

## WATER THIEVES OR POLITICAL CATALYSTS? SYRIAN REFUGEES IN JORDAN AND LEBANON

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In 2013, a Jordanian town near Mafraq in the north ran out of water. The villagers barricaded roads and burned tires. This was no ordinary protest: King Abdullah himself came to the scene, assuring the villagers he would get water to them in tankers. In a move uncharacteristic of Jordanian politics, the villagers refused. They wanted water piped directly into their houses instead. In the end, the king promised piped water.<sup>1</sup>

This negotiation with the king of Jordan, in the area with the country's highest concentration of Syrian refugees, demonstrates a key effect of the crisis: population pressure on scarce resources. In Jordan and Lebanon, the countries most demographically affected by the crisis, the presence of the Syrian refugees has brought to the fore longstanding problems in providing resources to the populace. The refugees did not create the water scarcity, but they did exacerbate it, advancing the timeline for water deprivation. More important, their presence laid bare the inadequacies of the states' infrastructural capacity. Hostility is directed both at the Syrians for using the water and at the governments for mis-

managing it, generating the potential for domestic conflict and a crisis of state allegiance. On the other hand, it also provides an opportunity for governments to reform effectively and better govern their people.

The proportion of refugees to locals in Jordan and Lebanon dwarfs anything Europe or the United States has experienced: one in four people in Lebanon is Syrian, as is at least one in 10 in Jordan, conservatively.<sup>2</sup> Lebanon has more refugees per capita than any country in the world.<sup>3</sup> The two countries are also water-scarce, though Lebanon's water issues are recent.<sup>4</sup> The sudden influx of refugees highlighted the problem of securing adequate resources, turning water into an unavoidable domestic issue that can no longer be deflected and blamed on a neighboring state (Israel), as it was in the past.<sup>5</sup> The Syrian refugees present an unsustainable burden on crucial resources.

But environment is not destiny in this situation. Politics will ultimately decide the future of water in these countries. While they are burdened disproportionately with refugees, they benefit from massive aid from the United Nations and

other international organizations thanks to their presence.<sup>6</sup> Technological changes, demand moderation and changes in distribution could furnish enough water. However, these would entail fundamental alterations in the nature of the regimes and their support bases. Neither state has been able or willing to confront these core issues, although Jordan has begun to try. The consequences of inaction are stark: water is not a luxury, and its lack holds long-term implications for health, sanitation, development and social movements.

The Syrian refugees, in effect, have been catalysts of domestic conflict over water security, providing one spillover from Syria's civil war. Surprisingly, much of this conflict is directed toward the citizens' own governments. In Jordan, violence directly due to the provision of water has broken out, and opinions are clear in the public and the media that the Syrians are a threat to Jordanian water. In Lebanon, opinion polls indicate more concern over water than most other threats, even fears of change in the state's sectarian balance. This is all the more surprising since the Lebanese, unlike Jordanians, have historically perceived their country as water-rich. At the same time, various forms of violence have proliferated between the refugees and the Lebanese, but the populace generally perceives more injustice over unemployment than over scarce resources.<sup>7</sup> Given adequate income, private sources can secure water and other resources in Lebanon. Animosity toward the refugees is surely present, but hostility will not solve the problem. Protests demanding solutions are targeted toward the government and its affiliated elites. Increasingly, citizens are refusing to blame the refugees, focusing instead on government corruption and inequality in provisioning.

### **(MIS)MANAGING WATER**

While emerging from quite diverse political-economy profiles, the water problems of Jordan and Lebanon are remarkably similar. Both are ostensibly oriented toward free-market economics, yet in Jordan the state has retained a heavy concentration of power over the economy.<sup>8</sup> Lebanon attempted a night-watchman state, devoid of service provision and dominated by the private sector,<sup>9</sup> seeking improvements with minimal government spending. Jordan has kept control of water in the hands of the government, with no effective decentralization. Both prioritize agriculture and its access to water, though that sector contributes little to the economic bottom line.

Water is considered a public good in Jordan and Lebanon, a right and not a commodity.<sup>10</sup> This view is common in countries where the water is of low quality or intermittent availability.<sup>11</sup> People feel no obligation to pay for the inferior water services; provision is unreliable and the water often contaminated or undrinkable.<sup>12</sup> One estimate holds that 90 percent of urban water in Lebanon is contaminated.<sup>13</sup> Jordan's tap water occasionally ran brown well before the Syrians arrived and would often stop altogether.<sup>14</sup> One analysis determined that Jordanians in urban areas (generally receiving preferential water services) had 12 hours of piped freshwater per week.<sup>15</sup> In 2009, before the refugee influx, Lebanon's public-network water was available between three and 13 hours per day depending on the season, with considerable regional variation.<sup>16</sup> Studies done by UN organizations recently found that 64 percent of Lebanese do not have regular access to safe water.<sup>17</sup> Many areas are not connected to the water grid at all.<sup>18</sup> Theft and old infrastructure contribute to

significant loss. In both countries, about 50 percent of water is unaccounted for. In some areas of Lebanon, estimates reach 80 percent of water lost through the pipes.<sup>19</sup> Leakage and theft can be fixed with technology and regulation, but this requires local and state capacity and political backing to enforce stricter demand management.<sup>20</sup>

Much of the public has avoided the polluted national water systems through illegal private wells, in addition to massive private purchases of water. In 2011, Jordan's water agency claimed there were 409 illegal wells and almost 4,000 that were privately licensed. In the year before the refugees' arrival, almost 900 new wells were licensed.<sup>21</sup> In 2014, Jordan had an estimated 1,500 illegal wells.<sup>22</sup> The actual numbers are almost certainly higher. Recently, Jordan's Ministry of Water and Irrigation announced that it had corrected 30,000 infractions of the water laws since 2013.<sup>23</sup> In Lebanon, wells drawing up to 100,000 liters of water per day are exempt from regulation.<sup>24</sup> Even with this allowance, the World Bank estimated that there are 20,000 illegal wells in the environs of Beirut, mainly used by private truckers to deliver water around the city.<sup>25</sup> Overall, there are at least 50,000 private wells in Lebanon; some estimates go as high as 80,000, partly a legacy of the civil war, with militias maintaining their own water supply. This is up from 3,000 in the early 1970s, while the state grid still works off of only 650 wells.<sup>26</sup> Three-quarters of family budgets are spent buying water from private suppliers,<sup>27</sup> five times the amount for public water.<sup>28</sup>

Such private provisioning further degrades the water supply and the state attempts to improve service. Illegal wells provide water to the refugees and citizens who are the most vulnerable to water

shortages, but they have several negative consequences. Private wells further degrade groundwater quality, as they overdraw from the aquifers and increase the salinity and pollution of the remaining supply. Pumping costs increase, since over-pumping leads to declining water tables.<sup>29</sup> The wells are not regulated or taxed by the government, which decreases revenues to the state that could be used to maintain or upgrade infrastructure. Private water businesses now hold a potential veto in attempts to improve the public water system.<sup>30</sup> The value of the bottled-water industry in Lebanon is estimated in the hundreds of millions of dollars, with the vast majority of the bottlers unregulated.<sup>31</sup> In some poor areas, the quality of this water is no better than the state system, while costing a significant portion of the budget.<sup>32</sup> Overall, private water provisioning allows the state to avoid responsibility for water, while it generates, enriches and institutionalizes business interests in maintaining an inadequate public supply.<sup>33</sup>

Agriculture is the big consumer of water in both countries, and irrigation is virtually unrestricted, unregulated and free. Sixty-one percent of Lebanon's water goes to agriculture, but the sector contributes less than 5 percent to GDP.<sup>34</sup> Similarly, agriculture takes about 70 percent of Jordan's water, while yielding little to domestic income.<sup>35</sup> Water use is highly inefficient, due to leakage and the inability to collect penalty fees. In Jordan, the agricultural sector's importance in the development of water policy stems from the network of patron-client relationships created by King Hussein during the 1950s and 1960s. These relationships became a strong source of support for the central government at a time when many urban political movements were challenging the monarchy.

Thus, the rural elites, with their agricultural interests, became entrenched in the political process. In an effort to foster the relationship, much leeway was granted to the development of water policy that specifically benefits rural landowners.<sup>36</sup> Several laws have been passed to curtail the unabated water pumping by farmers, but the agricultural lobby has been able to significantly alter legislation or blatantly disregard the law.<sup>37</sup> Both countries still prioritize agriculture in their economic strategies.<sup>38</sup>

Administration of the water sector is uncoordinated and understaffed, though water is subject to multiple agencies and laws.<sup>39</sup> Lebanon demonstrates the bureaucratic chaos. From 1951 through 1995, 22 autonomous authorities under the guidance of the Ministry of Hydraulic and Electric Resources were established, with roughly 220 commissions and projects tasked with the distribution of water.<sup>40</sup> Reforms have reduced the number of autonomous authorities to four; however, this has not generated increased coordination. In 2014, donors were asked to place the locations of their projects on a physical map, in an effort to curtail duplication.<sup>41</sup> Lebanon's Law 221 in 2000 was an attempt to address water problems, affirming the state's management role and leaving private, local authorities in charge of the actual projects.<sup>42</sup> In management of wells, Lebanon has other administrative impediments, since licensing and closing down wells are separate bureaucratic duties.<sup>43</sup>

Both governments hope to attract private business into water, but entrepreneurs have been uninterested in funding projects due to the lack of profitability. The governments either do not collect fees to cover water costs or charge a flat fee unrelated to usage.<sup>44</sup> They have been unable to charge

realistic rates for water or collect even those fees they do charge.<sup>45</sup> In some areas of Lebanon, the rate of unpaid water bills is 40 percent.<sup>46</sup> One attempt at private management in Jordan led to failure; the multinational in charge of the project withdrew due to payment issues and fights over control with the local state water company and government institutions.<sup>47</sup> Donors and international loans are thus used to repair the countries' water systems, but their work is overregulated and does not address the core issues.<sup>48</sup> Laws against foreign workers impede international donors and NGOs from working in the water sector.<sup>49</sup> Lebanon, despite \$3 billion invested in its water sector through loans since 1992, has seen no improvement.<sup>50</sup> Only the humanitarian sector has undertaken water projects under the guise of aiding the refugees and refugee-hosting countries.

Lebanon and Jordan focus on supply, particularly on developing large, costly and prolonged projects of questionable efficacy.<sup>51</sup> Jordan's Disi Aquifer is one example. Its goal was to meet Jordan's water needs for the next century, although revised estimates have limited the project's water to the next couple of decades.<sup>52</sup> It will not function as intended, to give the aquifers time to replenish while using this alternative source. Particularly alarming is that the project took so long to complete and cost so much: \$1.1 billion.<sup>53</sup> Neither country has historically taken seriously the issue of demand-management or reallocating supply away from wasteful sectors. Indeed, in Lebanon, it is believed that the problem is retaining Lebanon's abundant water. Thus we hear calls for grandiose projects that — historically and currently — have been gravely unsound: building in an earthquake zone for example.<sup>54</sup> Many fear the water projects will suffer the same

fate as Lebanon's dozens of wastewater-treatment plants. Funded by development loans to the government, they sit idle due to administrative problems and jurisdictional fragmentation.<sup>55</sup>

The two states differ in their historical view of water scarcity. Jordan has long perceived its vulnerability, while Lebanon is only now coming to realize the gravity of its situation. Though their water infrastructure could not meet demand even before the arrival of the Syrians, Lebanese still hold the popular conception of their state as "blessed with water."<sup>56</sup> Water is considered a national-security issue in both states and has been linked to animosity toward neighbors. Israel has been blamed in Lebanon, in particular; the government continues to bring up Israel's alleged draining of the Litani River in the south.<sup>57</sup> In Jordan, the water treaty with Israel achieved little; it still charges Israel with exacerbating its water problems.<sup>58</sup> At least Jordan can no longer blame Syria. Due to war and migration, the upstream areas no longer take water for irrigation.<sup>59</sup>

The majority of Jordan being a desert, water provisioning and management began early in the country's history. It is one of the most water-poor lands in a water-scarce region. The country draws twice as much water from under the ground as is replenished and imports the bulk of its water. Jordan has one of the lowest per capita water-consumption rates in the world — between 110 and 145 cubic meters annually, substantially less than the annual threshold of 500 cubic meters established by the United Nations.<sup>60</sup> Rainfall is also declining.<sup>61</sup> A USAID report prior to the refugee crisis highlighted all these problems, including the excessive use of water by agriculture, groundwater over-exploitation, salinization and the need

for reforms.<sup>62</sup> Even without the refugees, Jordan's high fertility rate would decrease water availability to dangerous levels.

In Lebanon, human actions have decreased the availability of water by an estimated 29 percent, resulting in increasing desertification.<sup>63</sup> Waste, pollution, evaporation and drought all negatively impact reliable water delivery.<sup>64</sup> Unreliable seasonal rainfall further complicates Lebanon's supply. As the population grows, the amount of water available per individual continues to decrease. The government declared a water crisis in this hitherto water-secure state in 2014.<sup>65</sup>

#### **JORDAN: SCARCITY AND REFUGEES**

Syrian refugees differ from prior waves of refugees in being primarily self-settled or urban rather than residing in camps, while also being significant demographically. Jordan encourages camps, while Lebanon forbids them.<sup>66</sup> Camps are areas over which international actors can have near-exclusive rule. This can threaten sovereignty, or it can be used to the state's advantage, as Jordan has shown. Camps can decrease interaction between citizens and refugees, leading to less conflict, and they can also focus international attention and draw more aid money.<sup>67</sup> By contrast, refugees outside of camps live in informal tented settlements, rent among the population, or squat on land as they can manage. They tap whatever water sources they can, often over-drawing aquifers and adding to underground pollution through inadequate sanitation.

Beginning in 2011, over 600,000 Syrians entered Jordan.<sup>68</sup> Prior to their arrival, the freshwater supplies to the kingdom were expected to run out around the year 2060, given the 2012 Jordanian popula-

tion of 6.5 million.<sup>69</sup> With the rapid surge in population, in part due to the influx of refugees, the expectation is that water will not last beyond 2030.<sup>70</sup> In 2017, Jordan announced its water could serve less than one-third of its population.<sup>71</sup> The refugees are not the only factor in these changing demographics. From 1980 through 2008, the population grew by 86 percent.<sup>72</sup>

Poor rural communities, which tend to have higher percentages of refugees, have seen water deliveries significantly curtailed.<sup>73</sup> The Sumaya pumping station in northern Jordan is emblematic of water infrastructure and supply problems. The station has traditionally been responsible for providing water to roughly 80,000 Jordanians. Even at this level, it could provide intermittent water at best. The influx of Syrian refugees has increased the numbers at the pumping station to over 200,000, a 250 percent increase in demand. Further hampering the station's ability to meet demand is the significant amount of water leaking out of its run-down pipes: up to 75 percent.<sup>74</sup> This scenario is commonplace in northern Jordan.

Refugee camps affect the surrounding water infrastructure, particularly since the largest ones were built in the most water-stressed areas. Zaatari, the largest of the camps, now is home to around 80,000 refugees.<sup>75</sup> Built somewhat hastily and located in the desert close to the Syrian border, the camp does not have direct access to Jordanian infrastructure. Water was extracted from village wells around the nearby town of Mafraq, and this covered 80 percent of needs within the camp.<sup>76</sup> The solution was unsustainable, however, as it negatively impacted the infrastructure and resources available to two villages within close proximity.<sup>77</sup> Later, internal boreholes provided water for the camp but still

stressed the available water. Even prior to the construction of the camp, the aquifer that villages in Mafraq draw from was decreasing rapidly from over-extraction.<sup>78</sup> Jordanians across the northern parts of Jordan now receive water only once or twice a week or even less often, as the refugees draw from community resources.<sup>79</sup>

Perhaps more damaging to the remaining water supplies are the issues of wastewater and sewage treatment in the Zataari refugee camp. There is no large-scale infrastructure in place to remove sewage and waste. Residents of the camp rely upon a network of ditches, lagoons and cesspools that are periodically emptied to septic tanks away from Zataari.<sup>80</sup> This opens the possibility for serious groundwater contamination; Zataari sits atop the Shallow Aquifer System and the Upper Cretaceous Aquifer System at greater depths.<sup>81</sup> Essentially, the waste of over 80,000 refugees is seeping into the ground directly above two of the only sources of clean groundwater in northern Jordan because of a lack of infrastructure. A recent study of Zataari found the raw sewage from cesspools in the camp has not yet contaminated the groundwater.<sup>82</sup> The implications are somewhat paradoxical. The government has no motivation to improve infrastructure, but the pollution levels will only increase if it is not improved, compromising the water supply for all of northern Jordan. Other reports maintain that the aquifer under Zaatari will be polluted within a few years.<sup>83</sup>

Outside the camps, wastewater and sewage infrastructure is overwhelmed due to the increase in non-camp population. Over 85 percent of refugees self-settled in urban or rural areas.<sup>84</sup> Thirty-five percent of those hosting refugees do not have access to municipal sewage services. Those who do have seen dramatic increases in

infrastructure failures that usually result in overflows of raw sewage. Complaints against local infrastructure administrators have doubled or tripled in many communities as a result of broken or clogged sewage systems.<sup>85</sup> These infrastructure breakdowns have the potential to lead to groundwater contamination.<sup>86</sup>

NGOs have played a critical role in mitigating water scarcity for the refugees, yet they also further distort the local market value of water. Numerous NGOs and Jordanians are all vying for the use of municipal wells, and the NGOs serving the refugees are winning. They compete not only with the local population for water, but among themselves as well. NGOs willing to pay more are able to purchase water and provide aid to larger numbers of refugees.<sup>87</sup> By overpaying from a local source, they have priced some Jordanians out of the water market.<sup>88</sup> Local farmers, predominantly the East Bank landowners who support the regime, must vie with others for water. NGO water use feeds into the perception that Jordanians are overlooked while the state's resources are directed at the refugees.<sup>89</sup> In the villages outside the Zaatari refugee camp, Jordanians watch tankers that once brought them water pass through without stopping on their way to the refugee camp. This discourages water conservation; people perceive that any water they save will be given to the Syrians.<sup>90</sup>

## **LEBANESE WATER**

Lebanon's population of 4.6 million in 2011 received proportionally the largest number of Syrian refugees,<sup>91</sup> over one million, many more unregistered and staying with families.<sup>92</sup> Lebanon forbids camps, so Syrians unable to rent apartments or live with relatives rent land and pitch their tents or squat in informal tented settlements. An

official at the Ministry of Energy and Water stated that "[b]ecause of the Syrians, a water balance that should have been negative in 2030 is negative now."<sup>93</sup> Furthermore, the Lebanese government recognizes it is understaffed to manage the additional water demand.<sup>94</sup> With increased stress on resources, private water deliveries for those who can afford them have become less frequent and more expensive.<sup>95</sup> While the drilling of illegal wells started long before the Syrian conflict, the dramatic influx of refugees accelerated it.

Refugees are spread out across the state but reside heavily in impoverished areas that already suffer from lack of water infrastructure. The Akkar governorate in northern Lebanon, home to 110,000 refugees, was disadvantaged in water before the arrival of the Syrians.<sup>96</sup> Prior to 2011, when an estimated 79 percent of Lebanese had access to drinking water, only 54 percent of those in Akkar did.<sup>97</sup> Water availability for Akkar residents has now declined sharply.

An estimated 45 percent of the refugees in Akkar live in either substandard buildings or informal settlements never intended to have permanent water infrastructure or state services.<sup>98</sup> Informal settlements are loosely defined as tents or other handmade structures. The result of large numbers of refugees taking up residence in substandard or temporary shelters is evident in their limited water sources. In Akkar, 79 percent of refugees in informal settlements and 41 percent of refugees in substandard structures receive water from wells, which altogether means 46 percent of all refugees in the region derive their water from wells.<sup>99</sup> There is little reason to believe that the wells used by refugees in the Akkar region are sanctioned or regulated by the Lebanese government in

any way. A commonplace arrangement for those who own the property on which an informal settlement or substandard structure is erected is to dig the well and include water charges as part of the rent. Though this informal system is able to provide water to refugees, there is no way to filter out contaminants. Moreover, it relieves the central government from having to deliver the service — though it has to forgo the revenue it would be able to use to improve the water infrastructure.

The unregulated increase in water extraction through illegal wells also has a significant negative impact on water quality in general. The increased extraction has caused the water table to drop to alarmingly low levels, producing seawater intrusion.<sup>100</sup> The most dramatic example of declining water quality is in the Shatila refugee camp in suburban Beirut. Tap water has been called “hell water;” it is salty and smells repugnant. It is said to rust silverware in roughly 30 minutes of exposure.<sup>101</sup> Reports from Shatila are extreme, but even in many Lebanese communities in Beirut, the tap water is at times too saline for consumption.<sup>102</sup> Skin diseases and other waterborne illnesses are on the rise in the most concentrated refugee communities.<sup>103</sup> Authorities fear cholera, scabies, hepatitis A and leishmaniasis have broken out.<sup>104</sup> One recent study found that, in a two-week period, 40 percent of Syrians were suffering dysentery from water-borne organisms.<sup>105</sup>

NGOs have attempted to bridge the gaps in infrastructure. A total of \$11.1 million was allocated through the UN High Commissioner for Refugees (UNHCR) to address sanitation and water supplies in municipalities that are particularly vulnerable to water shortages, in addition to other funding specifically for water.<sup>106</sup>

This funding has enabled many NGOs to establish programs that not only benefit the refugees, but also the local population. Beyond delivering water and improving infrastructure, many NGOs have established programs that focus on water, sanitation and hygiene (WASH).<sup>107</sup>

NGOs alone are not the solution. They have limited ability to guarantee the safety of their water. The most frequent way that NGOs provide water to refugees is by giving tanks, filters and pumps to a centrally located water source with the ability to decontaminate water.<sup>108</sup> This form of aid, however, still relies upon dwindling amounts of groundwater that has become more contaminated with increased extraction. Furthermore, many of the tanks provided by NGOs are filled using the notoriously unreliable water infrastructure, where available. Water from illegal wells at informal settlements is also collected and stored. It is equally poor in quality, if not worse, than water from the state infrastructure. The UNHCR has determined that there is significant contamination in most of the water sources accessed by refugees.<sup>109</sup>

In the most desperate cases, water is trucked to the informal refugee settlements, completely bypassing the potential contamination of wells or the central infrastructure’s pipes.<sup>110</sup> This method has provided temporary relief to some refugees but is unsustainable for the majority. Moreover, settlements often only receive water biweekly; some areas are overlooked entirely.<sup>111</sup> When deliveries are made, refugees rush to collect as much water as possible, depleting the supply quickly.<sup>112</sup> Since the refugees generally do not have any uncontaminated means of water storage, a significant health risk is present even when the water started out clean.<sup>113</sup> There have been problems of theft and fraud,<sup>114</sup> but the



UN agencies have adjusted their methods to check on deliveries.<sup>115</sup> Refugees in the south are at a further disadvantage since NGO resources are focused on the north and the large cities. Despite religious differences between the communities and the refugees in the south, the burden of providing services to the refugees lies with the local communities.<sup>116</sup>

Many international organizations have undertaken projects to improve Lebanon's physical water infrastructure.<sup>117</sup> These efforts must be coordinated through the appropriate understaffed and underfunded government offices.<sup>118</sup> Bureaucracy and rampant corruption often impede NGO projects, causing delays or derailing projects altogether. The government has further limited the number of foreign workers allowed to enter Lebanon. The limit on foreign employees of 10 percent, combined with a lack of local Lebanese water specialists, severely hampers NGO water provision and has forced some NGOs to leave Lebanon entirely.<sup>119</sup>

## **SOCIAL CONFLICT AND CORRUPTION**

The refugees have made the longstanding water-supply problems worse, but inefficiency and biased distribution are the real culprits.<sup>120</sup> Indeed, since the initial honeymoon period of brotherhood and aid from both the Jordanians and Lebanese to the refugees (despite the difficult past between Lebanon and Syria), sympathy has waned. Local populations have begun to view the Syrians as an invading group, competing for resources, economic goods and social relationships.<sup>121</sup> Central to this change are perceived and actual effects, which have been felt disproportionately among poorer communities. Syrians are seen as draining resources, with water high

on the list. Negative opinions pervade all classes, particularly those without direct contact with refugees.<sup>122</sup>

Media in Jordan claim refugees consume water at the rate they did in Syria, a country with significantly more renewable water than Jordan.<sup>123</sup> The king has reiterated that refugees are an unsustainable burden on the country.<sup>124</sup> Jordanians connect fears of water shortages to tensions with the refugees.<sup>125</sup> Others envy the refugees' privileged access to water. These poor Jordanians would like to be refugees themselves in order to obtain water.<sup>126</sup> According to 71 percent of Jordanians, access to water creates friction with Syrians.<sup>127</sup> Close to 60 percent felt that newcomers (refugees) were responsible for lack of improvement in the water situation.<sup>128</sup> Stories circulate about Syrians' culture of water use — that they leave the sink faucet running and often fill the bathtub. The frequency of repetition may indicate that these stories are urban legends, yet Syrian water-use differs from that of Jordanians who on average use less than the world minimum.<sup>129</sup>

Lebanese blame the increasing water pollution on the Syrians and believe water to be threatened by the Syrians.<sup>130</sup> Several polls found that degradation of the quality and quantity of available water was identified as a threat created by the refugees.<sup>131</sup> One poll concludes that Lebanese believe Syrians are changing water and energy availability either to a great extent (66 percent) or somewhat (27 percent).<sup>132</sup> Lack of proper sanitation for the refugees, who live in informal settlements instead of camps, means human waste is often buried, polluting the groundwater table. Seventy-nine percent of municipalities in Lebanon stated that providing services — water, electricity and education, for example — was their

greatest challenge, and directly affected the Lebanese population.<sup>133</sup> Indeed these fears about water rank higher than concern for the much-discussed sectarian balance.<sup>134</sup> Animosity against Syrians has flared at different times, inflamed both by security problems from rebel groups or ideological affiliates and by Lebanon's negative history with the Syrian regime.

Blaming the Syrians is somewhat expected, backed by much literature on migrants. More surprising is that domestic governments are also accused of malfeasance and corruption. In Jordan, the northern governorates, historically bastions of regime support but lacking in water, are witnessing the most virulent reactions to the decline of resources directed against other Jordanians and the government. The first result was official complaints to the government's Yarmouk Water Company, which serves the north. Complaints to the company over water increased four-fold during the initial period of refugee influx.<sup>135</sup> Protests followed these ignored grievances, shutting down major roads.<sup>136</sup> In riots over water, participants insulted the government, accusing it of failing in its duty,<sup>137</sup> particularly during dry summers such as 2013.<sup>138</sup>

Other protests in the southern areas followed similar patterns, blocking roads and burning tires, demanding water from the authorities.<sup>139</sup> In Karak governorate, one string of protests, lasting over a month, blocked streets and demanded access to water, despite assurances from the Water Authority that supply was not being disrupted for long.<sup>140</sup> The protests occasionally turn more violent. In one case, a man was killed by a protester as he attempted to pass through a blockade.<sup>141</sup> Jordanians have attacked domestic — i.e., Jordanian — Islamic NGOs that provide aid to

refugees in an effort to stop the delivery of services.<sup>142</sup> Warehouses owned by the Islamic Society were attacked in 2012 because the NGO's assistance was believed to be for the Syrian refugees only. This event exemplifies the potential for significant cleavages within Jordanian society.<sup>143</sup> According to the water engineer in charge of NGO-led water infrastructure improvements, protests in the north were a regular occurrence. Residents would block work on the water lines with trucks, demanding water for their village.<sup>144</sup> Grievances vary with expectations. Arjan, in Ajloun Governorate, protested when their supply of water was disrupted. As the origin of half of the governorate's water, Arjan was accustomed to regular weekly water deliveries, as opposed to biweekly for the neighboring areas.<sup>145</sup>

In other incidents, groups of armed Jordanians have targeted the digging of new pipelines by international humanitarian organizations, based on the belief that such projects will divert water from local communities to refugees. Death threats against those working on the projects were common, as were hasty negotiations with officials from the water utility that promise priority to the assailant's village or neighborhood.<sup>146</sup> In Yarmouk and other parts of the north, protesters would face water authorities with guns, intimidating them. Work would stop, security officials and representatives from the government would arrive, and finally, after negotiations had concluded, work would begin again.<sup>147</sup>

In Lebanon's hyper-privatized state, citizens are not accustomed to the government's being responsible for public goods.<sup>148</sup> Neither is water as scarce as in Jordan; private sources can still provide it, for a price. Grievances and mobilization follow need and real deprivation. Yet

here, too, we see demands for state action. Numerous demonstrations have centered around water as a right.<sup>149</sup> Protests have mingled water with other issues, particularly electricity, which is needed to pump water.<sup>150</sup> Electricity has also been affected by the sudden increase in population. In protests over electricity, participants have assaulted the South Lebanon Water Authority in Sidon.<sup>151</sup> In the northern city of Tripoli, water shortages caused demonstrators to protest the municipality.<sup>152</sup> In another case, local elites and officials joined in protests, demanding that government officials allocate water justly.<sup>153</sup>

### GOVERNMENT RESPONSES

Jordanian society, hit harder than the Lebanese, has been more active in both condemning the state and demanding water. Jordan has also done more to fix the crisis. A few years ago, Jordan began cracking down on illegal wells, imposing steeper fines for water violations, and has confronted members of its own political base of support.<sup>154</sup> There was even a film about water theft, highlighted by the authorities.<sup>155</sup> To date, about 30,000 violations have been detected.<sup>156</sup>

Why has Jordan changed its water policy at the expense of some parts of its traditional rural support base? Some water engineers and advisers to NGOs working in the water sector felt it was inevitable, that Jordan was forced to do so to avoid a complete lack of water. Others felt it was a move to assure donors that their money will be used in the right way, to encourage continued investing. After all, they reasoned, the dire nature of the water situation was apparent to ministers long before the Syrians arrived, but they dared not risk action against the regime's stalwart base. Now, however, large amounts of humani-

tarian aid for infrastructure are coming in, due to the presence of the refugees, with a large part allocated to Jordanians.<sup>157</sup> The state does not want to compromise this resource stream.

Jordan was responding to one part of its water problem: theft. People have been stealing water from the public system, some constructing elaborate and expensive pipe networks and hardware fixtures. Clearly these are not recent installations, and in some cases the authorities could not have been completely unaware. One violator had installed a pipeline almost a mile long, siphoning water from the public line for his own and other farms.<sup>158</sup> Enforcing the law in this case meant confronting guard dogs and people forming a protective ring around the farm. In another case, pipes 200 meters long, estimated to cost around \$300,000, were used to steal water to irrigate private farms and fill a pool.<sup>159</sup> Such small private farms have become a fashion for the upper classes in general for weekend entertaining. Shutting down illegal wells and charging people with water theft has often turned violent. While attempting to close illegal wells in a northern area recently, Water Authority employees accompanied by various security services were fired upon, attacked with rocks and by armed men in a car. The victims had to be hospitalized.<sup>160</sup> The owner of the land is reportedly one of the local elite.

Most water theft is small-scale, running pipes and siphoning off the public network to an individual house or farm.<sup>161</sup> Stolen water was used for a car wash in Salt.<sup>162</sup> In another case, a member of an influential tribe, also running for Parliament, had been systematically taking water from the public system, treating it and selling it for less than public water to resorts in the Dead Sea area.<sup>163</sup> In the capital, Amman,

one man siphoned off and sold an average of 1,200 cubic meters of water a day, storing it in his backyard.<sup>164</sup>

During the Eid al Adha holiday at the end of summer 2017, the discoveries of water theft skyrocketed. The ministry increased the estimated percentage of water being stolen — now up from 50 to 70 percent.<sup>165</sup> Experts are divided on whether this is an exaggeration, but it was meant to communicate a message to the populace: the urgency of the water situation and the need to stop violations so that more water would be available to ordinary Jordanians.<sup>166</sup> Taking water is criminal; rights and the interpretation of them are at stake. Many rural Jordanians do not believe they are stealing water; to them, the water is theirs, as they access it under their land. They have thus battled authorities' attempts to block their wells, and state attempts to limit their access to water can jeopardize their allegiance.<sup>167</sup>

Jordan's problem is political, not technical: balancing the varying demands of societal groups.<sup>168</sup> The lower class in the rural areas is living on the edge of poverty, and cutting water to them would mean revolution, experts have stated. This is precisely the group hardest hit by the influx of refugees. Historically strong regime backers, their support is now waning. International humanitarian organizations have provided emergency aid to the refugees, initially ignoring the local community despite their dire poverty. Sometimes disruptive protests — blocking access to roads or humanitarian work, burning tires, threatening humanitarian sites with guns — apparently sent a powerful message to the aid organizations and the government.<sup>169</sup> More resources have been directed to these Jordanians specifically.

The government prioritizes Amman and other cities for water.<sup>170</sup> The situation may actually be worse in the south, but political speech stresses the effects of the refugees and the need for the international community to compensate Jordan. It is not clear whether the new water laws are enforced throughout the country. In the areas hardest hit by the refugees — Mafraq and Ramtha — locals had not heard of any punishments for water theft.<sup>171</sup> Still, waste can be seen everywhere: lawns of prominent NGOs are bright green, and water leaks from the property of think tanks that produce reports on water use.

Lebanon's policy solution on water has been to focus on increasing supply, as Jordan also did. For this, the countries relied again on large projects funded by international loans. Jordan has placed its faith in the Red-Dead canal, a newer version of a plan Israel has been talking up for decades.<sup>172</sup> Lebanon has, as usual, focused on dams, reasoning that its main problem is keeping the plentiful water it already has.<sup>173</sup> Lebanon has also blamed Israel for stealing water (again), and targeted international NGO efforts to fix the problem. Large-scale dam projects, driving the country further into debt without addressing water use and demand, simply kick the can down the road. Funded by international lending institutions, these projects will have environmental and archeological consequences — reasons they have been rejected in the rest of the world during the past few decades.<sup>174</sup>

Part of Lebanon's half-hearted response is due to lack of state capacity, the most critical variable in dealing with the refugee crisis and water availability. The government cannot handle the needs of refugees or its citizens, so nonstate actors and local networks have attempted to fill

its role. The water crisis is also not as dire as in Jordan. Private suppliers with powerful entrenched interests exist, and most of the population can access these sources.

## CONCLUSION

The Syrian refugees in Jordan and Lebanon have merely laid bare the incompetence and lack of capacity of both states to provide water. Technical fixes are possible, but for the long term, the governments will have to alter their unequal distribution of water that privileges some nationals over others and prioritizes the technical over the political. This will entail political and institutional change.

The international community has now rushed to Jordan and Lebanon, funding large, costly and time-consuming projects

through burdensome long-term loans.

They will not solve the underlying issues of skewed distribution and unregulated demand. Indeed, some have observed that little has resulted from all this aid for water development, as the emphasis is still on supply.<sup>175</sup> Ironically, it is only thanks to the Syrian crisis that these countries are receiving international aid for water projects.

Scapegoating Syrians will not solve the problem, and people have instead begun to question the privileges of some of their fellow citizens over others, demanding that government provide all of them with water. In the areas most affected by refugees, populaces have identified the root of the problem: corruption and lack of accountable and efficient governance.

<sup>1</sup> Keith Proctor, "Refugee Crisis Draining Jordan's Water Resources," The Atlantic Council, March 21, 2014, <http://www.atlanticcouncil.org/blogs/menasource/refugee-crisis-draining-jordan-s-water-resources>.

<sup>2</sup> UNHCR, Syria Regional Refugee Response, "Regional Overview," <http://data.unhcr.org/syrianrefugees/regional.php>. Neither country is a party to the United Nations Convention or Protocol on Refugees, and the Syrians are not legally termed refugees in either country.

<sup>3</sup> United National High Commissioner for Refugees (UNHCR), *Global Trends: Forced Displacement in 2016* (2016), 3, [www.unhcr.org/statistics](http://www.unhcr.org/statistics).

<sup>4</sup> See recent report by Stanford on Jordan's dire situation and how it will only worsen. Rob Jordan, "Jordan Faces Likelihood of Much More Frequent Long and Severe Droughts, Stanford Researchers Said," *Stanford News*, August 30, 2017, <http://news.stanford.edu/2017/08/30/extreme-droughts-projected-increase-jordan/>.

<sup>5</sup> Both states have blamed neighbors for theft or unfair water use, typically Israel but also Syria for Jordan.

<sup>6</sup> Karen Jacobsen, "Can Refugees Benefit the State? Refugee Resources and African Statebuilding," *Journal of Modern African Studies* 40, no. 4 (2002): 577-96.

<sup>7</sup> Perception is key, as it does not equate to the objective situation, but is informed by popular ideas and historical legacies.

<sup>8</sup> Laurie A. Brand, "Economic and Political Liberalization in a Rentier Economy: The Case of the Hashemite Kingdom of Jordan," in *Privatization and Liberalization in the Middle East*, eds. Iliya Harik and Denis J Sul-livan (Bloomington: Indiana University Press, 1992), 167-188; and Timothy J. Piro, *The Political Economy of Market Reform in Jordan* (Rowman & Littlefield, 1998).

<sup>9</sup> Carolyn Gates, *Merchant Republic of Lebanon: Rise of an Open Economy* (IB Tauris, 1998); and Toufic K. Gaspard, *A Political Economy of Lebanon, 1948-2002: The Limits of Laissez-faire* (Brill, 2004).

<sup>10</sup> Rana Victor Tomaira, "Legacy of a Rentier State: Reforming Jordan's Water, Energy, and Telecommunications Sectors," (Ph.D. dissertation in City and Regional Planning, University of California, Berkeley, 2008), 207; Nassim Barham, "Is Good Governance Possible in a Rentier State? The Case of Jordan," Center for Mellemostudier, Analysis, May 2012, 5; and S. Catafago, "Restructuring Water Sector in Lebanon: Litani

River Authority Facing the Challenges Of Good Water Governance,” in *Food Security Under Water Scarcity in Méditerranéennes: Série A. Séminaires Méditerranéens*, ed. Rosella Monti (CIHEAM, 2005), 75. For Lebanon, see the still-standing Decree 144 dating from the 1920s, declaring water a public good. Yasmina El Amine, “Rethinking Water Service Provision in Lebanon,” Conference Report, Lebanon Water Forum, AUB Policy Institute and Oxfam, October 2016, 6.

<sup>11</sup> Colin Chartres, Mark Giordano, and Samyuktha Varma, “Water: A Free Public Good or a Market Commodity?” Global Water Forum, <http://www.globalwaterforum.org/2010/09/20/water-a-free-public-good-or-a-market-commodity/>.

<sup>12</sup> T. Darwish et al., “Salinity Evolution and Crop Response to Secondary Soil Salinity in Two Agro-climatic Zones in Lebanon,” *Agricultural Water Management* 78, no. 1 (2005): 152; and International Committee of the Red Cross, “Bled Dry: How War in the Middle East Is Bringing the Region’s Water Supplies to the Breaking Point; An ICRC Report,” March 2015, 21.

<sup>13</sup> Inter-agency Water, Sanitation and Hygiene (WASH) Working Group — Lebanon (Government of Lebanon and UNHCR), “WASH Strategy for 2014,” February 2014, 4.

<sup>14</sup> Lead author, Jordan, 1998-present. All interviews and personal communication are with lead author.

<sup>15</sup> Steven Gorelick, “Water Security in Jordan: A Key to the Future of the Middle East,” Brookings Institution, January 16, 2015, <https://www.brookings.edu/blog/planetpolicy/2015/01/16/water-security-in-jordan-a-key-to-the-future-of-the-middle-east/>.

<sup>16</sup> Roland Riachi, “The Private Modes of Water Capture in Lebanon,” in *Towards a Peace Economy in Lebanon*, eds. Jessica Banfield and Victoria Stamadianou, International Alert, September 2015, 40.

<sup>17</sup> Interview, David Adams, Coordinator of Water Projects, UNICEF, Beirut, Lebanon, March 20, 2017.

<sup>18</sup> El Amine, “Rethinking Water Service Provision in Lebanon,” 10.

<sup>19</sup> Roland Riachi, “Beyond Rehashed Policies: Lebanon Must Tackle Its Water Crisis Head-On,” Featured Analysis, Lebanese Center for Policy Studies, <http://www.lcps-lebanon.org/featuredArticle.php?id=27>; International Committee of the Red Cross, “Bled Dry: How War in the Middle East Is Bringing the Region’s Water Supplies to the Breaking Point; An ICRC Report,” March 2015; and Caroline Gluck, “Syrian Refugee Influx Adding to Jordan’s Water Worries,” Oxfam International, April 24, 2013, <https://blogs.oxfam.org/en/blogs/13-03-22-syria-refugees-adding-jordan-water-worries>.

<sup>20</sup> For a concise analysis of Jordan’s management problems, see Elliott Ducharme, “Water Management in Jordan in Response to the Syrian Crisis: Between Neoliberal Pressures and Social Crisis,” al-Jadaliyya, April 21, 2015, <http://www.jadaliyya.com/pages/index/21440/water-management-in-jordan-in-response-to-the-syri>.

<sup>21</sup> Barham, “Is Good Governance Possible in a Rentier State? The Case of Jordan,” 4.

<sup>22</sup> Sawsan Morrar, “Jordan Examining Satellite Images to Locate Illegal Water Wells,” *Herald Globe*, November 19, 2014, <http://www.heraldglobe.com/index.php/sid/227753817>.

<sup>23</sup> Hana Namrouqa, “Authorities Tackle 30,000 Violations on Water Resources Since 2013,” *Jordan Times*, May 6, 2017.

<sup>24</sup> Riachi, “Beyond Rehashed Policies: Lebanon Must Tackle Its Water Crisis Head-On.”

<sup>25</sup> “Preserving Lebanon’s Water before the Wells Run Dry,” World Bank, September 30, 2014, <http://www.worldbank.org/en/news/feature/2014/09/30/preserving-lebanon-s-water-before-the-wells-run-dry>.

<sup>26</sup> Riachi, “The Private Modes of Water Capture in Lebanon,” 41.

<sup>27</sup> Riachi, “Beyond Rehashed Policies: Lebanon Must Tackle Its Water Crisis Head-On.”

<sup>28</sup> El Amine, “Rethinking Water Service Provision in Lebanon,” 12.

<sup>29</sup> International Committee of the Red Cross, “Bled Dry: How War in the Middle East is Bringing the Region’s Water Supplies to the Breaking Point; An ICRC Report,” 8.

<sup>30</sup> Interviews with Adams and Roland Riachi, Visiting Assistant Professor, Department of Political Studies and Public Administration, American University of Beirut, March 20, 2017.

<sup>31</sup> Paul Cochrane, “The Big Lebanese Thirst,” *Executive Magazine*, July 19, 2017, <http://www.executivemagazine.com/economics-policy/the-big-lebanese-thirst>.

<sup>32</sup> M.A. Massoud et al., “Public Perception and Economic Implications of Bottled Water Consumption in Underprivileged Urban Areas,” *Environmental Monitoring and Assessment* 185, no. 4 (2013): 3093-3102.

<sup>33</sup> Interview, Adams.

<sup>34</sup> Nadim Farajalla et al., “Climate Change in Lebanon: Higher-order Regional Impacts from Agriculture,” AUB Issam Fares Institute for Public Policy and International Affairs, Climate Change and the Environment

Working Paper no. 23, June 2014, 9.

<sup>35</sup> Mark Zeitoun et al., "Water Demand Management in Yemen and Jordan: Addressing Power and Interests." *Geographical Journal* 178, no. 1 (2012): 58; and Aleena Farishta, *The Impact of Syrian Refugees on Jordan's Water Resources and Water Management Planning*. M.S. thesis presented to the Faculty of Architecture and Planning and Preservation at Columbia University, 2014, 27.

<sup>36</sup> Scott Greenwood, "Water Insecurity, Climate Change and Governance in the Arab World," *Middle East Policy* 21, no. 2 (2014).

<sup>37</sup> Ibid.

<sup>38</sup> Hana Namrouqa, "Agricultural Producers, Exporters to Enter Training Programme to Uplift Sector," *Jordan Times*, July 12, 2017, <http://www.jordantimes.com/news/local/agricultural-producers-exporters-enter-training-programme-uplift-sector%E2%80%99>; and Ido Bar and Gerald Stang, "Water and Insecurity in the Levant," *European Union Institute for Security Studies Issue Brief* no. 15, April 2016, 3.

<sup>39</sup> Riachi, "Beyond Rehashed Policies: Lebanon Must Tackle Its Water Crisis Head-On."

<sup>40</sup> Catafago, "Water Sector in Lebanon," 76-7.

<sup>41</sup> SISSAF, "Water Governance in Lebanon Picks Up Stronger Momentum," January 12, 2015, <http://sissaf-lebanon.eu/news-and-events/news/water-governance-in-lebanon-picks-up-stronger-momentum/>.

<sup>42</sup> Catafago, 75.

<sup>43</sup> El Amine, "Rethinking Water Service Provision in Lebanon," 10.

<sup>44</sup> Interview, Riachi; and Riachi, "Beyond Rehashed Policies: Lebanon Must Tackle Its Water Crisis Head-On."

<sup>45</sup> Ghina Yamout and Dima Jamali, "A Critical Assessment of a Proposed Public Private Partnership (PPP) for the Management of Water Services in Lebanon," *Water Resources Management* 21, no. 3 (2007): 619, <http://link.springer.com/article/10.1007/s11269-006-9033-3>.

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<sup>48</sup> Barham.

<sup>49</sup> See the International Center for Not-for-Profit Law, "NGO Law Monitor: Jordan," March 22, 2016, <http://www.icnl.org/research/monitor/jordan.html>; and Ruth Michaelson, "Refugees Pay the High Price of Lebanese Cost-Cutting," *Al Jazeera*, April 30, 2015, <http://www.aljazeera.com/news/2015/04/refugees-pay-high-price-lebanese-cost-cutting-150412095256439.html>.

<sup>50</sup> Interview, Riachi; and Riachi, "Beyond Rehashed Policies: Lebanon Must Tackle its Water Crisis Head-On."

<sup>51</sup> On Jordan focusing on supply and not demand management, see Yorke, 44, Barham, 6, and Marwan El Solh, "Lebanon's Dam Obsession: Who Pays the Price?" *Middle East Eye*, February 4, 2016, <http://www.middleeasteye.net/columns/lebanon-s-dam-obsession-who-pays-price-1829727251>.

<sup>52</sup> Interview with Ghassan Hazboun, formerly Mercy Corps' Water Engineering Director in Jordan (currently with Blumont), Amman, September 20, 2017; and see also the *Economist*, "Economic Intelligence Unit, Jordan, 'Disi Water Project Comes on Steam,'" July 29, 2013, <http://country.eiu.com/article.aspx?articleid=1590783543>.

<sup>53</sup> Mercy Corps, "Tapped Out: Water Scarcity and Refugee Pressures in Jordan," March 2014, 14.

<sup>54</sup> Agence France-Presse, "Lebanon's New Dam to be Built in an Earthquake Zone," *The National*, June 30, 2017, <http://www.thenational.ae/world/middle-east/lebanons-new-dam-to-be-built-in-an-earthquake-zone>.

<sup>55</sup> Interview, Riachi.

<sup>56</sup> Discussions with Lebanese, Beirut, January 2015 and March 2016.

<sup>57</sup> "Lebanon Must Protect Its Water: Aoun," *The Daily Star*, June 6, 2017, <http://www.dailystar.com.lb/News/Lebanon-News/2017/Jun-06/408678-lebanon-must-protect-its-water-aoun.ashx>; and "Aoun Chairs Meeting on Israel Theft of Lebanon Water, Says Country Won't Bow to Pressures," *Naharnet*, June 6, 2017, <http://www.naharnet.com/stories/en/230996>.

<sup>58</sup> Hussein A. Amery, "A Popular Theory of Water Diversion from Lebanon: Toward Public Participation for Peace," in *Water in the Middle East: A Geography Of Peace*, eds. Hussein A. Amery and Aaron T. Wolf (Austin: University of Texas Press, 2010), 121-49. See also Ashok Swain and Anders Jägerskog, "Water Scarcity,"

in *Emerging Security Threats in the Middle East: The Impact of Climate Change and Globalization* (Rowman & Littlefield, 2016).

<sup>59</sup> Marc François Müller et al., "Impact of the Syrian Refugee Crisis on Land Use and Transboundary Freshwater Resources," *Proceedings of the National Academy of Sciences*, 2016, 14932-7.

<sup>60</sup> Heslot notes for comparison that the average U.S. citizen uses close to 3000cm per year. Soazic Heslot, "Jordan's Food and Water Security," *Future Directions International*, September 11, 2014, <http://www.futuredirections.org.au/publications/food-and-water-crises/1939-jordan-s-food-and-water-security.html>; and Caroline Gluck, "Syrian Refugee Influx Adding to Jordan's Water Worries," *OXFAM Canada*, <http://www.oxfam.ca/blogs/conflict-emergencies/refugee-influx-adding-tojordan-s-water-worries>.

<sup>61</sup> Steven Gorelick, "Water Security in Jordan: A Key to the Future of the Middle East."

<sup>62</sup> Don Humpal et al., "Review of Water Policies in Jordan and Recommendations for Strategic Priorities," *USAID Jordan Water Sector Assessment*, April 2012.

<sup>63</sup> Amin Shaban, "Indicators and Aspects of Hydrological Drought in Lebanon," *Water Resources Management* 23, no. 10 (2009): 1875-1876.

<sup>64</sup> Kamel Saleh, "Lebanon Faces Water Crisis," *Al-Monitor*, March 30, 2014, <http://www.al-monitor.com/pulse/security/2014/03/lebanon-water-poverty-line-crisis.html#>.

<sup>65</sup> Kamel Saleh, "Lebanon Faces Water Crisis"; and Roland Riachi, "Lebanon Must Tackle Its Water Crisis Head-On," *Daily Star*, October 31, 2014.

<sup>66</sup> Lewis Turner, "Explaining the (Non-) Encampment of Syrian Refugees: Security, Class and the Labour Market in Lebanon and Jordan," *Mediterranean Politics* 20, no. 3 (2015): 386-404.

<sup>67</sup> See the contrast in Areej Abuqudairi, "A Tale of Two Za'ataris," *IRIN*, July 26, 2013, <http://www.irinnews.org/feature/2013/07/26/tale-two-za%E2%80%99ataris>.

<sup>68</sup> Figures vary. Jordan insists on the higher figure. Registered UNHCR refugees amount to 655,000, but Jordan insists many other did not register, putting the numbers far higher. See UNHCR, "Syria Regional Refugee Response: Jordan," December 4, 2016, <http://data.unhcr.org/syrianrefugees/country.php?id=107>.

<sup>69</sup> Mercy Corps, "Tapped Out," 13; and Embassy of the Hashemite Kingdom of Jordan, "Quick Facts," <http://www.jordanembassyus.org/page/quick-facts>.

<sup>70</sup> *Ibid.*, 15.

<sup>71</sup> "Water Restrictions Imposed as Heat Rises," *Jordan Times*, July 2, 2017, <http://www.jordantimes.com/news/local/water-restrictions-imposed-heat-rises>.

<sup>72</sup> Mercy Corps, "Tapped Out," 14.

<sup>73</sup> Rania Abouzeid, "Jordan's Rural Chafe under the Burden of Hosting Syrian Refugees," *Al Jazeera*, October 21, 2013, <http://america.aljazeera.com/articles/2013/10/21/jordana-s-rural-poorchafeundertheburdenofhostingsyrianrefugees.html>.

<sup>74</sup> Mercy Corps, "Tapped Out," 19.

<sup>75</sup> UNHCR, "Syria Regional Refugee Response: Jordan," May 14, 2016, <http://data.unhcr.org/syrianrefugees/regional.php>.

<sup>76</sup> Fanack, "Jordan's Scarce Water Reserves under Pressure from Refugee Influx," November 17, 2014, <https://water.fanack.com/jordans-scarce-water-reserves-under-pressure-from-refugee-influx/>.

<sup>77</sup> Joby Warrick, "Influx of Syrian Refugees Stretches Jordan's Water Resources Even More Thinly," *Washington Post*, June 16, 2013.

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<sup>79</sup> Francis, "Jordan's Refugee Crisis," 1; and UNHCR, "Syria Regional Refugee Response."

<sup>80</sup> Sura Al-Harashsheh, Rida Al-Adamat, and Seraj Abdullah, "The Impact of Za'atari Refugee Camp on the Water Quality in Amman-Zarqa Basin," *Journal of Environmental Protection* 6 (2015): 17.

<sup>81</sup> Fanack, "Jordan's Scarce Water Reserves."

<sup>82</sup> Al-Harashsheh, Al-Adamat, and Abdullah, "Impact of Za'atari Refugee Camp," 23.

<sup>83</sup> Hana Namrouqa, "Authorities Seek to Identify Pollution Sources at Zaatari," *Jordan Times*, September 26, 2013, <http://vista.sahafi.jo/art.php?id=3b7fd87451736dcde91f76905c60d10afd5d81a1>.

<sup>84</sup> UNHCR, "Syria Regional Refugee Response: Jordan," May 14, 2016, <http://data.unhcr.org/syrianrefugees/regional.php>.

<sup>85</sup> Mercy Corps, "Tapped Out." See complaints against Yarmouk, fn 79.



<sup>86</sup> *Ibid.*, 20.

<sup>87</sup> Jonathan Glennie, "NGOs Need a Third Way: Collaboration," Poverty Matters Blog, *The Guardian*, March 13, 2012, <https://www.theguardian.com/global-development/poverty-matters/2012/mar/13/ngos-need-third-way-collaboration>.

<sup>88</sup> Elliott Ducharme, "Water Management in Jordan in Response to the Syrian Crisis: Between Neoliberal Pressures and Social Crisis."

<sup>89</sup> Mercy Corps, "Tapped Out," 24.

<sup>90</sup> Francis, 12. Jordanians perceive that Syrians are more wasteful in their water use than they are themselves, arguing that since Syrians come from a water-secure country, they are not used to conserving. Lebanese do not have such complaints about Syrians, as Lebanon is historically water-secure relative to Syria.

<sup>91</sup> World Bank, "Lebanon," <http://data.worldbank.org/country/lebanon>.

<sup>92</sup> UNHCR, "Syria Refugee Response: Lebanon," September 30, 2016, <https://data.unhcr.org/syrianrefugees/country.php?id=122>.

<sup>93</sup> Peter Schwartzstein, "Syrian Refugees in Lebanon Camp Reliant on 'Hell Water' That Reduces Metal to Rust," *The Guardian*, May 26, 2015, <http://www.theguardian.com/global-development/2015/may/26/syrian-refugees-lebanon-shatila-camp-hell-water>.

<sup>94</sup> *Ibid.*

<sup>95</sup> "Approaching Summer and Syrian Refugee Influx Add to Jordan's Water Worries," OXFAM, March 22, 2013, <http://www.oxfam.org.uk/media-centre/press-releases/2013/03/syria-refugee-water-worries>.

<sup>96</sup> *Ibid.*, 1.

<sup>97</sup> *Ibid.*, 12.

<sup>98</sup> The UNHCR defines substandard buildings as "garages and shops, warehouses, one room structures, unfinished buildings, and other privately owned, unfinished, or otherwise substandard shelter units not originally intended to serve as dwellings"; and REACH and UNHCR, "WASH Assessment of Syrian Refugee Households in Akkar Governorate," Lebanon Assessment Report, December 2014, 11.

<sup>99</sup> *Ibid.*, 13.

<sup>100</sup> Fanack, "Water Quality," November 3, 2015, <https://water.fanack.com/lebanon/water-quality>.

<sup>101</sup> Schwartzstein, "Hell Water."

<sup>102</sup> Fanack, "Water Quality."

<sup>103</sup> Nour Malas, "Refugee Crises in Mideast Spawn Health Threats," *Wall Street Journal*, June 27, 2016, <http://www.wsj.com/articles/refugeecrisesinmideastspawnhealththreats1467064144>.

<sup>104</sup> Elsa Buchanan, "Lebanon: Doctors Warn of Spread of Cholera in Refugee Camps as Rubbish Crisis Intensifies," *International Business Times*, January 28, 2016, <http://www.ibtimes.co.uk/lebanon-doctors-warn-spread-cholera-refugee-camps-rubbish-crisis-intensifies-1519262>; and M. Saroufim M et al., "Ongoing Epidemic of Cutaneous Leishmaniasis Among Syrian Refugees," in *Lebanon: Emerging Infectious Diseases* (Centers for Disease Control, October 2014).

<sup>105</sup> Interview, Riachi.

<sup>106</sup> REACH and UNHCR, "WASH Assessment of Syrian Refugee Households in Akkar Governorate," 1.

<sup>107</sup> Save the Children, "Water Sanitation and Hygiene."

<sup>108</sup> Maya Gebeily and James Haines-Young, "High and Dry: Syrian Refugees Have Been Severely Affected by the Water Shortages," *Executive Magazine*, October 30, 2014, <http://www.executive-magazine.com/economics-policy/water-high-and-dry>.

<sup>109</sup> *Ibid.*

<sup>110</sup> Heather Murdock, "Water Shortages in Lebanon Devastate Syrian Refugees," Voice of America, December 23, 2014, <http://www.voanews.com/content/water-shortages-lebanon-syrian-refugees/2571595.html>.

<sup>111</sup> Gebeily and Haines-Young, "High and Dry."

<sup>112</sup> Murdock, "Water Shortages in Lebanon."

<sup>113</sup> For types of containers used by the refugees and their cleanliness, see Accion Contra el Hambre, ACF International, "Humanitarian WASH Response to the Syrian Refugees in Bekaa Valley (Lebanon)," June 2012, funded by UNICEF, 15.

<sup>114</sup> Interview, Riachi.

<sup>115</sup> See the lessons learned and revised strategy in Dalia Mikdashi, "WASH and Voucher Systems: Hygiene and Water Trucking Vouchers," presentation, OXFAM, March 6, 2015.

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- <sup>127</sup> REACH, "Access to Water and Tensions in Jordanian Communities Hosting Syrian Refugees," Thematic Assessment Report, June 2014, 2.
- <sup>128</sup> REACH, "Access to Water and Tensions in Jordanian Communities Hosting Syrian Refugees," 12.
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- <sup>130</sup> Interviews, Beirut, January 2016 and March 2017.
- <sup>131</sup> Beirut Research and Innovation Center and Lebanese Center for Studies and Research, "Citizens' Perceptions of Security Threats Stemming from the Syrian Refugee Presence in Lebanon," International Alert, February 2015, <http://www.international-alert.org/resources/publications/citizens-perceptions-security-threats-stemming-syrian-refugee-presence>.
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- <sup>133</sup> Mercy Corps, "Engaging Municipalities in the Response to the Syria Refugee Crisis in Lebanon," Policy Brief, March 2014, 1.
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- <sup>135</sup> 2011-2013. Complaints increased to over 45,000. Keith Proctor, "High and Dry with the Hashemites," Fanack Water, March 18, 2015, <https://water.fanack.com/high-and-dry-with-the-hashemites/>.
- <sup>136</sup> Among such protests against water shortages in Karak, reported July 6, 2016, and in Arjan, reported October 4, 2016, both in *Jordan Times*.

<sup>137</sup> Keith Proctor, "Refugee Crisis Draining Jordan's Water Resources," *MENASource*, Atlantic Council, March 21, 2014, <http://www.atlanticcouncil.org/blogs/menasource/refugee-crisis-draining-jordan-s-water-resources>.

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<sup>140</sup> *Ibid.* See also "Protests Erupt in Karak Village Following Water Cuts," *Roya News*, July 2, 2017, [http://en.royanews.tv/news/10585/Protests\\_erupt\\_in\\_Karak\\_villag](http://en.royanews.tv/news/10585/Protests_erupt_in_Karak_villag).

<sup>141</sup> Petra News Agency, "Man Killed During Demonstrations Over Water in Beit Ras," *Jordan Times*, July 13, 2014, <http://www.jordantimes.com/news/local/man-killed-during-demonstrations-over-water-beit-ras>.

<sup>142</sup> Mercy Corps, "Analysis of Host Community-Refugee Tensions in Mafrqa, Jordan," October 2012, 6.

<sup>143</sup> *Ibid.*

<sup>144</sup> Interview, Hazboun.

<sup>145</sup> Hana Namrouqa, "Arjan Residents Protest Disruption to Water Supply," *Jordan Times*, October 4, 2016, <http://www.jordantimes.com/news/local/arjan-residents-protest-disruption-water-supply>.

<sup>146</sup> Mercy Corps, "Tapped Out," 33.

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<sup>148</sup> Lama Mourad and Laure-Helene Piron, "Municipal Service Delivery, Stability, Social Cohesion and Legitimacy in Lebanon: An Analytical Literature Review," Developmental Leadership Program and AUB Issam Fares Institute for Public Policy and International Affairs, July 2016, 3.

<sup>149</sup> Riachi, "The Private Modes of Water Capture in Lebanon," 41, and interview. In addition to those listed below, protests include: "Palestinians Protest Water Cuts in South Lebanon Camp," *Daily Star*, October 20, 2016, <https://www.dailystar.com.lb/News/Lebanon-News/2016/Oct-20/377324-palestinians-protest-water-cuts-in-south-lebanon-camp.ashx>; and "Lebanese University Students Protest Electricity and Water Cuts," *Daily Star*, April 4, 2017, <http://www.dailystar.com.lb/News/Lebanon-News/2017/Apr-04/400514-lebanese-university-students-protest-electricity-and-water-cuts.ashx>.

<sup>150</sup> "Anti-Establishment Protests in Lebanon Escalate," *World Weekly*, August 27, 2015, <http://www.theworld-weekly.com/reader/view/magazine/2015-08-27/anti-establishment-protests-in-lebanon-escalate/4573>.

<sup>151</sup> "Lebanon Residents in Sidon Protest Prolonged Electricity Cuts," Albawaba, August 4, 2015, <http://www.albawaba.com/business/lebanon-residents-sidon-protest-prolonged-electricity-cuts-726932>.

<sup>152</sup> Misbah al-Ali, "Tripoli Perplexed by Acute Water Shortage," *Daily Star*, April 18, 2016, <http://www.dailystar.com.lb/News/Lebanon-News/2016/Aug-18/367730-tripoli-perplexed-by-acute-water-shortage.ashx>.

<sup>153</sup> "Tripoli Residents Protest Water and Electricity Cuts," *Daily Star*, July 8, 2016, <http://www.dailystar.com.lb/News/Lebanon-News/2016/Jul-08/361045-tripoli-residents-protest-water-and-electricity-cuts.ashx>.

<sup>154</sup> Steeper penalties were introduced in 2013, and more changes occurred recently. Hana Namrouqa, "Authorities Tackle 30,000 Violations on Water Resources since 2013," *Jordan Times*, May 6, 2017, <http://www.jordantimes.com/news/local/authorities-tackle-30000-violations-water-resources-2013>; and "Penal Code Changes Raise Debate over Its Expected Role in Enhancing Rule of Law," *Jordan Times*, August 3, 2017, <http://www.jordantimes.com/news/local/penal-code-changes-raise-debate-over-its-expected-role-enhancing-rule-law>.

<sup>155</sup> Hind Houcka, "British Filmmaker Examines Water Theft in Jordan," *Jordan Times*, October 11, 2016, <http://www.jordantimes.com/news/local/british-filmmaker-examines-water-theft-jordan>.

<sup>156</sup> Hana Namrouqa, "Authorities Tackle 30,000 Violations on Water Resources since 2013."

<sup>157</sup> NGOs say that the government reiterates in meetings that 30 percent of all money must go to Jordanians. See Hana Asfour, "Jordan: Local Perceptions on Syrian Refugees (Part 2/2)," *Fair Observer*, March 19, 2014, [https://www.fairobserver.com/region/middle\\_east\\_north\\_africa/jordan-local-perceptions-syrian-refugees-62951/](https://www.fairobserver.com/region/middle_east_north_africa/jordan-local-perceptions-syrian-refugees-62951/). There is also a special accounting system that the aid money must go through so the state can direct a portion to its priorities set and agreed with the aid community through the Jordan Response Plans again due to the presence of the refugees.

<sup>158</sup> "Ministry Seeks NASA Help to Reveal Major Water Theft," *Jordan Times*, December 8, 2014, <http://www.jordantimes.com/news/local/ministry-seeks-nasa-help-reveal-major-water-theft>.

<sup>159</sup> Hana Namrouqa, "Authorities Uncover Suspected Water Theft in South Amman," *Jordan Times*, July 26,

2017, <http://www.jordantimes.com/news/local/authorities-uncover-suspected-water-theft-south-amman>. Others did likewise, Hana Namrouqa, “Four Major Incidents of Water Theft Detected in Wadi Al Seer,” *Jordan Times*, February 10, 2016, <http://www.jordantimes.com/news/local/four-major-incidents-water-theft-detected-wadi-al-seer>.

<sup>160</sup> Hana Namrouqa, “Water Authority Employees Shot at, Car Rammed at Illegal Drilling Well Site,” *Jordan Times*, May 14, 2017, <http://www.jordantimes.com/news/local/water-authority-employees-shot-car-rammed-illegal-drilling-well-site>.

<sup>161</sup> Interview with Jordanian environmental scientists, Amman, September 10 and September 20, 2017.

<sup>162</sup> Hana Namrouqa, “Suspected Water Theft for Car Washing Discovered in Salt,” *Jordan Times*, June 11, 2017, <http://www.jordantimes.com/news/local/suspected-water-theft-car-washing-discovered-salt>.

<sup>163</sup> Omar Obeidat, “Ministry Ends Large-Scale Water Theft in Jordan Valley,” *Jordan Times*, September 1, 2016, <http://www.jordantimes.com/news/local/ministry-ends-large-scale-water-theft-jordan-valley>.

<sup>164</sup> Hana Namrouqa, “Suspect Arrested for Water Theft in North Amman,” *Jordan Times*, May 23, 2016, <http://ftp.jordantimes.com/news/local/suspect-arrested-water-theft-north-amman>.

<sup>165</sup> “Authorities Uncover Three Cases of Alleged Water Theft during Eid,” *Jordan Times*, September 5, 2017, <http://jordantimes.com/news/local/authorities-uncover-three-cases-alleged-water-theft-during-eid>.

<sup>166</sup> Interview with Jordanian environmental scientists, Amman, September 10 and September 20, 2017.

<sup>167</sup> Hana Namrouqa, “Repeat Offenders Apprehended for Pumping Water from Sealed Wells,” *Jordan Times*, May 22, 2014, <http://www.jordantimes.com/news/local/repeat-offenders-apprehended-pumping-water-sealed-wells>.

<sup>168</sup> Interview with Jordanian environmental scientist, Amman, September 10, 2017.

<sup>169</sup> We were unable to verify if the government actually acknowledged it, but all the evidence indicates they did. Aid organizations were explicit that the protests were a turning point, an “eye-opener,” causing them to alter their policies toward the local communities. Interviews with Mercy Corps, Amman, September 14, 2017; and interview with UNDP researcher working in the North, Amman, September 20, 2017.

<sup>170</sup> Interview with Dr. Basim Tweissi, dean, Jordan Media Institute, Amman, September 24, 2017.

<sup>171</sup> Interviews with head of NGO and a local leader, in Mafraq and Ramtha, respectively, September 18 and September 21, 2017.

<sup>172</sup> Melanie Lidman, “Experts Say Red Sea-Dead Sea Pipe Dream Isn’t Worth Its Salt,” *Times of Israel*, August 16, 2017, <http://www.timesofisrael.com/experts-want-pols-to-pipe-down-over-red-seadead-sea-link/>.

<sup>173</sup> For example, Federica Marsi, “Group Raises Fresh Concerns Over Bisri Dam,” *Daily Star*, August 14, 2017; and Rouba El Huseini, “Lebanon Dam Planned Atop Fault Line Stirs Fears,” *Daily Maverick*, June 29, 2017, <https://www.dailymaverick.co.za/article/2017-06-29-lebanon-dam-planned-atop-fault-line-stirs-fears/#.WfDwNRNSzaZ>.

<sup>174</sup> El Solh, “Lebanon’s Dam Obsession: Who Pays the Price?;” and Philip Shabecoff, “After 85 Years, the Era of Big Dams Nears End,” *New York Times*, January 24, 1987, <http://www.nytimes.com/1987/01/24/us/after-85-years-the-era-of-big-dams-nears-end.html>.

<sup>175</sup> Victoria Yan, “Lots of Aid for Water, Little to Show,” *Daily Star*, March 23, 2017, <http://www.dailystar.com.lb/News/Lebanon-News/2017/Mar-23/398739-lots-of-aid-for-water-little-to-show.ashx>.