinions expressed do not necessarily reflect those of the ISS, its trustees, members of the Advisory Council or donors. Authors contribute to ISS publications in their personal capacity.