



JORDAN

The Hashemite Kingdom of Jordan, a desert country with few energy resources and even less water, seems to have survived them all:

regional wars, lost territory, influxes of refugees which overwhelmed the local population, and a conflict with those refugees. Even during the Arab Spring, which swept through the region supplanting and shaking decades-old regimes, Jordan experienced waves of protests but no revolution.

The monarchy has skillfully consolidated power since Jordan's independence in 1947—in part by eliciting outside support from Western governments and regional governments alike. Appreciated by many as a vital state in a volatile neighborhood, Jordan has survived by drawing millions, and then billions, of dollars in external aid. By using the proceeds of that assistance to carefully appease powerful tribes and distribute a generous mix of subsidies and public sector jobs, the government has been able to withstand decades of latent discontent, but not without a cost. Relative to the size of its economy, the Jordanian government's spending is among the highest in the world.¹

This generous external financing has had concrete benefits for service provision. The dispersed population is widely connected to electricity and water networks. The majority of wastewater is treated and reused. Still, Jordan must do better than average to survive. Jordan is the second-most water scarce country in the world. Climate change and population bursts have accelerated the problem. While it has the world's eighth-largest supply of oil shale, it has no oil reservoirs and little natural gas.² Consequently, Jordan has been dependent on outsiders for energy and development aid for decades. The 2008 global recession, gas supply interruptions, and wars rocked regional trade and infrastructure. Covid-related economic costs have catapulted Jordan's debt to over 100 percent of its GDP.³

Committing to environmentally sustainable solutions to service provision in the power sector, water and sanitation, and

waste management are not just good for the environment, they are cost effective and necessary for meeting the needs of a population that is projected to increase by 20 percent in the next decade.⁴

GOVERNANCE OF SERVICE DELIVERY

The population of Jordan has grown immensely since the

country was carved from the ruins of the Ottoman Empire after World War I. The royal family migrated from the Arabian Peninsula at that time, and while it did not have deep local roots, it proved skillful at balancing relations between the country's existing tribes and winning their allegiance. The British Mandate, which governed Jordan for the first two decades, always acknowledged Jordan's strategic importance. The United States and the United Kingdom in particular valued Jordan as a staunch ally and an important buffer for Israel. More than most countries, Jordan benefited from Western engineering support, and the influx of Palestinians—first in 1948 and then in 1967—provided a population that was increasingly cosmopolitan and eager for education.

The population of Jordan has swelled greatly since the country was founded, and most of Jordan's major cities are largely new. The capital, Amman, had perhaps 1,000 house-

holds a century ago and now hosts more than 4 million residents. The Hashemite monarchy that rules the kingdom consistently has placed a premium on deploying modernization and political balancing in equal measure. While it established authorities to provide utility services, the services are often delivered in a manner sensitive to political concerns. The government's political tasks have often dictated a strong hand from Amman, and in some cases, bred resentment between local populations and the central government.

nearly 100 percent of its energy needs has meant that Jordan's leadership has been engaged in a delicate foreign policy dance to sustain cheap energy and electricity prices for its citizens.

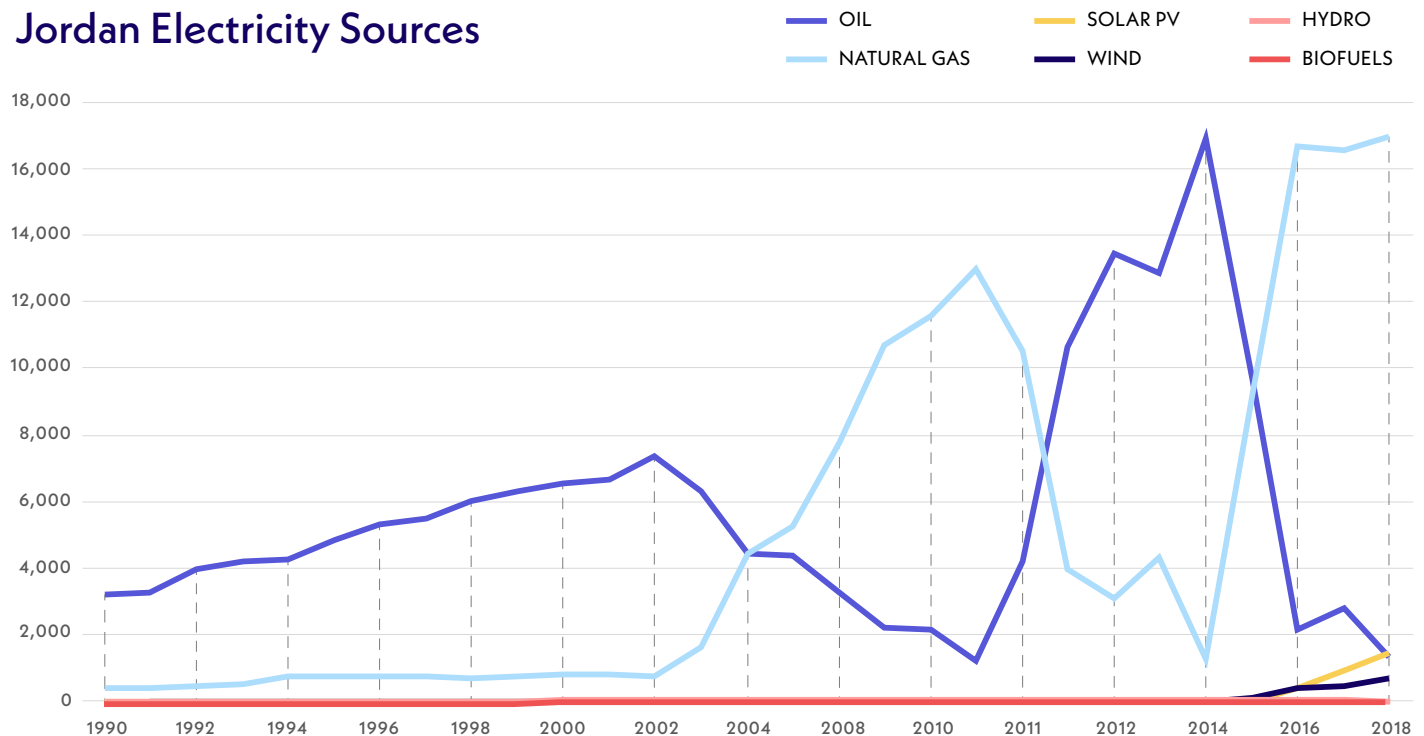
However, the loss of regional largesse in recent decades meant that Jordan had to increasingly turn to the United States and international financial institutions and deal with mounting national debt through unpopular austerity measures. The power sector was considered a priority for such reforms.

The government gradually phased out energy subsidies and raised tariffs on some of its largest consumers (e.g., ICT companies and hotels). It privatized the generation and distribution of electricity while maintaining a state-owned monopoly—the National Electric Power Company (NEPCO)—to manage transmission, engage in power purchase agreements,

POWER

Thousands took to the streets in Jordan to protest rising prices—including fuel—in 1989, 1996, 2012, and 2018. Importing

Jordan Electricity Sources



and purchase fuel for power generation companies.

Even so, regional turmoil still made Jordan vulnerable. As unrest swelled during the Arab Spring, terrorists attacked the gas pipeline from Egypt more than 24 times, jeopardizing vital supplies.⁵ Forced to buy expensive fuel oil on an urgent basis, NEPCO's debt rose.⁶ Bolstering a more resilient energy mix became a priority. Plans were developed to exploit Jordan's uranium for a nuclear plant and Jordan's oil shale reserves.⁷ Yet, with large expanses of desert, more than 310 days of sun a year, and strong winds, renewables were a clear unexploited resource.

As early as 2012, as ideas for nuclear, oil shale, and new gas projects were still being developed, Jordan embarked on a new frontier in renewables. Parliament adopted the Renewable Energy and Energy Efficiency Law (REEEL) in 2012, to incentivize private sector investment in renewable energy, and created the Jordan Renewable Energy and Energy Efficiency Fund (JREEEF) to support individuals and small- and medium-sized enterprises. Jordan's government planned to boost electricity generation capacity from renewable sources to 1.8 gigawatts by 2020, and it attracted billions of dollars of investment to do so.⁸ By 2018, Jordan was ranked first in the Middle East and North Africa in renewable and clean energy growth and third in the world, according to a Bloomberg report.⁹ By 2019, Jordan had about 6,900 workers employed across the renewables sector.¹⁰

Yet, solutions agreed to in the urgent circumstances of the Arab Spring began to

impinge on the growth of renewables. A \$10 billion agreement with Noble Energy to import Israeli natural gas secured Jordan's gas supply, but it locked the government into high levels of consumption for 15 years, arguably at premium rates.¹¹ A 30-year power purchase agreement (PPA) to build the second-largest oil shale-fired plant in the world was signed, aiming to meet almost 15 percent of the country's power demand.¹² Pricing for that deal has also been controversial.¹³

At the same time, renewables were eating into NEPCO's bottom line. The company's biggest electricity consumers responded to higher NEPCO tariffs by building their own solar facilities. Jordan went from having too little electricity to having too much. Yet, because the gas purchase agreements and PPAs require NEPCO to purchase fixed quantities of electricity at fixed rates, NEPCO continues to buy electricity that Jordanians cannot use and cannot afford, with no way to export it. Today, NEPCO's debt stands at around \$7.7 billion.¹⁴ Servicing the debt costs over \$100 million annually.

In 2019, the government capped renewables projects at one megawatt, shattering investor confidence and disrupting companies whose business model had been built off of Jordan's ambitious renewables strategy. When electricity peak load dramatically dropped early this year due to Covid-19, renewables were taken off the grid completely—without informing companies or consumers. The losses were tremendous, and many companies are looking outside Jordan for future business development. Some in the field

CLOUDING JORDAN'S RENEWABLES FUTURE

In early 2012, the Jordanian government and NEPCO increased the electricity rates on banks and telecom companies by 150 percent overnight in an attempt to keep costs low for individual consumers. The move dramatically increased costs for Jordan's three major telecom companies, Orange Jordan, Zain, and Umniah. By 2018, one of the companies was operating in the red, prompting executives to search for a way to cut energy costs. They found their solution in solar energy.

Orange Jordan partnered with Kawar Energy, a renewables company, to install a 37-megawatt photovoltaic (PV) farm, covering over 70 percent of the company's energy consumption. Zain and Umniah planned their own. The arrangement was good for the telecoms, but it created a crisis for NEPCO, which was relying on some of its largest customers to pay steep rates in order to subsidize individual consumers. NEPCO had gone deeply into debt to finance generation capacity, and it suddenly had both an income problem and a looming demand problem.

On January 9, 2019, the Jordanian government capped all new renewable projects at one megawatt, citing the need to assess grid capacity. Two years later, that cap on new development remains.

The cap on new, large-scale solar projects has decimated what was once a market for solar energy. Most solar companies have shrunk by 50 percent after the cap. Kawar Energy has half the employees it had in 2018, and a slew of projects have been put on hold.

With investor confidence shaken by the government's sudden move, it might be a long time until PV advocates in Jordan see the light at the end of this tunnel.

who have continued to develop projects under one megawatt do not believe that such scale can stimulate job growth at the same rate.¹⁵ Now, promising young engineers in the country are asking if they should even study renewable energy.¹⁶

Those in the business argue that the government is so focused on debt that it has been making short-term economic decisions without accounting for how renewables could electrify the Jordanian economy over the long term. Experts point to the possibility of using the power to electrify cars, partially run desalination plants, or simply encourage industries to use more power. In the meantime, renewables companies are looking into storage capabilities, something that many experts said needed to be incorporated into planning years ago. The government has also signed a preliminary agreement to connect to Iraq to export electricity and stabilize the load during times when there is excess capacity. However, given the regional experience so far, Jordan will have to invest in alternative strategies.

Today, the country still imports around 94 percent of its energy, which represents approximately 10 percent of GDP, with annual domestic demand increasing 3 percent. Advancing the renewables industry is clearly Jordan's future if it is ever to achieve any level of energy independence and financial sustainability—necessary steps for any country, especially one with such high debt in a chaotic neighborhood.

There are a few necessary steps for Jordan to move forward with renewables. The Green Corridor project seeks to address

grid capacity, and it is now awaiting the completion of an environmental impact assessment.¹⁷ However, industry experts have recommended that distributors, who have very long-term contracts with the government, also need to be properly incentivized to deal with the variable nature of renewable energy.¹⁸ In light of the existing one megawatt cap, the legal framework also needs to be revised to include individual consumption and storage capacity.¹⁹

Experts suggest enlarging the circle of decisionmaking and making it more transparent—particularly in PPAs—to find solutions and prevent problems in the sector before they begin. Fostering more transparency in decisionmaking—from the bidding process to implementation and operations—will also be necessary to re-instill confidence from investors, not to mention the country's businesses, people, and parliament. Such trust-building steps will also encourage young Jordanians to begin developing skills in various aspects of the renewables industry to meet the demands of tomorrow. Given solar farms' locations in desert areas where employment outside the public sector remains low, this could be a boon for workers if they believe that there is a future in developing such skills.

Renewables can help Jordan become more resilient, but the government needs to first make the sector more resilient to external challenges. Making those planning choices transparently is not just doable, it is mandatory to bring confidence back.

WATER AND SANITATION

Jordan did not have much of an Arab

Spring, but it did have a parched Arab summer in 2012, igniting protests against water shortages and disruptions. Some demonstrators burned tires, while others carried empty plastic gallons in the street, clamoring for water to fill them.²⁰

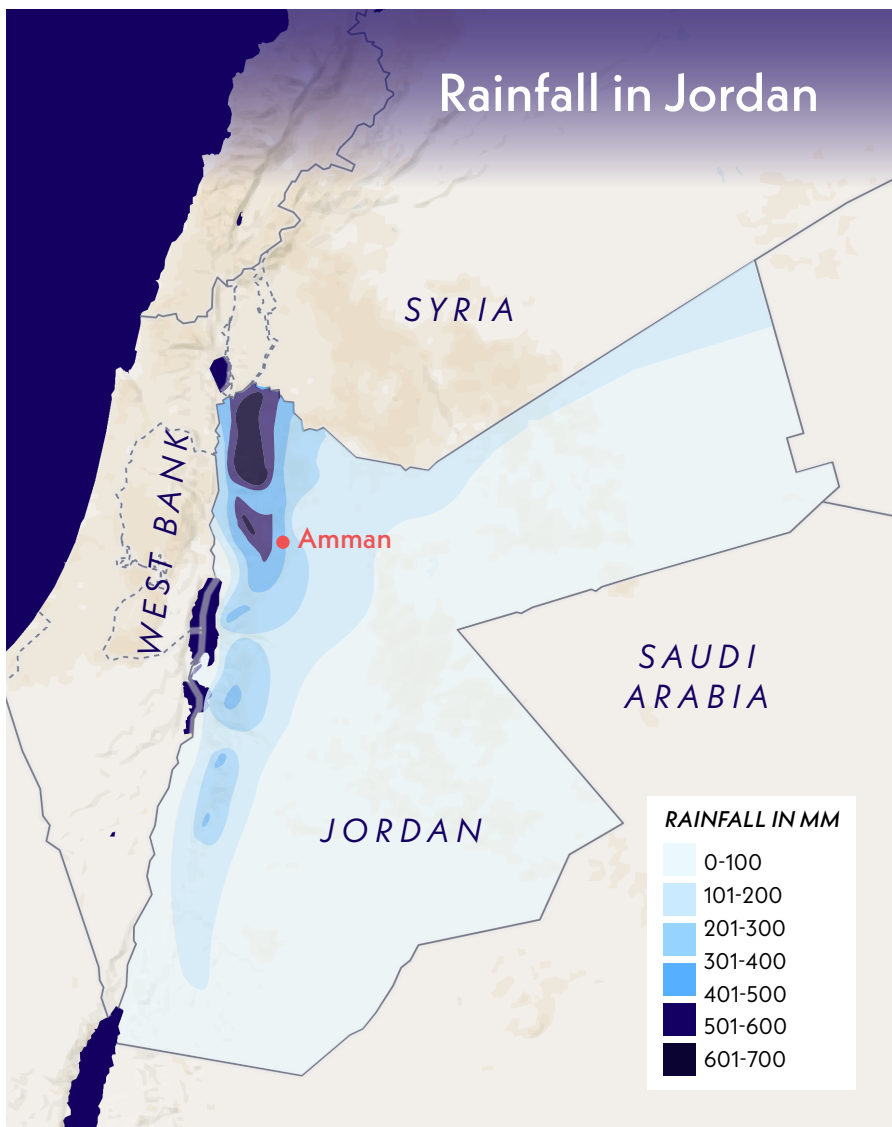
Jordan is in trouble. The country's per capita water supply is only 10 percent of the level that the United Nations defines as

the boundary for water poverty. It amounts to less than 100 cubic meters annually. As one expert in the water sector said, "if Jordan does not start making drastic changes, my daughter will not have enough water to live here."²¹

The stresses of climate change, population pressures, and problematic transboundary water agreements add to water stress.²² However, there are other immediate challenges. Agriculture consumes over 60 percent of water resources while contributing just over 4 percent to GDP. Non-revenue

water (NRW), or water lost through leakage, under-registration, and theft, is approximately 51 percent.²³ While these are common figures throughout the world, Jordan is not typical. As the second-most water poor country on the planet, its margin for error is paper thin.²⁴

To control water supply, Jordan's water and sanitation sector became increasingly centralized in the 1980s. Increasing the water supply was the priority. In order to deal with demand, the government manages the sector primarily through the Ministry of Water and Irrigation (MWI), with the Water Authority of Jordan (WAJ) and the Jordan Valley Authority



(JVA) underneath it. Together, these bodies plan, regulate, and provide services. The JVA is responsible specifically for water sector development and distribution of irrigation water in the Jordan Rift Valley. While the operation and management of water and sewage services has been opened to private sector participation since 1999, asset ownership has been fully retained by the public sector, and private sector involvement has been limited to a couple large infrastructure projects.

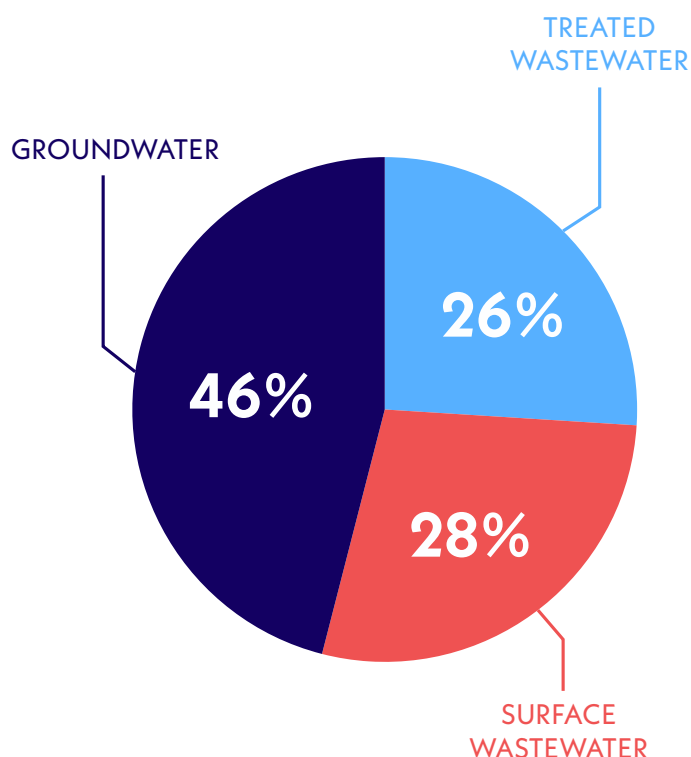
The centralized structure has had some benefits as infrastructure needed to quickly expand. Today, 95 percent of the population has access to an improved water source, albeit on an intermittent basis, and about 63 percent are connected to a public sewer system.²⁵ Two-thirds of wastewater is treated, and nearly 100 percent of that is reportedly reused. Al Samra Wastewater treatment plant is one of the unrivaled success stories of planning at scale. The plant has gone through several expansions and renovations in recent years to treat almost 70 percent of Jordan's treated wastewater. Through a mix of biogas and hydropower, the plant is able to meet 78 percent of its energy requirements.²⁶ The plant was the first co-financed private sector build-operate-transfer (BOT) project in Jordan.²⁷ However, aside from Al Samra and the \$1.1 billion Disi conveyance project, which brings non-renewable fossil water to Amman and surrounding areas, the water sector has attracted limited private sector investment.

Even with these achievements to improve sanitation and supply, Jordan continues to use water at an unsustainable pace,



As one expert in the water sector said, “if Jordan does not start making drastic changes, my daughter will not have enough water to live here.”

Water Sources for Irrigation



Source: Maher Salman et al., *An assessment of policies, institutions and regulations for water harvesting, solar energy, and groundwater in Jordan* (Rome: Food and Agriculture Organization of the United Nations, 2018), 10, <http://www.fao.org/3/i8601en/i8601EN.pdf>.

PATCHING JORDAN'S WATER LEAKS

The Jordan Valley is the country's "vegetable basket," but one farmer's frustration captured the water challenge there succinctly: "Those banana plantations are owned by the big guys; there is water for them. . . . The water problem is for the small guys and the weak guys." The history of water management in the Jordan Valley is one of maximizing political stability, not water conservation. In this arid country, influential tribal members and landowners have steady access to water, while individual consumers and small farmers struggle.

In 2001, the German development agency Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) developed a set of Water User Associations (WUAs) in partnership with the Jordan Valley Authority (JVA), the government agency responsible for water distribution to the valley's farmers. The scheme sought to create a "sustainable participatory approach" to water management to address both inequities in access and the JVA's own resource constraints. In exchange for a yearly fee to the WUA, farmers were able to lobby the JVA collectively, get access to assistance that the under-resourced JVA was unable to provide, and win the right to repair their own leaks.

The presidents of WUAs were typically powerful tribal leaders. As a consequence, they hired workers to monitor pipes and open taps more often for the workers' connections than their technical skills. Many small farmers accepted the trade-off. They had joined WUAs mainly for entrée to powerful farmers who could lobby for water on their behalf.

The WUAs have increased solidarity among farmers. For example, many are now persuaded that stealing water from farmers' shared pumping stations is wrong. The goodwill does not flow to the Jordanian state or those outside the WUA, though. One farmer said he had no problem with farmers stealing water directly from the King Abdullah Canal. That is like stealing from the government, he explained, and that seems to be fine.

depending on underground aquifers for over 60 percent of its water needs and over-abstracting them by more than 160 percent.²⁸ Many are becoming brackish, with little to no recharge. While water sector experts agree that dramatic resupply efforts through desalination and water exchanges with neighboring countries will be necessary, many say that there must also be more pressure on limiting demand, theft, and wastage.

Jordan's National Water Strategy 2016–2025 recognized these issues and aimed to reduce NRW from 50 to 25 percent by addressing leakages, illegal pumping, and meter deficiencies. Donors worked with Jordan to update pipes and introduce smart metering and rapid leak detection; such investments saved millions of dollars and cubic meters of water.²⁹ To encourage water efficiency, the government introduced quotas and bulk tariff rates on water.³⁰ In addition, authorities announced that between 2013 and 2017, they prevented or stopped over 30,000 violations on water mains and resources and imposed stiff penalties for violations.³¹ The MWI said that it had also gone after Jordan's business and political elite, sometimes at great personal risk to the minister and his staff.³²

Despite spending on infrastructure, corporatization of utilities, and donor projects to improve efficiency, reductions in water usage have not been significant.³³ Water experts continue to be skeptical of the government's commitment when they see Jordan's most water-intensive agricultural enterprises in the southern desert and the northern highlands, where

the water deficit is the most extreme. The tension between the water haves and have-nots has grown over the past decade, as small-scale farmers are struggling to survive, and residents are forced to spend large amounts of their income to supplement carefully rationed water from the state.

The struggle has become violent at times, with residents in the north blocking roads and taking infrastructure hostage to demand water.³⁴ In the meantime, many agricultural communities with access to wells have been able to maintain their water supply. Reports have also pointed to the difference between farmers. Some have argued that many smaller-scale farmers without political capital still struggle with water shortages even after shifting their water consumption habits, while powerful landowners continue to use groundwater and surface water to feed water intensive crops, further entrenching inequalities.³⁵ For example, while the government encourages using treated wastewater for irrigation, some wealthier farmers continue to use precious groundwater for low-value olive trees to boost land values.³⁶

Reducing NRW, increasing water conservation through treated wastewater reuse and new technologies, and building up supply is necessary. New technologies such as hydroponic farming and drip irrigation could save 50 to 80 percent of the water used in traditional cultivation.³⁷ However, experts consistently cite the government's need to reform the agricultural sector through zoning regulations, lowering import tariffs on water intensive crops to encourage farmers to

grow less water-intensive crops, and allowing contracts for companies growing in unsustainable areas to expire. However, powerful interests have been able to lobby the government to hold off on such measures.³⁸ Increasing water prices may discourage agriculture, but powerful interests will continue to find ways around such pricing schemes.

Giving farmers at each end of the income spectrum alternatives may be the only option, and this will not be easy. Around 25 percent of the poor, including many Syrian refugees, rely on agriculture for their income, according to the government.³⁹ Absorbing these workers and small-scale farmers who can no longer make ends meet due to water shortages has already proven difficult. In some parts of the south, the state's security and civil defense departments have absorbed 90 percent of workers in order to maintain stability.⁴⁰ Confronting powerful vested interests will be even more politically challenging for the government.

Direct communication with farmers and landowners will be necessary to find the necessary mixture of incentives and regulations to encourage farmers to shift to higher value, water-efficient crops, or alternative employment or revenue generation such as eco-tourism or wind and solar farms.⁴¹ Developing reliable and transparent water data will also be essential for technical experts and entrepreneurs to understand where the losses are coming from in order to mitigate them. This transparency will also allow civil society to have a bigger role in the solution through awareness among the local population on water scarcity.

In order for any of these solutions to work, the government must show commitment by enforcing the necessary policies to make environmentally sustainable water planning effective. Much like importing expensive fuel oil, growing bananas in the desert and exporting citrus cannot be part of Jordan's future if it wants to survive and thrive.

WASTE

In the past decade, Jordan could no longer deprioritize its waste management sector. In part due to urbanization, a refugee influx, and growing economy, the amount of solid waste from 19 of Jordan's 21 landfills doubled between 2012 and 2019.⁴² In northern Jordan, the urgency is particularly acute with over a half a million refugees spilling across the border, straining municipalities' ability to deal with newly generated amounts of solid waste. Most of Jordan's landfills are still unsanitary, meaning they could threaten surface and groundwater—a precious rare commodity in the country.

International donors helped northern governorates respond to growing waste management needs due to the Syrian refugee influx but many municipalities outside the capital and touristic areas continue to struggle with a lack of resources. Amman, Aqaba, and the Petra region are managed by the Greater Amman Municipality (GAM),

REEDING BETWEEN THE LINES

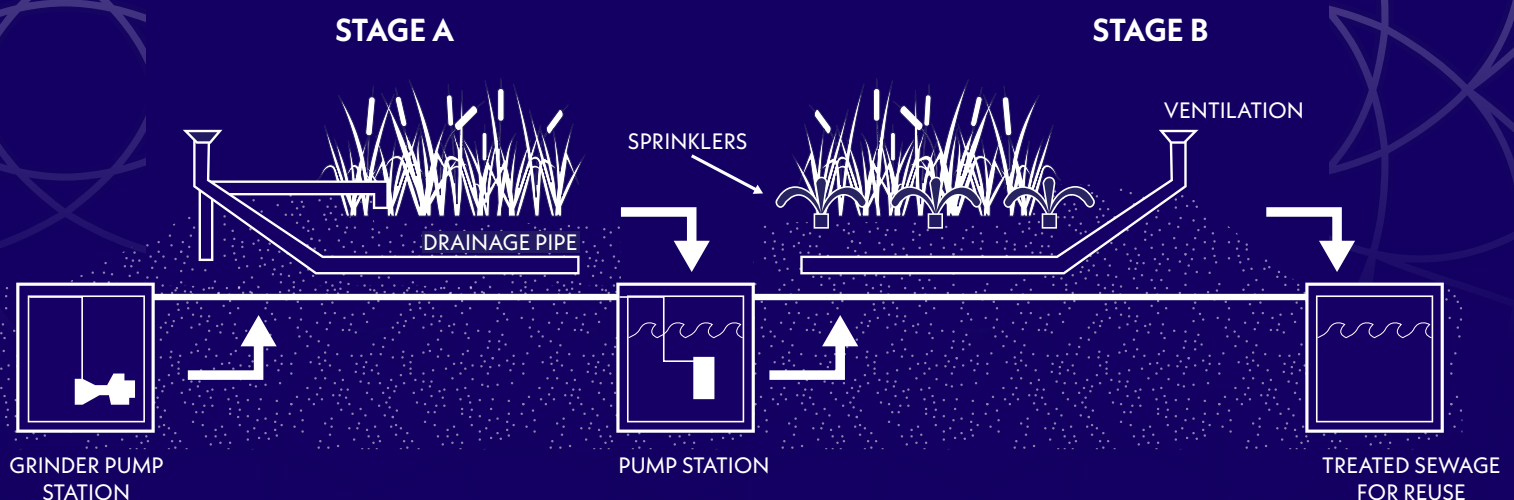
Azraq's oasis—wetlands in the middle of Jordan's arid desert landscape—has been famous for centuries. In recent decades, too much water has been pumped and too much untreated wastewater has been dumped, threatening the Azraq Wetland Reserve, groundwater wells, and local biodiversity. The answer to the threats is as simple as it is elegant: reeds.

When engineers plant reeds for the Innovative Sanitation Solutions and Reuse in Arid Regions (ISSRAR) project, they will be doing more than merely revitalizing the environment. The reeds will form the backbone of an innovative wastewater management system that helps a town near the Azraq oasis turn its sewage from refuse to resource. The "constructed wetlands" can filter and treat over 500 m³ of raw sewage per day—more than enough for 12,000 residents.

Compared to a traditional wastewater treatment facility, the constructed wetlands require minimal electricity and few highly technical skills to maintain. As a bonus, the treated wastewater can irrigate crops, lessening the burden on dwindling groundwater resources.

The original concept was a hard sell to locals, though. Residents feared that the system would smell and devalue their land. They also did not want to become a dumping ground for other villages' waste. A six-month campaign sought the support of key stakeholders, while young volunteers went door-to-door to build grassroots support and answer residents' concerns.

The technology deployed in Azraq has been used in other places in the Middle East and around the world. In these projects, the reeds do most of the dirty work, and the people reap the benefits. For those in rural communities who often find themselves doing dirty work while others benefit, the project is a welcome change.



Source: Original analysis and creation based on "Raw Wastewater Treatment by Constructed Wetlands," Blumberg Engineers, 2019, <https://www.blumberg-engineers.com/en/ecotechnologies/raw-wastewater-treatment>.

the Aqaba Special Economic Zone Authority, and the Petra Development and Tourism Region Authority (PDTRA), respectively. They have legal, financial, and administrative authority over solid waste management in their areas. The rest of the country depends on the Ministry of Municipal Administration (MOMA), which often does not have the budget to effectively manage waste. Cost recovery is only 60 percent in the Greater Amman Municipality and no more than 30 percent in the other municipalities. Household contribution to solid waste management represents 0.11 percent of GDP per household, a much lower share than comparable countries.⁴³

As a result, while waste management services are acceptable in large cities, those services are often poor or nonexistent in small towns and rural areas, as municipalities generally lack capacity.⁴⁴ However, the need to respond to an increase in waste—especially in northern governorates hosting tens of thousands of new refugees—prompted the government and donors to begin working on a strategy for the waste sector. In 2015, the government released its Solid Waste Management Strategy, which aims to achieve a recycling rate of 50 percent by 2034 and recommends the development of five major composting facilities by 2025.⁴⁵ Currently, the amount of waste recycled still does not exceed 7 percent of waste produced.

Young boys get heat from a burning rubbish bin as Syrian refugees go about their daily business in the Za'atari refugee camp on February 1, 2013, in Za'atari, Jordan.



Most recycling activities in Jordan are still considered pilot projects and small-scale interventions. They are mostly initiated and supported by NGOs and other international organizations for relatively short funding schedules. The UN Development Program (UNDP), the French Development Agency (AFD), and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) have all either completed or launched projects to develop sanitary landfills and sorting and composting facilities, aiming to employ refugees and Jordanians.

Formal private sector participation remains limited. The majority of recycling is still done by around 5,000 waste pickers in the country. Syrian refugees have entered the market in search of income opportunities, intensifying competition with Jordanians. Dozens of recycling companies, which waste pickers sell to, face tough competition as well. The recent rise in electricity prices has raised the costs of recycling to the point where raw materials and imported recycled products are cost-effective substitutes for Jordanian recycled products.

With greater awareness, integration of sectors, and inclusive planning, Jordan could create an opportunity out of crisis by using aid to develop long-term, financially sustainable models for waste management. There are currently low levels of awareness in communities regarding waste management. NGOs such as the Jordan Environment Society, which started its recycling program in the mid-1990s, developed awareness campaigns to teach residents how to sort at source.

While the capacity of such programs has been limited, they could be expanded to reach greater numbers of people as recycling efforts expand. A 2019 Oxfam and GIZ country-wide survey showed that 75 percent of non-recyclers said they would be willing to recycle if proper facilities were made available to them.⁴⁶ Some projects also provide maps identifying where a limited number of recycling companies are located for those willing to bring their materials to those locations. While these efforts alone are unlikely to greatly expand sustainable waste management, they could help with future planning and building awareness with local communities.

Due to high electricity costs, making recycling financially feasible is challenging. However, if a more integrated approach is developed, sustainable solid waste management could make use of renewable energy, including waste-to-energy solutions, to mitigate the costs and reduce methane gas emissions from landfills. Al-Ghabawi landfill near Amman has already taken advantage of this technology and now has an installed capacity of 4.68 megawatts, only using 4.5 percent of the generated energy for the plant's operations.⁴⁷ Some projects are also working with the 200 recycling companies in Jordan and the government to enable and incentivize commercial waste generators to use recycling services by reducing their overall solid waste management costs.⁴⁸ Since the commercial sector in Amman generates at least 40 percent of waste produced, this could be a significant step.⁴⁹ Additionally, composting could also create soil conditioner or fertilizer for struggling farmers, since more



AWAD AWAD/AFP/Getty Images

Garbage and water waste are seen on the shores of the Jordanian side of the Dead Sea, near Shuneh on April 16, 2008.

than half of waste produced is organic. By improving cost recovery mechanisms, the government could better reach areas on the periphery.

Many of the existing efforts are either large-scale government efforts for major cities or NGO-led projects. While NGOs, in particular, have been able to develop income opportunities for Jordanians and Syrian refugees in the sector, further expanding sustainable solid waste management practices could provide 1,000s of formal jobs for women and men. In Jordan, a fourth of waste pickers formally working on dumpsites are women.⁵⁰ But as open dumpsites close down and the sector is more formalized, many waste

pickers may be left out. Some efforts to employ informal waste pickers have already backfired when companies paid them less than they would make on their own. Understanding how formalizing the sector could impact local economies and job competition must also be better understood to assess the long-term costs and benefits of scaling up sustainable waste management practices.

By attracting private sector participation at a larger scale and investing in the skills development needed for this strategy, thousands of jobs could be created in sustainable waste management. A participatory and inclusive approach will ensure that benefits outweigh the costs.

In an effort to maintain stability and mitigate costs, Jordan has had to move slowly—too slowly some experts say—toward policies that would make basic service provision more resilient and sustainable. For Jordan, a country with limited energy and water resources in an unstable region, environmental sustainability is existential. A growing number of youth will expect jobs in their future, something that the public sector and agriculture simply cannot continue to absorb.

While connectivity throughout the region will hopefully be the way of the future, Jordan cannot depend on outsiders for energy, water, or aid. With guaranteed debt and advances of NEPCO and WAJ reaching 22 percent of GDP in 2016, financial feasibility will be paramount.⁵¹ Pursuing environmental sustainability in service provision has the potential to decrease deficits and vulnerability. Integrated and transparent participatory planning could minimize the growing pains during this transition and create thousands of new jobs for a country whose cost of living has skyrocketed.