The Sultanate of Oman: Food and Water Security to 2025

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Key Points

- Food security in Oman is currently maintained through a combination of domestic production, food imports and substantial government support.
- Despite comprehensive water management, Oman faces a high risk of water shortages and is one of the most water-stressed countries in the world.
- As Oman’s reliance on food imports increases, its food security will depend on its ability to finance imports. Economic diversification will be crucial in the face of dwindling oil reserves.
- Oman has developed the National Water Resource Management Master Plan and the Oman Food Security Strategy to develop sustainable solutions to the threats of food and water insecurity.

Summary

Oman faces similar constraints to domestic food and water security as its GCC neighbours: the availability of arable land is limited and water scarcity is extreme. The country currently maintains a state of trade-based food security, relying on international markets for up to 60 per cent of its food needs. Oman is a middle-income economy with a primary economic base that is being undermined as its oil reserves face depletion. While impressive efforts are being made at diversification, the economy continues to rely heavily on oil revenues and has limited time to complete its economic transition. Oman has a higher degree of food self-sufficiency and better water access than its neighbours, but it remains import-dependent and water-insecure.
Analysis

Oil and Economics in Oman

Successfully diversifying Oman’s oil-dependent economy will be paramount if the country is to ensure its long-term economic, political and social stability. The government is actively pursuing a development plan to tackle this threat by aiming to reduce the oil sector’s GDP contribution to nine per cent by 2020. At present, oil resources generate approximately 77 per cent of government revenue. The fall in global oil prices has had a significant impact on Oman and highlighted the vulnerability of the country to fluctuating oil revenue. Exacerbating this fall in price is the country’s welfare and subsidy system and an unsustainably high public wages bill.

The Omani Government provides substantial support to its population. Direct financial support is offered to the disadvantaged, while subsidies for services, including water and electricity, are available to the entire population. The generous system has assisted Oman reach a high level of human development; the country is ranked fifty-sixth out of 187 countries on the 2014 Human Development Index. Oil production revenue has enabled the government to also provide free health care and education. The long-term economic feasibility of such provisions, however, is questionable.

Population and Urban Growth

A young, predominately urban, population will create growing challenges for Oman; over half the population is under the age of 25. Following uprisings across the Middle East, demonstrations were organised in Oman in early 2011 demanding job creation, economic benefits for the unemployed and an end to corruption. Sultan Qaboos bin Said Al-Said assured his citizens that political and economic reforms would be implemented. In mid-2012, a royal directive mandated the implementation of a national job creation plan for thousands of jobs in both the private and public sectors. Meeting the demand for jobs as the labour force expands rapidly in the coming years will be a key challenge for the government.

Non-national residents represent over 30 per cent of Oman’s population and approximately 60 per cent of the country’s labour force. The industrial sector and infrastructure development projects rely on these workers, but the government has begun to focus on domesticating its workforce as the national population ages and a larger, younger labour pool emerges. The Public Authority for Investment Promotion and Export Development (PAIPED) is driving this workforce transition through the country’s Vision 2020; an economic plan focused on diversifying the economy, reshaping the role of government and enhancing the skills and training of Omanis to encourage the “Omanisation” of the private sector.

The urban population represents approximately 77 per cent of the 3.2 million people resident in Oman and the country is experiencing an urban growth rate of change of 8.54%. Meeting the housing and services requirements of a growing, urbanising population is a common challenge facing countries worldwide. Providing for the needs of increasingly congested urban centres will require innovative and flexible urban planning that can support populations into the future. Current water shortages across Oman are being blamed on the
lack of co-ordination between various government departments and a failure to plan for the foreseen rises in demand. The annual population growth rate is estimated at 2.06%, meaning that the provision of basic services as Oman’s population continues to grow will require a concerted, co-ordinated approach to managing demand.

**Agriculture, Imports and Food Security**

Despite efforts to increase Oman’s domestic food production, the availability of water and arable land constrain significant growth. The country will remain reliant on imports to supply its food consumption gap. For this approach to food security to remain sustainable in the long term, broadening the country’s export revenue base and diversifying the economy is required.

Up to half of the Omani population is dependent on the agriculture and fisheries industries, with one-third of the economically active population directly employed in agriculture. The GDP contribution of the sector, however, is just 1.3%. It is dwarfed by the industrial (55.2%) and services (43.5%) sectors.

The contribution of local agricultural products to food security in Oman has been relatively constant, at around 36 per cent of total food consumption since 2000. The country is self-sufficient in fish production and partially (30 to 50 per cent) self-sufficient in milk, meat, poultry and fresh fruit and vegetable products. Of Oman’s 309,500km² of land, approximately 430,952 hectares, or 0.12 per cent of available land, is cultivated; over half of this is located on the Batinah Plain, the principal agricultural region in the country’s north. All cultivated areas are reliant on irrigation, placing pressure on scarce water resources.

Food production is market-oriented, with sectoral organisation typified by small farm units, water-saving irrigation and modern farming techniques, including hybrid seeds, commercial fertilisers and pesticides and mechanisation. The main agricultural products produced are dates, limes, bananas, alfalfa, vegetables, camels, cattle and fish. Dates are considered one of the most important food crops in Oman and plantations occupy approximately half of the country’s agricultural land; domestic cultivation meets local demand and produces a significant surplus for export.

Fish has traditionally been an important staple food and recent studies estimate that it contributes 21 per cent of the protein in Omani diets. Fisheries production is one of the fastest-growing food production sectors in Oman. According to the United Nations Food and Agriculture Organization, Oman is one of the largest fish producers in the region and is a net exporter of fish and fish products; around 47 per cent of the fish catch is exported and 61 per cent of this is sold to fellow GCC states. The government aims to more than double fisheries production from 200,000 tonnes per year to approximately 480,000 tonnes by 2020, which will contribute significantly to economic growth and job creation in the Sultanate.
Oman’s sustained capacity to finance food imports allows it to maintain a situation of food security for its population. It does, however, render it vulnerable to disruptions to food supply and to price fluctuations on global markets. This was highlighted during the global food price crisis of 2008, when world grain prices surged and a number of large agricultural producers placed emergency export restrictions on grain to ensure their domestic food security. As a result, Oman experienced significant levels of inflation and it became evident that a segment of Omani households did not have sufficient income to meet their food needs in times of crisis.

The government’s short-term response was to implement a system of food subsidies that continued when global food prices rose again in 2011. The crisis also led to the establishment of a national committee for food security, responsible for drafting a comprehensive strategy for future food security aimed at preventing a repeat of essential commodity price rises. A key role in this process is played by the Public Authority for Stores and Food Reserves (PASFR). The food security committee identified a number of food items deemed strategic to Oman’s food security interests, including rice, flour, vegetable oil, sugar, meat, fish, milk powder, tea and coffee. PASFR is responsible for maintaining and managing strategic stockpiles of these items in key locations around the country.

**Water Management in Oman**

Oman is considered a regional leader in the assessment and management of water resources. According to a submission to the UN for the International Decade for Action “Water for Life”, by the Omani Government, the country is estimated to consume 25 per cent more than the natural recharge of water resources currently available. Desalination has contributed significantly to meeting this demand, and is now responsible for 90 per cent of the national potable water supply.

In 1988, a Royal Decree declared all water resources in the country to be a national resource and is still the most important legislative action regarding water management in the Sultanate. Since May 2001, the Ministry of Regional Municipalities and Environment and Water Resources (MRMEWR) has been responsible for water resource assessment and irrigation. Oman has a broad-based water management scheme that is founded upon improvements in data collection, detailed assessment of water resources and studies of water demand and spatial distribution.

The National Water Resource Management Master Plan principally targets domestic and industrial supplies with the objective of minimising the cost of municipal water supplies while maintaining traditional irrigated agriculture. Numerous water conservation initiatives have derived from the plan. Principal among these are efforts to improve irrigation efficiency through subsidies; the extension of waste water collection methods and the promotion of wastewater reuse; and the expansion of desalination capacity to provide potable water for municipalities. The level of public awareness of water scarcity in Oman is also high.
Water resources are scarce across the country and the mean annual rainfall is low nationally, exceeding 350mm in the mountainous north, reducing to 100mm in the foothills and averaging less than 50mm in coastal and desert interior governorates. The significant scarcity of natural resources has led to major investments in water resource development and management. In June 2015, the Sultanate signed a contract with the Islamic Development Bank (IDB) to finance 86 per cent of the cost of a water supply project from Wadi Dhaiqah to Muscat and Quriyat. At the same time, Haya Water, Oman’s wastewater company, signed two separate agreements with private companies to begin constructing a modern sewage network in the wilayats (provinces) of Baushar and A’Seeb.

A heat wave and the delayed commission of two desalination plants, meanwhile, are exacerbating water shortages across Oman, with some residents forced to pay exorbitant fees for water from private merchants. The government has long-term plans to expand the country’s water resources through further desalination plants and the development of wastewater treatment. Population growth and urban expansion are likely to quickly absorb these new sources, however, and create an environment where supply continues to be insufficient to meet demand. In this scenario, water scarcity will continue to confront urban planners, officials and the population to 2025 and beyond.
The *falaj* system has been the traditional method of supplying water for irrigation and domestic purposes in Oman for centuries. The system of channels ensures a continuous flow, divides distribution and has a high social significance. According to Fred Pearce in an article for *Yale 360 Environment*, a government inventory in the 1990s found that approximately 3,000 working *afraig* irrigated roughly 26,000 hectares, or half the country's fields. The unregulated sinking of wells has had a profound impact on both Oman's groundwater availability and the water flow in *afraig*, but a government-imposed ban on the sinking of new wells within three kilometres of *afraig* water collecting zones and the announcement of restoration programs for the system are attempting to protect those that remain in function.

Rapid population growth, increased water demand and limited alternative water resources has necessitated the excess abstraction of groundwater. Hydrographs have shown a consistent decline in groundwater levels since the late 1990s, as a lack of intensive rainfall events to recharge aquifers has combined with high rates of abstraction. The dependence on non-renewable fossil aquifers has created significant groundwater shortages in some parts of Oman and long-term uncontrolled withdrawal has also had a severe impact on groundwater quality and caused saline groundwater to flow inland from coastal regions.

According to the UN, the agricultural sector accounts for more than 87 per cent of Oman’s total water consumption. Irrigation is dependent on groundwater sources, either through wells or *afraig*, and localised irrigation has more than tripled over the last 15 years. The government has provided considerable support and subsidies for farmers to upgrade their irrigation systems to modern technology and techniques to reduce groundwater abstraction and water wastage.

*Looking Forward: Oman’s Food and Water Security Outlook to 2025*

Oman has demonstrated strong political will in its efforts to transform its economy, but it faces considerable pressure to speed up the process before losses in oil revenue have significant socio-economic and political ramifications. Government expenditure remains heavily dependent on oil production and export revenues. If the current economic diversification projects fail to adequately expand the non-oil sector, Oman’s trade-based food provision system and the ability of the country to continue to develop alternative water resources could be threatened.

Food and water consumption in Oman already exceeds sustainable domestic supply. Projected population growth will increase the pressure on water resources and result in greater food demands. At best, the country can expect marginal increases in agricultural output to 2025 by focusing on intensive farming practices that are more water efficient and shifting remaining traditional production to modern techniques and technologies.

Moving towards intensive, productivity driven improvements will require a strategy stipulating priority crops, based on water and land efficiency, sustainability and high profit rates. One such area of diversification could be fruit and vegetable cultivation. Oman already has relatively high self-sufficiency ratios for fruit and vegetable production and these crops
can be grown sustainably without compromising scarce land and water resources. In line with this push, efforts are being made to encourage private sector investment in food production by improving infrastructure for irrigation, food processing, storage facilities and warehousing.

Oman’s food security strategy also aims to support domestic food production by sponsoring research in the country’s universities on the production of drought-resistant and saline-tolerant crops. In 2014, Oman signed a Memorandum of Understanding with the Australian state of Victoria on food production, research and development and education. According to Invest Victoria, the MoU will give Oman access to Victoria’s research and agribusiness know-how, as well as vocational education and training partnerships in agricultural and veterinary science.

According to the IFPRI Agricultural Science and Technology Indicators, Oman’s agricultural R&D spending increased by approximately one-third between 2007 and 2012. Accounting for roughly 6.5% of agricultural GDP, Oman invests a significant proportion of its agricultural GDP to research. Research into crops, fisheries and livestock represents over three-quarters of the commodities on Oman’s research agenda.

Expanding the fisheries sector is a key part of the Sultanate’s strategy to diversify its economy and create job opportunities. The government’s 2015 budget has prioritised two major fisheries projects: the Duqm fish processing complex and the expansion of aquaculture infrastructure development. The forecast growth in the fisheries sector will play an important role in supporting Oman’s long-term food security and economic and social stability.

At present, the shutdown of a desalination plant will have a significant impact on water security. The interruption of water supply at the Sohor desalination plant due to a burst seawater pipe in May affected 250,000 people and highlighted the vulnerability of the country to water supply disruptions and the social and economic ramifications. The development of further desalination plants for potable consumption is a key priority to ensure that water supply can keep up with growing demand. Diversifying supply will be critical for long-term water security; developing wastewater reuse for non-potable uses is an underdeveloped opportunity which will assist with that diversification.

Expanding supply, however, is only part of the solution. According to the Times of Oman, the country’s subsidy system will have cost the government an estimated US$4.67bn this year, predominately spent on petrol, housing loans, electricity and water. Managing demand and addressing the country’s subsidy system will assist in lowering per capita water consumption. Subsidy spending is often disproportionately utilised by those who are in a position to afford the real cost of resources and who consume more of those resources. Changing subsidies so that those able to afford unsubsidised water pay fees that are reflective of the true value of water will assist in curbing demand and encourage water conservation. Increased revenue through fee-raising will also assist utilities to expand, maintain and update ageing infrastructure. That, in turn, will reduce the amount of water
lost through supply systems and further support the growing demand to connect to the water supply network in urban centres.

**Conclusion**

Global food commodity prices are expected to face consistent upward pressure in the period to 2025. Population growth, rising income levels and changing consumption patterns, combined with growing pressure on agricultural production and water resources, present significant challenges to Oman’s long-term food and water security. In the event of another global supply shortage and food price rise, the introduction of export restrictions by large agricultural producers would put Oman’s food security at risk.

A protracted period of food insecurity in Oman could have harmful domestic implications, particularly if it were accompanied by a downturn in the economy following the depletion of oil reserves. Rising food prices could stir up social unrest. Oman has invested significant resources to address the identified risks to both its food and water insecurity. Institutionally, Oman is one of the best-placed countries in the region to successfully address potential threats to its food and water security. While it does face significant challenges in ensuring long-term food and water security, programs to diversify the economy, create jobs, expand alternative water resources and optimise agricultural development will ensure that the Sultanate remains food-secure to 2025. To move beyond this, a commitment to addressing the subsidy system and demand-side management of both food and water will be required.

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