WASH
Poverty Diagnostic | SERIES

Water and Sanitation for All in Tunisia

A Realistic Objective

TUNISIA

WORLD BANK GROUP

Water and Sanitation for All in Tunisia

A Realistic Objective

WORLD BANK GROUP

Contents

Boxes

Figures

Maps

Tables

Acknowledgments

Abbreviations

CRDA	Regional Commission for Agricultural Development
DFID	Department for International Development (United Kingdom)
DGFIOP	Direction Générale du Financement, des Investissements et des Organismes Professionnels (General Directorate for Finance, Investments and Professional Agencies)
DGGREE	Direction Générale du Génie Rural et de l'Exploitation des Eaux (General Directorate for Rural Agricultural Affairs and Water Management)
EGIM	Enquête par Grappes à Indicateurs Multiple (Multiple Indicator Cluster Survey)
GDA	Groupements de Développement Agricole (Agriculture Development Group)
GLAAS	Global Analysis and Assessment of Sanitation and Drinking Water
HDI	Human Development Index
INS	Institut National de la Statistique (National Institute of Statistics)
LPCD	liters per capita per day
MDGs	Millennium Development Goals
MDICI	Ministry of Development, Investment, and International Cooperation
MICS	Multiple Indicator Cluster Survey
NSBCL	National Survey on Households' Budget and Consumption and Living Standards
O&M	operations and management
ONAS	Office National d'Assainissement (National Sanitation Office)
OPHI	Oxford Poverty and Human Development Initiative
SDGs	Sustainable Development Goals
SOE	state-owned enterprise
SONEDE	Société Nationale d'Exploitation et de Distribution des Eaux (National Society for Water Supply and Distribution)
UN-Water	United Nations Water
UNICEF	United Nations Children's Fund
WASH	water supply, sanitation, and hygiene
WHO	World Health Organization

Note: A billion is 1,000 million.

Executive Summary

Key Findings

Progress in Poverty Reduction and Access to WASH Services

In recent decades, Tunisia has made remarkable progress in reducing poverty and increasing access to water supply, sanitation, and hygiene (WASH) services. Between 1990 and 2012, access to improved drinking water rose from 82 percent to 97 percent of the population, and access to improved sanitation rose from 73 percent to 92 percent. More than 4 million people in Tunisia have gained access to improved sanitation between 1990 and 2015, and 4 million have gained access to water. This is a significant accomplishment, considering that Tunisia is currently home to 11 million people, 33 percent of whom live in rural areas. The country is divided into 7 regions and 24 governorates.

Poverty has decreased overall in Tunisia in the past few decades, but it remains unevenly distributed. According to recent government estimates, Tunisia's poverty rates have dropped from 25 percent in 2000 to 15 percent in 2015, with an estimated 1.7 million poor people in 2015. The North West and Centre West regions have the highest poverty rates, with 28 percent and 31 percent, respectively, compared with lows of 12 percent and 5 percent in the Centre East region and Grand Tunis. The Centre West region remains the poorest in terms of its poverty and extreme poverty rates. Poverty is primarily a rural phenomenon in Tunisia. This applies both for income poverty and human development indicators, such as stunting and health outcomes (for example, maternal mortality).

Two state-owned enterprises provide the majority of water supply, sanitation, and hygiene (WASH) services in Tunisia, as explained in more detail in box ES.1.

Box ES.1: Brief Overview of the Tunisia WASH Sector Organization

- The main water service provider is the Société Nationale d'Exploitation et de Distribution des Eaux (SONEDE), which serves 100 percent of the urban population and 51 percent of the rural population. Most of the remaining rural population is served by the Ministry of Agriculture, which has delegated operational responsibilities to Groupements de Développement Agricole (GDAs), which are community-based organizations in charge of distributing water for human consumption and irrigated agriculture.

- Sanitation services—primarily sewerage and wastewater treatment—are provided by the state-owned enterprise called the Office National d'Assainissement (ONAS). ONAS is responsible for services in municipalities (called *communes*) that are in its service area but also provides sewerage services in some more densely populated rural areas. Responsibilities for sanitation services in rural areas were clarified by an interministerial decision in 2016, although implementation has been slow.

Challenges of Reaching Universal Access to Underserved Populations

Despite progress on extending access to improved WASH services, around 250,000 people in Tunisia still rely on unimproved drinking water from mostly unprotected wells and springs. Around 650,000 people are served by standposts managed by GDAs, which means walking outside of the house and carrying water home. In addition, of the 900,000 people who use unimproved sanitation, about half use shared latrines, and the other half use mostly unimproved latrines. An estimated 250,000 people in Tunisia still practice open defecation.

Although the Sustainable Development Goals (SDGs) for water and sanitation are within reach, the government of Tunisia must work diligently to meet the SDG targets of (1) delivering universal access to safely managed water and sanitation services by 2030 and (2) eliminating open defecation. In addition, SDG 6 (the water SDG) describes specific targets for improving efficiency in managing water resources and protecting natural resources.

If left unaddressed, deficiencies could become more severe in the coming years. Tunisia is a water-scarce country, and water supply security challenges are predicted to be exacerbated by climate change in the coming years. There are substantial imbalances in terms of water-resource distribution between the better endowed North and the semi-arid South.

The poorest quintile of the Tunisian population is significantly worse off than are other quintiles in terms of access to WASH services. The poorest quintile is the only one where people practice open defecation or use unimproved sanitation facilities. SONEDE is the water service provider with the largest number of poor customers in absolute terms, whereas GDAs are the formal service providers with the highest proportion of poor customers (27 percent). In addition, those who use self-supply are most likely to be poor (59 percent) but are less numerous in absolute terms.

Challenges in poverty and WASH service coverage are concentrated in certain parts of the country. The Centre West and North West regions have the greatest deficiencies in access to water, with the largest proportion and number of people using unimproved sources for drinking. The South East and Centre West regions have the largest proportions of people using non-networked improved water services, which are predominantly local rainwater harvesting systems such as a majel. Open defecation and unimproved sanitation are concentrated in the three governorates in the Centre West region, and these are also the regions with the lowest access to networked sanitation through piped sewerage and fairly high use of pit latrines. Six governorates—concentrated in the North West and Centre West regions—face overlapping problems in access to WASH services and poverty: Béja, Jendouba, Kairouan, Kasserine, Le Kef, and Siliana.

Variation in other levels of service experienced is another key equity issue, but unfortunately little data exist that are comparable by the governorate and that allow us to draw firm conclusions. Considering volumes consumed, volumes sold by SONEDE vary from 70 to 130 liters per capita per day depending on the geographical area. The mean for those served by GDAs is around 50 liters per capita per day. According to the World Health Organization (WHO), consumption of less than this threshold means that hygiene can be compromised. Given that the figure of 50 liters per capita per day for GDA users is a mean, some proportion of households (including those who receive water through standpipes managed by GDAs and those who are not formally served by GDAs) are likely to use significantly less and therefore put their health at risk.

Good-quality information on water supply service levels is not available by type of service providers and by governorate. Even at the aggregate level, limited robust data are available. Insights can nonetheless be made on the basis of estimations and anecdotal evidence. Water supply quality does not appear to be a serious issue for SONEDE customers, but no data are

systematic collected for GDAs or for households who self-supply. Similarly, no robust data are available on service continuity.

There are strong associations between poor WASH outcomes and poor health and nutrition outcomes in Tunisia, reinforcing the case for investing in improving WASH service delivery. Considering data on stunting and health outcomes such as diarrhea prevalence among children under 5 years of age, the poorest regions (for example, the larger governorates of the Centre West region) are also those that score among the worst on these indicators. World Bank analysis, which is based on UNICEF's synergies model for undernutrition suggests that WASH interventions in Tunisia contribute to improved child nutrition. It also suggests that there are positive interactions (synergies) among adequate WASH services, health services, and individual care practices. However, synergies differ across samples of poor, nonpoor, urban, and rural households. In rural areas, access to WASH and health services are correlated with significant improvements in child nutrition. For nonpoor households, adequate WASH and food intake have positive and significant effects. However, for the most vulnerable (the poorest quartile of rural households), positive and meaningful improvements in nutrition are observed only when adequate access to food, health, WASH, and care are all present.

Affordability of Water Supply Services, Even for the Poor

The total WASH expenditures were estimated for the first time in Tunisia using the TrackFin methodology developed by the WHO (2016). This methodology compiles total WASH expenditures, including from private sources (mostly households, via tariffs and investments in self-supply) and from public sources (mostly domestic tax transfers as well as concessional financing). The WASH expenditures were collated using all available data and was then classified by type, source, and geographic distribution to produce WASH Accounts and indicators.

The total WASH expenditures (both public and private) have increased by around 14 percent in US dollar nominal terms between 2013 and 2015. The total WASH expenditures have increased between 2013 and 2015 from US$589 million to US$671 million, amounting to around 1.5 percent of GDP. The total expenditures per capita for both water supply and sanitation are higher in urban areas than in rural areas. For water supply, this is explained by the higher levels of water consumption and higher expenditures on bottled water in urban areas in comparison with rural areas. For sanitation, both private and public expenditures are significantly lower in rural areas when compared with urban areas.

The public WASH expenditures accounts for around 1.6 percent of the total public expenditures, as compared with 14 percent for health. The total WASH expenditures per capita have increased slightly from US$51 in 2013 to US$57 in 2015. However, wide disparities between urban/rural areas and governorates remain. For example, in 2015, total WASH expenditures per capita in urban areas were around US$66 as compared with only US$38 in rural areas. Inequality is even wider between governorates, with total water supply and sanitation expenditures ranging between US$30 per capita in Le Kef (one of the most vulnerable areas) and US$109 in Tozeur in 2015.

Both water supply and sanitation expenditures are funded predominantly by households, either through tariffs or investments in self-supply. *Private expenditures* are particularly high in governorates that are predominantly urban, such as Ariana, Ben Arous, Monastir, and Tunis.

Household water expenditure accounts for a very small share of total household expenditures: 0.54 percent, on average. It accounts for 1.5 percent of total household expenditures for the very poorest, which is well below 3 percent, that is, what is normally used as an affordability benchmark. Ability to pay is unlikely to be the limiting factor on households increasing their consumption: policies should focus on increasing service levels and consumption so as to increase benefits to households. It is difficult to know the per-liter prices faced by the poor as

opposed to the rich because private water supply expenditures are a function of the price and the volume consumed. Per-liter prices for those who are served by SONEDE do not vary: the first block of consumption for a volume up to 220 liters per day is set at 0.2 TD/m³. However, price of services by GDAs formal providers vary (ranging from being aligned with SONEDE tariffs to 1.5 TD/m³). Prices from informal sources vary hugely per liter, with tanker trucks being very expensive (around 5 TD/m³ for those using their neighbors' water supply and between 15 to 25 TD/m³ for tanker water) whereas handpump or majel water is "free" (although households would have had to make the initial investment).

Modeling of potential tariff reforms aimed at reducing or eliminating government subsidies found that this would not hurt the poor in a significant way. Given that richer people consume more water, they capture far more of the subsidy from the government to SONEDE. SONEDE falls short of cost recovery, with a financial gap of around US$50 million, which is implicitly subsidised by the government. Being consumption-based, the tariffs are theoretically progressive. However, because the richest 20 percent of households consume four times more water than do the poorest 20 percent, they capture far more of the government subsidy.

The targeting of public WASH expenditures could be improved. Public water supply expenditures are fairly well targeted at governorates with high poverty levels but could be better targeted at governorates with large numbers of people not served by formal water providers as well. Achieving both objectives is possible. Areas with high numbers of people unserved by formal water providers, such as Kairouan, are not receiving significantly higher levels of public resources per capita. For sanitation, public sanitation expenditures are not well-targeted, and addressing the rural sanitation challenge should be a high priority.

Although there is a need for a shift of focus in the distribution of public resources for sanitation, especially in poor and rural areas, a clear definition of responsibilities for service provision will need to precede resource reallocation. Contrary to water supply, there is a negative correlation between public expenditures for sanitation and poverty levels. This is partly explained by the lack of a clear allocation of responsibilities for service provision in rural areas, which is also where poverty is concentrated—while ONAS has a mandate to serve urban areas, there is currently no service provider for largely rural governorates.

Most financial resources for both water supply and sanitation are spent on operations and management (O&M), followed by investments. In 2013, O&M (including staff costs, fuel, and any other expenses required to keep services running) for water supply accounted for 65 percent of total expenditures, whereas for sanitation it accounted for 52 percent. O&M excludes large capital maintenance costs (for example, system renewal and rehabilitation), for which only 5 percent of resources are allocated across both water supply and sanitation, thereby endangering the sustainability of these investments.

Recommendations

Recommendation 1: Conduct Strategic Financial Planning for the WASH Sector

Strategic financial planning analysis could be conducted for all four subsectors to identify the financing needs to achieve the water SDG and government objectives in Tunisia up to 2030, including for new investments, operations and crucially, for maintenance; the potential for freeing up resources through generating efficiency gains at the level of service providers; and how resources can be mobilized to meet spending requirements, for example, from public sources through taxation and concessionary finance or through domestic commercial financing.

Recommendation 2: Bring Tariffs Closer to Cost-Recovery Levels and Preserve Affordability

Current private expenditures on WASH services are affordable by the majority of the population, including the poor. The analysis presented here shows that it would be possible to reform water tariffs whilst not significantly affecting poor customers. Removing SONEDE tariff subsidies would help strengthening the company's financial viability and credit-worthiness, while freeing up scarce public resources for being allocated to other subsectors (such as rural sanitation, which has been chronically underfunded) where public funding is critically required and it would be harder to mobilize commercial financing. To that end, well-designed reforms of the tariff structure are needed, which could align with social transfer schemes.

Recommendation 3: Mobilize and Target Public WASH Sector Funding More Strategically

Going forward, public expenditures for water supply and sanitation will need to be allocated to the areas that need it the most—the governorates that have lower levels of coverage and limited capacity to generate their own resources, which is mainly governorates in the North West and Centre West regions of the country and rural areas. As Tunisia gets closer to achieving the SDGs, reaching the individuals who are harder to reach will likely cost more. and beneficiaries may have less ability to generate private financing. It will also be important to better coordinate WASH interventions with nutrition interventions; improved WASH services are necessary (albeit not sufficient) factors in combatting undernutrition and stunting.

Transparent public formulas for allocating WASH funding to the regions that need it most (where there are the highest number of poor people with inadequate services) should be defined and mechanisms for transferring funds from urban WASH service users to more deprived rural ones should be established.

Recommendation 4: Define a Clear Strategy for Delivering Improved Access to Sanitation in Rural Areas

Rural sanitation needs to be prioritized; neither ONAS nor GDAs have made significant investments to improve service delivery in rural areas. This will require operationalizing a recent decision by an interministerial committee to clarify responsibilities for sanitation services according to the size of the locality. Although this decision was adopted in June 2016, the relevant law and implementing decrees have yet to be published, which means that an operational strategy still needs to be defined.

Supporting rural sanitation requires defining a clear strategy and support structures, particularly in areas where responsibilities for planning, providing and monitoring services are unclear (that is, localities with fewer than 3,000 people). At present, households are responsible for investing in sanitation but receive neither technical nor financial assistance to invest in durable safely managed sanitation solutions. Encouraging them to invest will require dedicated public funding, to fund demand promotion, technical assistance and results-based subsidies. Funding required for these activities should be estimated as part of a nationwide strategic financial planning exercise.

Recommendation 5: Improve Sector Monitoring to Track Progress Toward the SDGs

Refinements to Tunisia's WASH monitoring framework will be required to measure progress toward the SDGs. SDG 6 commits Tunisia to universal access to safely managed water supply

and sanitation services. This target includes proper management of fecal waste and wastewater along the whole sanitation services chain. SDG 6 also aims to achieve universal access to safely managed water supply in the form of piped water on premises for all households by 2030. To a large extent, existing data availability on levels of service for WASH in Tunisia (for example, on water quality and service intermittency) are not sufficient to monitor SDG implementation.

The lack of robust data on service levels severely prohibits targeting investments that can improve services. The key providers generally manage services either in aggregate or at the individual system level rather than at a level in between. This approach hinders improving the allocative efficiency of public funds through targeting problem areas. Improving the availability of information on service levels, for example, by benchmarking at the governorate level, should be a priority to achieve the water SDG and requires establishing robust monitoring and regulatory systems.

Last, the preparation of WASH accounts should be repeated in 2 to 3 years to track whether sector allocations have increased and are better allocated. For such WASH accounts to include improved financial data, it is necessary to promptly identify the institution that are tasked with supervising the preparation of WASH accounts and for ensuring that the aforementioned recommendations on data improvements are duly followed through. As for the first exercise, the Ministry of Development, Investment, and International Cooperation could take on this responsibility but need to identify financial and human resources to that end.

Chapter 1
Introduction

Study Objectives

The World Bank funded the present work, referred to as the Tunisia WASH Poverty Diagnostics, to assist the government of Tunisia with exploring the linkages between poverty and water supply, sanitation, and hygiene (WASH) services (see box 1.1). The study in Tunisia was carried out as part of global WASH Poverty Diagnostics, which took place simultaneously in 18 countries, with varying areas of emphasis and depth. The water sector is also a priority for World Bank support in Tunisia. The Country Partnership Framework with the World Bank indicatively allocates US$150 million of lending to the water sector over 2016–18 and US$150 million to irrigation (World Bank 2016a).

The study in Tunisia was carried out in three phases:

- Phase 1 aimed to identify the links between poverty and WASH services in Tunisia. This included an analysis of household survey data so as to estimate subsidies implicit in water tariffs.

- Phase 2 analysed financial flows in the Tunisian WASH sector to understand how the four subsectors (urban, rural, water supply, and sanitation) are currently financed. This generated WASH accounts using the WHO/GLAAS (Global Analysis and Assessment of Sanitation and Drinking-water) TrackFin methodology.

- Phase 3 summarizes all findings and makes recommendations for improving WASH services.

Phase 1 aimed to provide an in-depth understanding of the Tunisian context and establish key facts about the current distribution of service use by level of income. The analysis also examined the linkages between WASH and nutrition. The method for Phase 1 was based on an analysis of various household survey datasets that included both WASH and welfare variables. Phase 1 also modeled the distributive effects of tariff reforms. The full results are available in a separate report (World Bank 2016b). The analysis showed that the majority of subsidies implicit in water and sanitation tariffs benefit comparatively richer customers because of their higher levels of consumption.

Box 1.1: Defining WASH Services

WASH, which stands for water supply, sanitation, and hygiene, is commonly used to summarize four types of interventions related to water availability, water quality, excreta disposal, and hygiene promotion (Department for International Development 2013). The hygiene element usually refers mainly to handwashing with soap at critical times—in particular, after defecation—rather than to a broader concept including food hygiene, for example. These interventions are jointly referred to as WASH because they are all public health interventions that primarily tackle pathways for fecal-oral diseases. Other interventions that tackle such diseases in different ways (for example, rotavirus vaccines) are not considered part of WASH.

During Phase 1, it became clear that only limited information was available regarding financial flows in the Tunisian WASH sector. This limitation prevented the development of a sound understanding of whether public funds are adequately allocated to those regions or subsectors that need them the most.

In an environment where available financial resources are limited, it is critical to assess how financial resources could be better used. The analysis of financial flows in Phase 2 aims to fill this gap by allowing more detailed recommendations on WASH sector financing beyond only tariff reform—for example, those related to allocative efficiency between governorates.

Phase 2 used the TrackFin methodology developed by the World Health Organization to assess financial flows to water supply, sanitation, and related hygiene activities. This assessment involved collecting data from different stakeholders involved in financing the WASH sector and coding each flow along different dimensions (such as different service types, financing units, and cost types). This approach allowed for the development of detailed cross-tabulations along the different dimensions, providing an in-depth understanding of financial flows in the Tunisian WASH sector. The full results and analysis are available in a separate report (World Bank 2017).

The present Phase 3 report synthesizes the findings from Phases 1 and 2. The Phase 3 report summarizes key analytical conclusions and draws together recommendations on policy reforms that include improving the present allocation of financing and leveraging additional financing.

Poverty and WASH Services: A Conceptual Framework

Around the world, a lack of WASH services is associated with poverty, and improvements in WASH services are associated with its reduction. WASH services have various positive effects through different causal pathways. Figure 1.1 visually depicts these effects, showing that

Figure 1.1: The Effect of Improved WASH Services on Economic Opportunities and Sustainable Growth
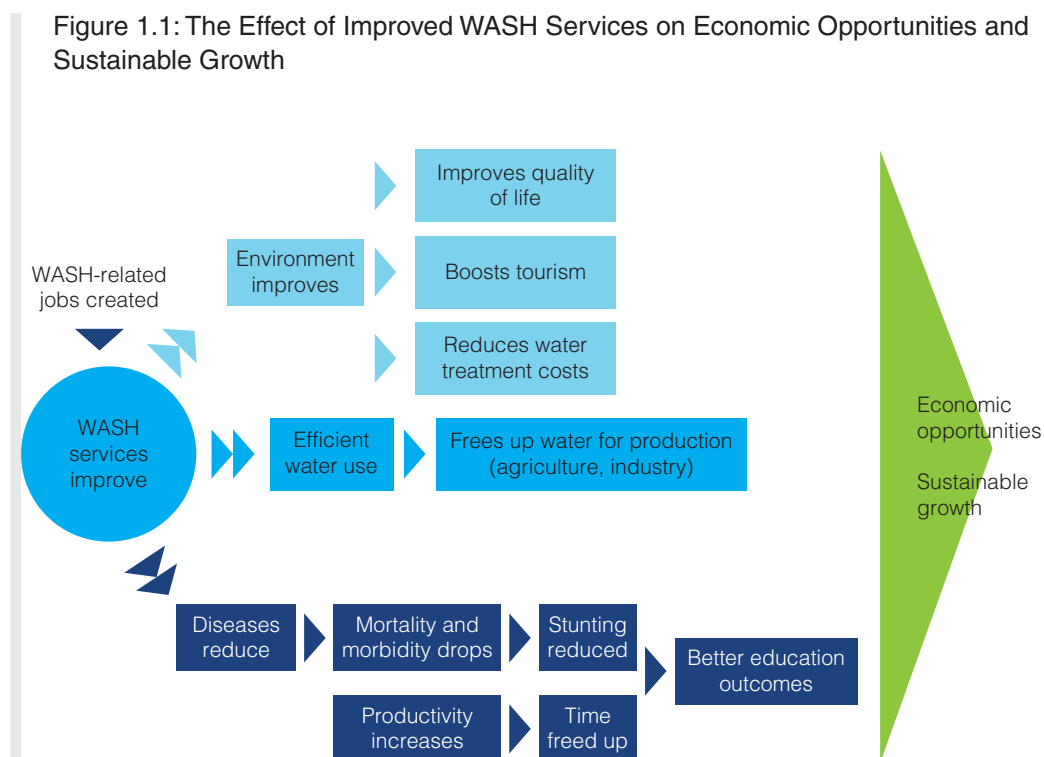
Note: WASH = water supply, sanitation, and hygiene.

improvements in WASH services can generate benefits related to health, education, nutrition, employment, and the environment. These services, in turn, all have knock-on benefits related to economic growth and opportunities. Cost–benefit analyses have found that US$1 of investments in WASH services can generate a US$4 return through these various benefits, although these benefits may take time to materialize because of the lengths of the causal chains (Hutton 2012).

In addition, inadequate access to WASH services is a marker of poverty. In most countries, there is a strong correlation between the two, and analysts of multidimensional poverty use WASH services as one indicator in their composite index (Oxford Poverty and Human Development Initiative 2016).

Structure of the Report

The present report is structured as follows: The first chapter provides a brief overview of the water resources and WASH context in Tunisia. The second chapter explores the linkages between WASH services and poverty. The third chapter summarizes the main findings from the analysis of financial flows. The final chapter provides recommendations to improve WASH services and financing.

References

Department for International Development. 2013. "Water, Sanitation and Hygiene: Evidence Paper." Department for International Development, London, United Kingdom.

Hutton, Guy. 2012. "Global Costs and Benefits of Drinking-Water Supply and Sanitation Interventions to Reach the MDG Target and Universal Coverage." WHO/HSE/WSH/12.01, World Health Organization, Geneva.

Oxford Poverty and Human Development Initiative. 2016. "Oxford Poverty and Human Development Initiative: Country Briefing December 2016: Tunisia." Oxford, United Kingdom.

World Bank. 2016a. "Country Partnership Framework for the Republic of Tunisia for the Period 2016–2020." World Bank, Washington, DC.

———. 2016b. "Tunisia WASH Poverty Diagnostic—Phase 1 Report." World Bank, Washington, DC.

———. 2017. "Republic of Tunisia, WASH and Poverty Diagnostic. Phase 2 Report: WASH Accounts" World Bank, Washington, DC.

Chapter 2
Tunisia: Remarkable Progress on WASH Services Despite Water Resource Constraints

Country Overview

Tunisia, the smallest country in the North African region, has a surface area of 163,610 square kilometers. It is divided in four physiographic regions: the mountains of the Northwest, the mountains of the South, the coastal plains, and the desert plains. From an administrative perspective, the country is divided into seven regions and 24 governorates, as shown in the annex.[1]

Tunisia is home to 11 million people, 33 percent of whom live in rural areas. The country went through a political transition after the 2011 revolution, which triggered the so-called Arab Spring, with the adoption of a new Constitution in early 2014 followed by orderly elections. Six years after the revolution, the population has yet to yield the full benefits of the promised economic transformation, with the implementation of an economic reform agenda only bearing fruit in 2015.

Economic performance has slowed in the years since the 2011 revolution. Real annual GDP growth was 2.3 percent year-on-year in 2013 and 2014 but fell to 0.8 percent in 2015 because of social tensions related to the slowness of reforms and the effects of several terrorist attacks. Inflation has also decreased from 5.8 percent in 2013 to 4.9 percent in 2015 (World Bank 2017). According to the United Nations Development Programme (UNDP) Tunisia's Human Development Index score is 0.725, at a level similar to that of Botswana, Colombia, and Jamaica (UNDP 2017).

Tunisia is a water-scarce country that has a Mediterranean climate with an average rainfall of 207 mm per year. However, substantial imbalances exist in water resource distribution between the better endowed North and the semi-arid South. One determinant of this imbalance is precipitation distribution, as shown in map 2.1. There is already a 90 percent mobilization rate of water resources through dams, whereas groundwater resources are overexploited (World Bank 2016b). A network of canals and transfers exists to transport water from the North to the South.

Water security challenges are predicted to be exacerbated by climate change in the coming years. The decrease in conventional water resources is estimated at about 28 percent by 2030 (World Bank 2016a). The decline in surface water availability is predicted to be around 5 percent by 2030, alongside increasing salinization of coastal aquifers because of sea-level rise.

KEY FINDINGS

Tunisia is a water-scarce country, and challenges will worsen with climate change.

The northern and southern regions of Tunisia face substantial imbalances in water resource distribution.

Tunisia made remarkable progress on water supply, sanitation, and health services in relation to the Millenium Development Goals, especially on water.

Inequalities in access persist, such as in service availability and quality, according to geography, urban/rural residents, and types of service providers.

Map 2.1: Decennial Daily Rainfalls in Tunisia, 1999

<50 mm	
50–59 mm	
60–79 mm	
80–89 mm	
90–99 mm	
>99 mm	
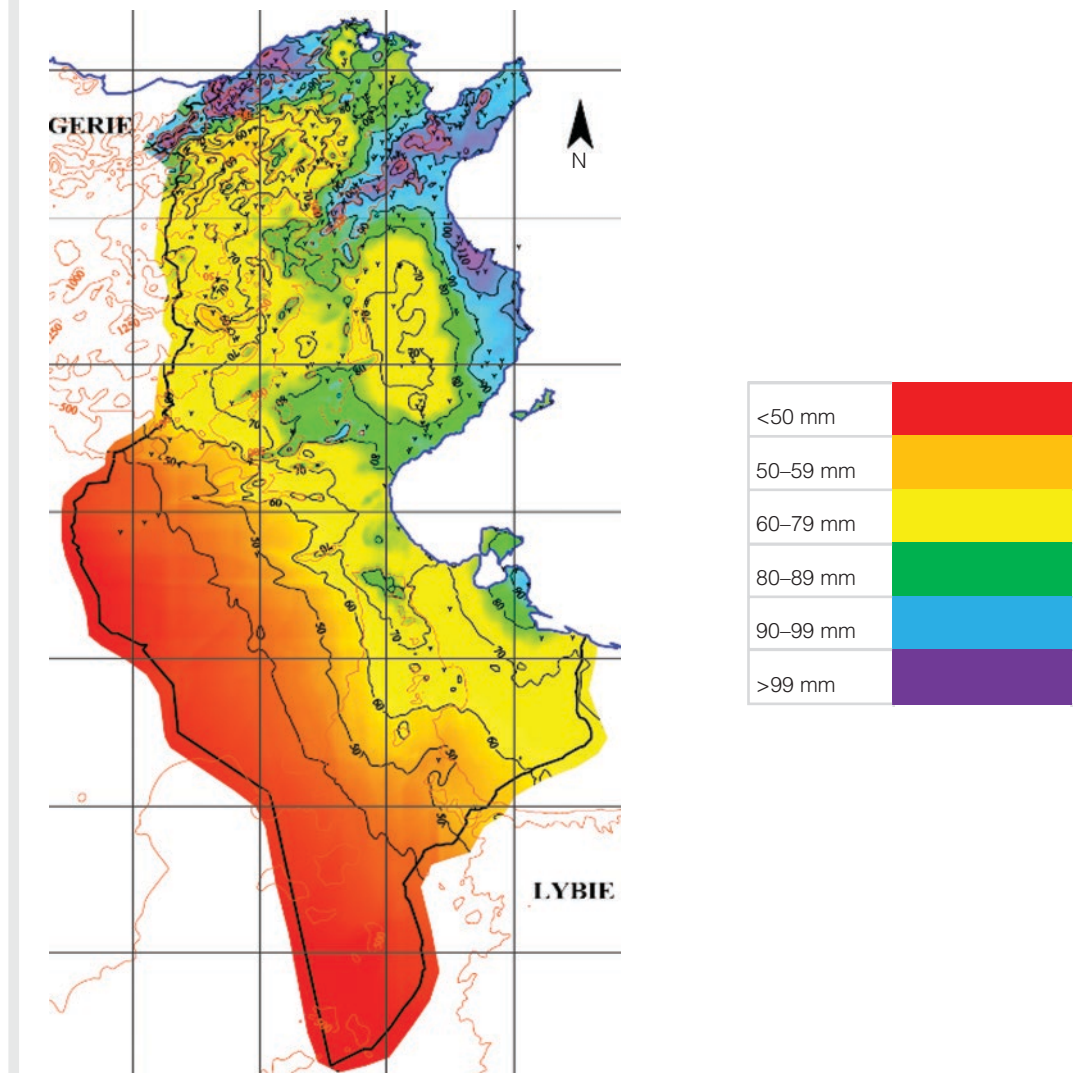
Source: Zahar and Laborde 2007.
Note: Lines are isohyets (lines connecting points of equal rainfall), with indicated number in millimeters being daily rainfall.

Water Sector Policy Framework

Water is a priority for the government of Tunisia, under Pillar 5 of the country's Strategic Guidance Document: "promoting green growth for sustainable development." (Ministry of Development, Investment and International Cooperation 2015).

The Water Code, adopted in 1975, is the basic legal text governing any action in the water sector. Water policies in Tunisia aim mainly to increase water resource mobilization and include the following:

- Master plans (for the North, Centre, and South regions) that are focused on setting up water mobilization, on distribution, and on using infrastructure;

- The 1990–2000 National 10-Year Strategy;

- The 2000–2011 Complementary Mobilization Strategy; and

- The 2030 Long-Term Strategy.

All of these plans and strategies allowed for defining current and future orientations for the development of the WASH sector, which are summarized as follows (*Ministry of Agriculture*, Water Resources and Fisheries 2013).

- Construction of medium- and small-sized structures to achieve a resource mobilization rate of 95 percent,

- Integrated management of water resources,

- Water saving and demand control for all users, and

- Water resource protection.

Tunisia's new constitution, adopted in 2014, enshrines the right to water for all Tunisians. It falls to the government and relevant institutions to guarantee the safeguarding and proper governance of water resources.

Last, Tunisia has adopted the Sustainable Development Goals (SDGs). SDG 6 focuses on improving the management of the water cycle at large and includes universal access to safely managed water and sanitation services by 2030. This represents a significant shift from the more modest objectives set under the Millennium Development Goals. This adoption commits Tunisia to universal access to safely managed water supply, which implies piped water on premises for all by 2030. Likewise, universal access to safely managed sanitation is required under SDG6, which means proper management of fecal waste and wastewater along the whole sanitation services chain.

Institutional Arrangements for the WASH Sector

Two state-owned enterprises are responsible for providing the majority of WASH services across Tunisia. With respect to water, the drinking water sector in the country is managed mainly in two ways, under the supervision of the Ministry of Agriculture.

The Société Nationale d'Exploitation et de Distribution des Eaux (SONEDE), the main water service provider in Tunisia, has a mandate to ensure water supply. At present, SONEDE supplies water to all urban areas and rural agglomerations. In 2015, SONEDE ensured the drinking water supply of 85 percent of the Tunisian population. This rate includes 100 percent of the urban population and 51 percent of the rural population. SONEDE provides drinking water access to approximately 9.5 million people total.

The rural engineering services unit of the Ministry of Agriculture, Water Resources, and Fisheries implements drinking water systems in scattered rural areas. Community-based organizations called Groupements de Développement Agricole (GDAs) manage these systems and distribute water for human consumption and irrigated agriculture. At present, there are approximately 1,400 drinking water GDAs and 140 mixed GDAs for drinking water supply and irrigation. These associations benefit from support and supervision from the rural engineering services, namely at the setting-up phase.

Supervised by the Ministry of Environment, the state-owned enterprise called the Office National d'Assainissement (ONAS) provides sanitation services, primarily sewerage and

wastewater treatment. ONAS is responsible for services in municipalities (called *communes*) in its service area but also provides sewerage services in some more densely populated rural areas. ONAS currently works in 173 of a total 283 communes across the country, providing service to a population of 6.8 million inhabitants, making up 91 percent of the country's urban population (7.4 million inhabitants in 2014). The remaining 110 communes that ONAS does not cover are generally small and have poor or no sanitation infrastructure. In these communes, households use septic tanks or cesspools.

The number of inhabitants connected to the sanitation network in the communes covered by ONAS amounts to approximately 6.2 million as of 2014—that is, a rate of connection of 91 percent. Households that are not connected to the ONAS network use septic tanks or cesspools. The government can request ONAS to construct sanitation infrastructure works even out of the communes it covers.

ONAS' mandate initially did not include rural sanitation. However, because the rural commune status does not exist and governorate councils are not equipped to perform this activity, the result is an apparent institutional vacuum for the rural sanitation subsector. Thus, when the place of residence is considered, strong disparities are found between urban and rural areas. In 2015, approximately 97 percent of Tunisians living in urban areas used improved facilities, compared with 80 percent of those living in rural areas.

To ensure sanitation services in rural areas and to remedy to the noted institutional vacuum, an interministerial council that met on June 13, 2016, decided to assign responsibilities for rural sanitation as follows, according to locality size:

- In localities where the population exceeds 3,000 inhabitants, sanitation services will be ensured by ONAS, which will collect sanitation tariffs in this regard.

- In localities where the population ranges between 1,000 and 3,000 inhabitants, the sanitation service falls to the regional councils and communes, under the lead of the Ministry of Local Affairs and Environment, with participation of the private sector and technical assistance from ONAS.

- In localities with a population of fewer than 1,000 inhabitants, the population will be encouraged to use on-site sanitation systems with the support of regional agricultural development commissions. The Ministry of Agriculture, Water Resources, and Fisheries has been invited to plan for the mechanisms required to help construct these infrastructures.

Legal texts (decrees and acts) required for the enforcement of sanitation responsibilities in rural areas in Tunisia had not been published as of August 2017. It may be a better option to implement collective sanitation facilities in the case of some localities with fewer than 1,000 inhabitants but where habitat is grouped.

In terms of institutional supervision, the main actors are the Ministry of Agriculture, Water Resources, and Fisheries, which is in charge of water policy for urban and rural subsectors and is the supervising ministry for water; and the Ministry of Local Affairs and the Environment, which is in charge of sanitation policy for urban and rural subsectors and is the supervising ministry for sanitation.

Other public actors, such as the Ministry of Development, Investment, and International Cooperation and the Ministry of Health are also involved in the water supply and sanitation sector and is particularly in charge of allocating public resources for the WASH sector.

The WASH sector in Tunisia is very centralized, with most budget and funding allocations decided at the central level. Nevertheless, at the subnational level, regional governorate councils are involved through the development and implementation of regional development

projects in the drinking water sector. In addition, the Directorate General of Rural Engineering and Water Development covers scattered rural areas through the rural engineering arrondissements of the regional agricultural development commissions, with a total of 24 arrondissements, one per commission. Rural drinking water sector projects are planned under a close collaboration between the Directorate General of Rural Engineering and Water Development and SONEDE, in consultation with regional services.

Figure 2.1 summarizes the key institutions involved in the water sector. It is structured according to three levels of decision making: (1) advisory boards, represented by the National Water Council, chaired by the Ministry of Agriculture and comprising representatives of several ministries, businesses, and national organizations; (2) bodies in charge of policies, represented by the ministerial departments involved in the drinking water supply and sanitation sector; and (3) water utility operators and water users' associations.

Access to Improved Water Supply and Sanitation Services Has Increased But Remains Unequal

Tunisia has accomplished remarkable progress in terms of providing WASH services. Between 1990 and 2012, access to improved drinking water rose from 82 percent to 97 percent of the population, whereas access to improved sanitation rose from 73 percent to 92 percent

Figure 2.1: Organization of the Water Sector in Tunisia
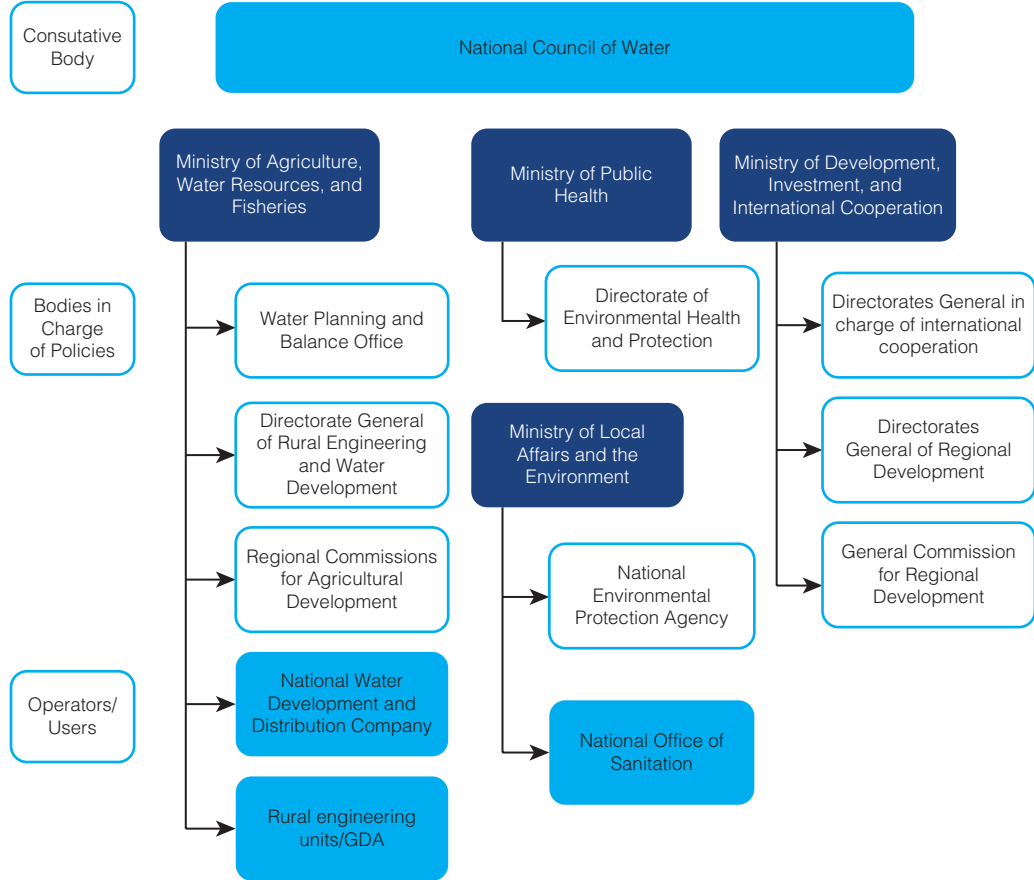
Source: Adapted from OECD 2014.
Note: GDA = Groupements de Développement Agricole; SONEDE = Société Nationale d'Exploitation et de Distribution des Eaux.

Figure 2.2: Access to Improved Water and Improved Sanitation, by Region, in 2012
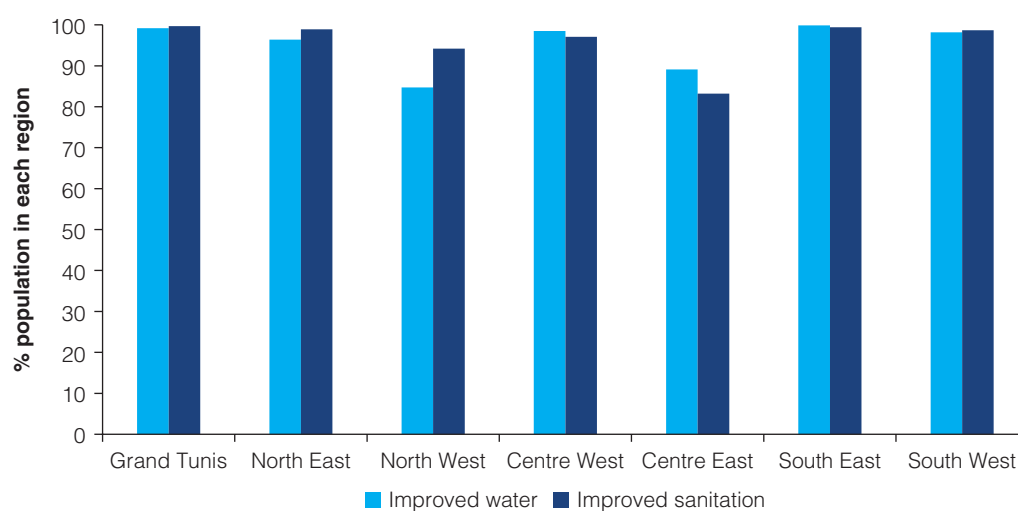
Source: MDICI, INS, and UNICEF 2013.

(trends are explored more in the next section). This progress puts Tunisia above North African averages, which stand at 93 percent for water and 89 percent for sanitation in 2015, according to the WHO/UNICEF Joint Monitoring Programme (WHO/UNICEF 2015). It also made Tunisia one of only nine countries worldwide that has succeeded in halving the proportion of the population without improved drinking water in both rural and urban areas. More than 4 million people gained access to improved sanitation between 1990 and 2015, with the same number for water. However, there are disparities in service availability and quality across various dimensions (such as geography, urban/rural, service areas of key providers). If left unaddressed, deficiencies could become more severe in coming years, particularly due to the increasing water scarcity described earlier.

Levels of access vary across the different regions of the country. Detailed analysis of service levels is presented in the next section, but figure 2.2 briefly illustrates access to improved water supply and sanitation, by region.

Refinements to Tunisia's WASH monitoring framework will be required to measure progress on the SDGs. Although significant progress has been made, the SDGs raise the bar significantly in terms of higher levels of service with universal access. To a large extent, existing data availability on levels of service for WASH in Tunisia (for example, on water quality and service intermittency) are not sufficient to monitor the SDGs. The WHO/UNICEF Joint Monitoring Programme's SDG baseline summary will be available in July of 2017: it will be useful to assess what needs to be done to fill the gaps identified by this assessment, in terms of monitoring (to verify progress towards the objectives) and investment (to effectively fill the gaps). As outlined in the recommendations, strategic financial planning can be used to assess how delivery of universal, safely managed and sustainable services can be ensured for Tunisia to achieve the SDGs.

Note

1. Governorates are administrative divisions that fall under the broader regions. Regions are more often used for sampling and data analysis in surveys, given that there are fewer of them. Governorates are distributed per region as follows: North East (Ariana, Ben Arous, Bizerte, Manouba, Nabeul, Tunis, and Zaghouan), North West (Béja, Jendouba, Le Kef, and

Siliana), Centre East (Mahdia, Monastir, and Sousse), Centre West (Kairouan, Kasserine, and Sidi Bouzid), South East (Gabès, Mednine, Sfax, and Tataouine), South West (Gafsa, Kébili, and Tozeur).

References

Ministry of Development, Investment and International Cooperation. 2015. Summary Note on the Strategic Development Plan 2016-2020, Tunis, Tunisia.

OECD (Organisation for Economic Co-operation and Development). 2014. Governance of Water Services in Tunisia: Overcoming the Challenges of Private Sector Participation. OECD Water Studies. Paris: OECD Publishing https://doi.org/10.1787/9789264213807-en.

MDICI, INS (Institut National de la Statistique), and UNICEF (United Nations Children's Fund). 2013. "Suivi de la situation des enfants et des femmes en Tunisie- Enquête par grappes à indicateurs multiples 2011-2012, Rapport Final." Tunis: MDICI.

UNDP (United Nations Development Programme). 2017. "Human Development Report 2016: Human Development for Everyone." New York: UNDP.

WHO (World Health Organization), UNICEF. 2015. "Thematic Report on Safely Managed Drinking Water Services." Geneva, Switzerland.

World Bank. 2016a. "Country Partnership Framework for the Republic of Tunisia for the Period 2016–2020." World Bank, Washington, DC.

———. 2016b. "Tunisia Poverty Assessment 2015." World Bank, Washington, DC.

———. 2016c. "Tunisia WASH Poverty Diagnostic—Phase 1 Report." World Bank, Washington, DC.

———. 2017. *World Development Indicators 2017*. Washington, DC: World Bank.

Zahar, Yadh, and Jean-Pierre Laborde. 2007. "Statistical Modeling and Cartographic Synthesis of Daily Rainfall Extremes in Tunisia." *Revue des sciences de l'eau* 20(4): 325–424.

Chapter 3
Poverty and Water Supply, Sanitation, and Hygiene Services in Tunisia

Poverty in Tunisia: Current Status and Recent Evolution

Poverty has decreased overall in Tunisia in the past few decades. However, it is unevenly distributed across the country, with geographical areas where substantial poverty remains. According to the Institut National de la Statistique (INS), poverty rates have dropped from 25 percent in 2000 to 15 percent in 2015, with a total estimated 1.7 million poor people in 2015 (INS 2016). The extreme poverty rate was estimated at 3 percent in 2015, compared with 12 percent in 2000, with an estimated 300,000 extreme poor people in 2015 (INS 2016). A disaggregated analysis of poverty rates by governorates is possible for the first time in Tunisia thanks to recent data generated by INS, as described in box 3.1.

Challenges in poverty and water supply, sanitation, and hygiene (WASH) service coverage are focused in certain parts of the country. Maps overleaf illustrate (1) the size of the poverty challenge by governorate, (2) the overlap of the poverty challenge and broad WASH service challenge (that is, people not served by SONEDE/GDAs and people using unimproved sanitation). The WASH context is considered in more detail in the next chapter.

It is possible to identify a small number of challenging governorates that face overlapping problems in WASH and poverty on the basis of the maps in map 3.1. Six governorates are concentrated in the North West and Centre West regions: Béja, Jendouba, Kasserine, Kairouan, Le Kef, and Siliana. The following are key insights on the maps in map 3.1.[1] Map 3.1, panel a, shows that absolute numbers of the extreme poor are generally concentrated in four to five governorates with a high extreme poverty rate mainly in the North West and Centre West regions (in particular, in Kasserine, Kairouan, Le Kef, and Siliana). Map 3.1, panel b, shows that the same is true for poverty, with the addition of the governorates of Béja and Jendouba to the list of those with the highest poverty rates. Map 3.1, panel c, shows that the absolute numbers of people without a formally provided water service (through SONEDE or GDAs) are concentrated in two to three governorates, and that the single biggest number are concentrated in Kairouan, which is also one of the poorest governorates. A significant number of people are also concentrated in Bizerte, which is not one of the poorest. Map 3.1, panel d, shows that, in contrast with water, the numbers of people with unimproved sanitation are slightly more evenly distributed around different governorates, although still concentrated in the Centre West region and some in the Centre East region.[2] A comparison with map 2.1 shows some associations between the areas with low rainfall (60–80 mm) and areas with poor water access (for example, the North West and Centre West regions). However, this correlation is not strong

Box 3.1: Poverty Data in Tunisia

In this report, we follow the Tunisian National Statistics Institute's (Institut National de la Statistique; INS) definition of poverty. In most cases where poverty data are used, the source is the INS's most recent statistical bulletin from December 2016. This bulletin is based on the new National Survey on Households' Budget and Consumption and Living Standards (NSBCL) 2015 survey for which results became available in late 2016. INS, under instructions of the *Commission Nationale de la Statistique*, is currently carrying out a review of these data, which may lead to changes in poverty estimates for some governorates. However, these are likely to be small and not to affect the broad thrust of the analyses presented in this report using these data.

In addition to these poverty estimates, some of the analysis presented here was conducted in Phase 1 of the study before the release of the 2015 data (World Bank 2016b). Analysis from the Phase 1 report reflected in the present report therefore relies on data from NSBCL 2010 and is flagged as such.

The Tunisian poverty line is calculated by a methodology agreed in 2012 between the INS, the African Development Bank, and the World Bank (INS, African Development Bank, and World Bank 2012). The joint methodology defines poverty lines on the basis of basic nutritional caloric needs. A unitary value per caloric intake is calculated for each household in a reference group (the poorest quintile) on the basis of its estimated caloric intake and the household's food consumption monetary value. As a direct result of this methodological update in 2012, including changes to the reference basket, it is not possible to directly compare NSBCL 2010 poverty results with those that are based on NSBCL 2015. Therefore, this report does not do so.

because the South East and South West regions have the same or lower rainfall and do not have the same low poverty and water access challenges.

Nationally, data shows significant reductions in poverty, enabled by robust economic growth and improvements in social protection during the early 2000s. The World Bank's country poverty assessment concludes that economic growth in Tunisia has contributed to reducing poverty but not to reducing inequality. It also notes that the socioeconomic profiles of the poor and bottom 40 percent have not changed in the past decade and that vulnerability remains high—that is, many nonpoor individuals remain at risk of falling into poverty (World Bank 2016a).

However, reductions in poverty have been unevenly distributed, as shown in figure 3.1. Considering poverty status, the rates are found in the North West and Centre West regions, with 28 percent and 31 percent, respectively, compared with lows of 12 percent and 5 percent in the Centre East region and Grand Tunis, respectively. Regarding extreme poverty, the highs are again in the North West and Centre West regions, at 6 percent and 8 percent, respectively. From a trends perspective, the biggest falls in poverty and extreme poverty took place in the Centre West and South West regions. Nonetheless, the Centre West region remains the poorest region in terms of both poverty and extreme poverty rates. Both poverty and extreme poverty have fallen in all regions, although faster in some than in others. Regions that have retained significant poverty rates but that have also made little progress between 2005 and 2015 include the North West and South East regions.

In Tunisia, poverty is primarily a rural phenomenon. This applies both for income-poverty and human development indicators, such as stunting and health outcomes (for example, maternal mortality). Figure 3.2 maps poverty and extreme poverty rates by governorate against the

Map 3.1: Poverty, Extreme Poverty, and Access to Water Supply and Sanitation
Services, 2014 and 2015

a. Extreme poverty rate and number of people in extreme poverty

2015 No.of extreme poor
- 0–12,000
- 12,001–24,000
- 24,001–36,000
- 36,001–48,000
- 48,001–60,000

2015 Extreme poverty rate (%)
- 0–2.1
- 2.2–4.2
- 4.3–6.2
- 6.3–8.3
- 8.4–10.3

b. Poverty rate and number of poor people

2015 No.of poor people
- 0–50,000
- 50,001–100,000
- 100,001–150,000
- 150,001–200,000
- 200,001–250,000

2015 poverty rate (%)
- 0–9.8
- 9.9–16.1
- 16.2–22.3
- 22.4–28.6
- 28.7–34.9

c. Poverty rate and number of people not served by SONEDE/GDAs

Number of people not served by SONEDE or GDAs (2015)
- 0–15,000
- 15,001–30,000
- 30,001–45,000
- 45,001–60,000
- 60,001–75,000

2015 poverty rate (%)
- 0–9.8
- 9.9–16.1
- 16.2–22.3
- 22.4–28.6
- 28.7–34.9

d. Poverty rate and number of people with unimproved sanitation

Number of people with unimproved sanitation (2014)
- 0–15,000
- 15,001–30,000
- 30,001–45,000
- 45,001–60,000
- 60,001–75,000

2015 poverty rate (%)
- 0–9.8
- 9.9–16.1
- 16.2–22.3
- 22.4–28.6
- 28.7–34.9

Source: Data are from INS 2016 and documents shared by SONEDE and ONAS.
Note: GDA = Groupements de Développement Agricole; ONAS = Office National d'Assainissemen; SONEDE = Société Nationale d'Exploitation et de Distribution des Eaux.

Figure 3.1: Reduction in Poverty and Extreme Poverty Rates, by Region, 2005–15

a. Extreme poverty
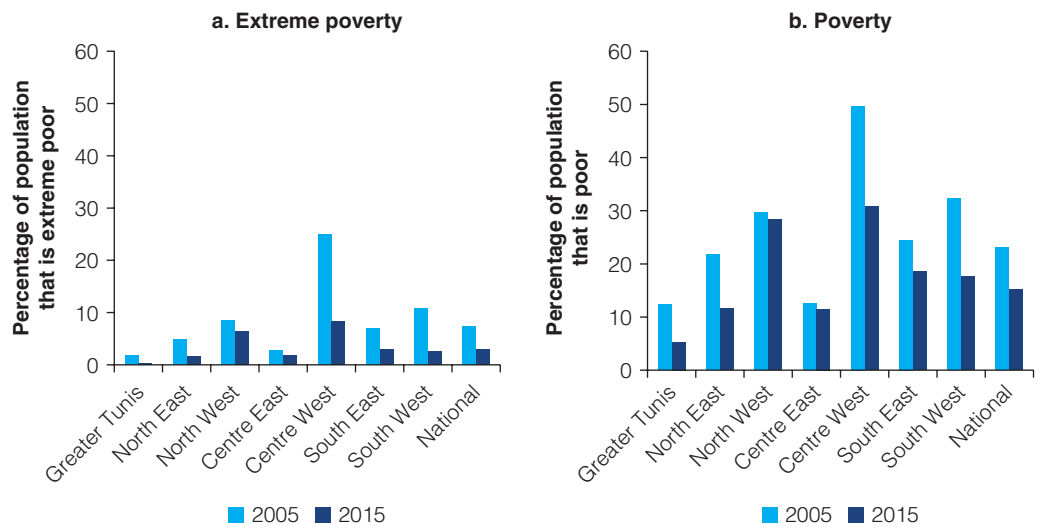
b. Poverty

Source: INS 2016.

Figure 3.2: Poverty Rates versus Proportion of Rural Population, by Governorate, 2015
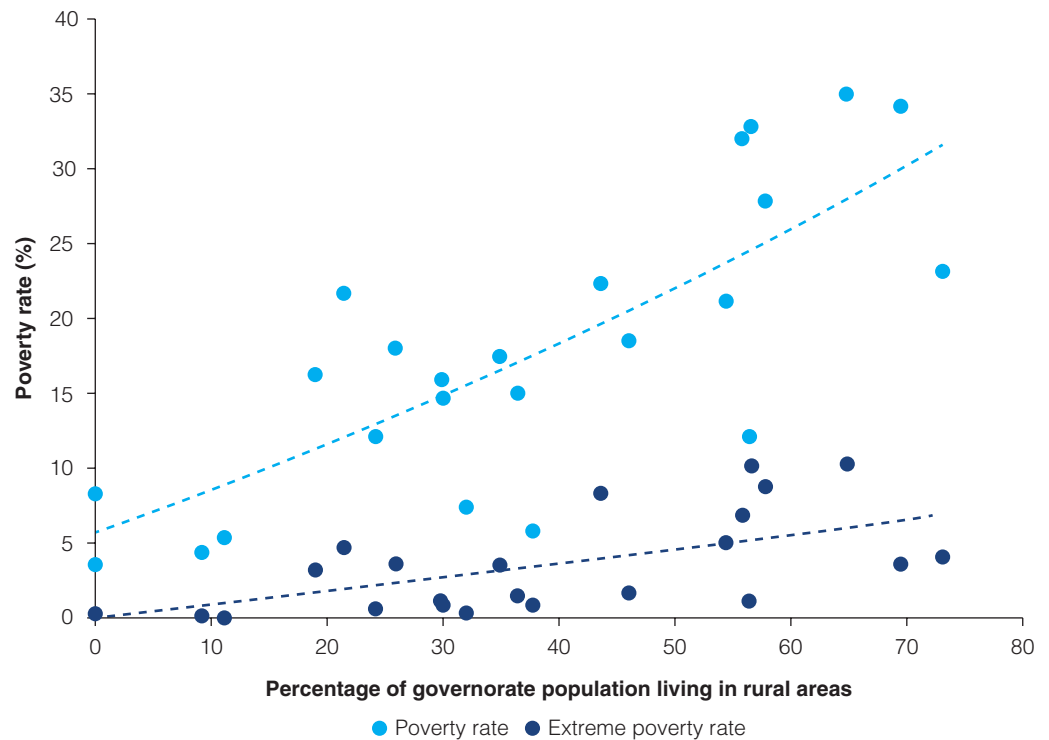
Source: World Bank 2017, based on INS 2016.

Map 3.2: Proportion of Rural Population, by Governorate, 2015

2015 rurality level (%)
- 0–14.6
- 14.7–29.2
- 29.3–43.7
- 43.8–58.3
- 58.4–72.9
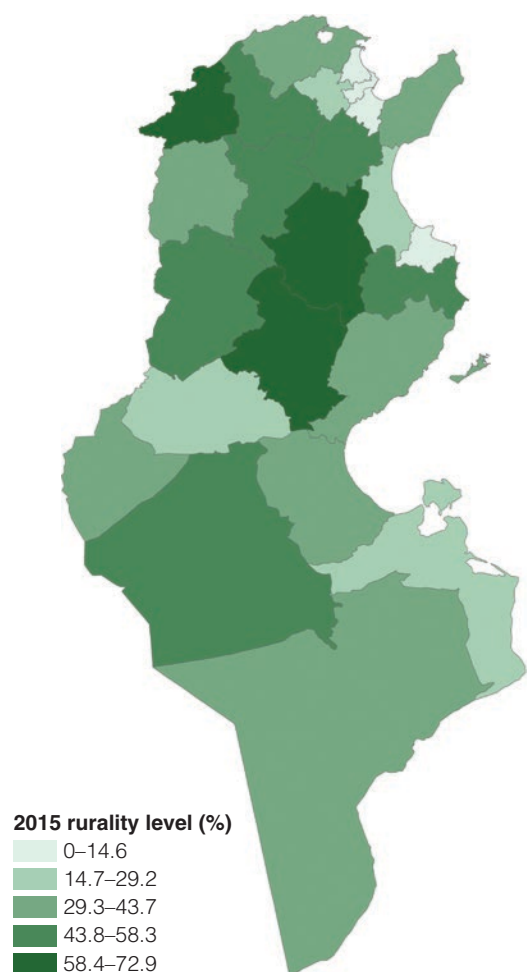
Source: World Bank 2017, based on INS 2016.

proportion of the population in that governorate that lives in rural areas and shows a strong, positive correlation between these two parameters. The correlation coefficient between rurality and the poverty rate is 0.78, with the relation being slightly less strong for the extreme poverty rate (0.63). The percentage of the population in each governorate that lives in rural areas is shown in map 3.2: it ranges from 0 percent in Tunis and Monastir to 73 percent in Sidi Bouzid.

Poverty and Access to WASH Services in Tunisia

Tunisia has accomplished remarkable progress in terms of extending access to improved WASH services, particularly in rural areas over the past 25 years, as shown in figure 3.3. Access to improved WASH services is now almost universal, with 98 percent for water and 92 percent for sanitation at the national level. Nonetheless, around 250,000 people rely on unimproved drinking water, mostly from unprotected wells and springs. In addition, 900,000 people use unimproved sanitation, about half of whom use shared latrines, and the rest use mostly unimproved latrines. Overall, high access rates show that the Sustainable Development Goal target should be achievable in Tunisia. Although it will be harder to reach those who

Figure 3.3: Trends in Access to WASH Services in Rural and Urban Areas

a. Water trends

Urban drinking water trends

Coverage (%)

- 0 / 4 / 6 / 90 (1990)
- 00 / 5 / 95 (2015)

1990 — 2015

Rural drinking water trends

Coverage (%)

- 2 / 34 / 44 / 20 (1990)
- 1 / 6 / 36 / 57 (2015)

1990 — 2015

■ Surface water   ■ Other unimproved sources   ■ Other improved sources   ■ Piped onto premises

b. Sanitation trends

Urban sanitation trends

Coverage (%)

- 2 / 2 / 2 / 94 (1990)
- 0 / 1 / 2 / 97 (2015)

1990 — 2015

Rural sanitation trends

Coverage (%)

- 48 / 4 / 5 / 43 (1990)
- 2 / 8 / 10 / 80 (2015)

1990 — 2015

■ Open defecation   ■ Other unimproved facilities   ■ Shared facilities   ■ Improved facilities

Source: WHO/UNICEF 2015.

remain unserved, the numbers are not especially high in a country of 11 million people. Nonetheless, achieving the Sustainable Development Goals requires targeted efforts to ensure universal access to piped water on premises and safely managed sanitation.

When considering poverty and WASH services, service-level disparities between the rich and the poor can be seen. Data by wealth quintile, which are based on the asset index used in the

Figure 3.4: Water and Sanitation Status, by Wealth Quintile, 2011–12

a. Water
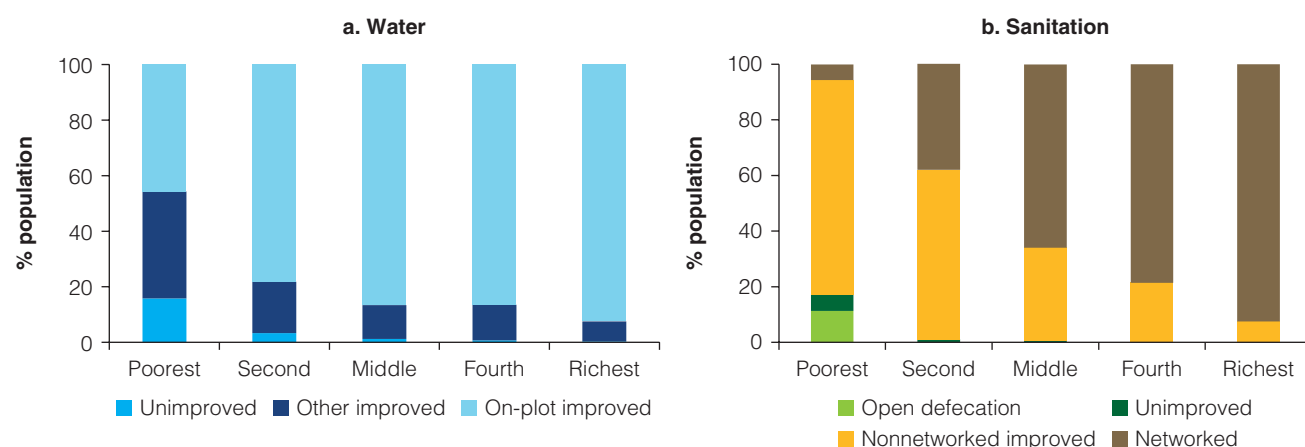
b. Sanitation

Source: MICS 2011–12.

Multiple Indicator Cluster Survey (MICS) 2011–12, are shown in figure 3.4 for improved water supply and sanitation. The data show significant bottom inequality, whereby the trend through the quintiles is not smooth but the poorest quintile is significantly worse off than are other quintiles. This disparity is not unusual in middle-income countries with a significantly large middle class.

Differences not just in headline access but also in levels of service by wealth quintile are observed. Taking sanitation first, the poorest quintile is the only one with any open defecation or use of unimproved infrastructure. Furthermore, the poorest quintile is very unlikely to have a sewer connection, although this latter point is unsurprising given that poorer households are concentrated in rural areas (as shown in figure 3.2).[3] Considering water supply, it is again only the poorest quintile that has significant numbers of people using unimproved water. Furthermore, less than 50 percent of the poorest quintile have on-plot improved water, whereas for other quintiles this is around 80 percent or higher. It is clear, then, that increasing service levels for the poorest quintile should be a priority for the sector.

Stark inequalities are observed when overlapping deprivations in sanitation and water are considered. Figure 3.5 shows the experience of different population segments in terms of the overlapping deprivations of both improved water and improved sanitation at the same time (World Bank 2016b).

Variation in other levels of service experienced is another key equity issue; unfortunately, little data exist that are comparable by governorate. One possible level of service to analyze by governorates is average volumes of water provided by SONEDE to domestic users. Volumes sold by SONEDE vary from 70 to 130 liters per capita per day depending on geographical areas. However, given that data on poverty rates exist for the governorate as a whole and not for SONEDE customers only, further analysis of SONEDE's customers by income range is necessary; this analysis was not performed as part of the study.

Data on volumes delivered show that people served by GDAs use far lower volumes of water on average, which reflects that not all of them have an at-home supply. On the basis of a recent strategic review for rural water in Tunisia, it can be estimated that around 850,000 people had domestic connections to a networked system run by a GDA in 2015.[4] Given that around 1.5 million people are served by GDAs overall, around 650,000 people are served by standposts managed by GDAs. Figure 3.6 shows the liters per capita per day consumed by users

Figure 3.5: Population Segments Using Improved Sanitation and Water in 2010
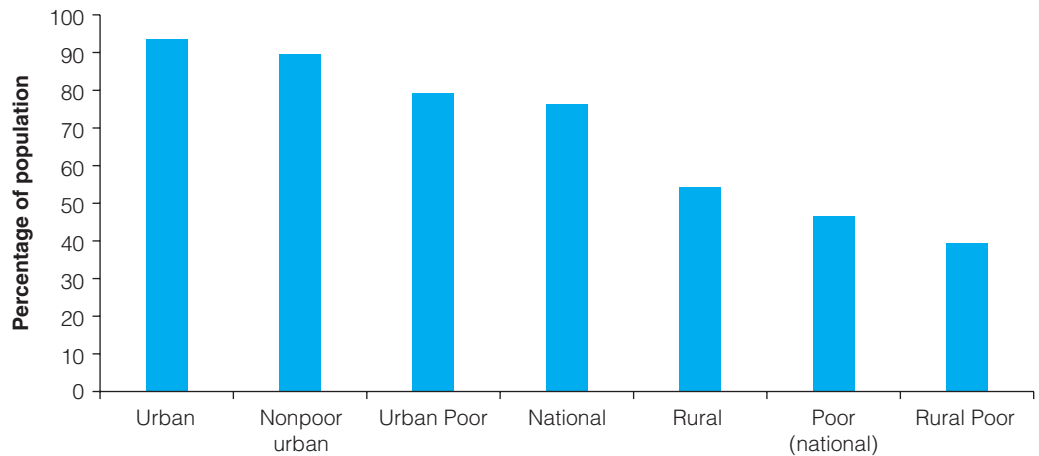
Source: World Bank 2016b, based on INS 2010.
Note: NSBCL 2010 data are used because the 2015 data were not available at the time the Phase 1 analysis was conducted. The figure would be expected to look fairly similar if newer data were used, given that the time period has not been very long.

Figure 3.6: Liters Per Capita Per Day Consumed by Users of SONEDE and GDAs, by Governorate, 2015
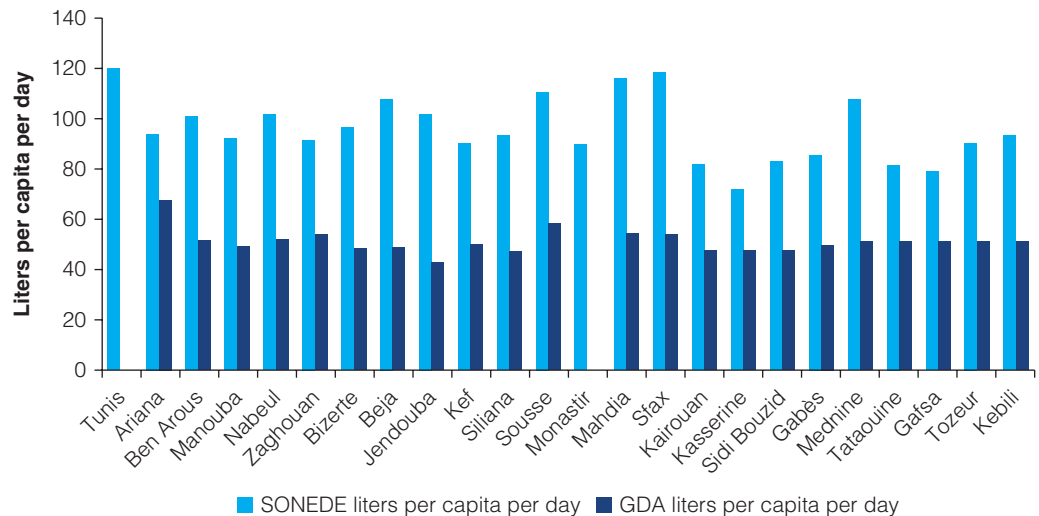
Source: World Bank 2017.
Note: Governorates without an orange bar have no GDAs providing services. People are considered covered by GDAs only if they live within 500 meters of a standpost. Some people continue to walk further than 500 meters to use GDA water, meaning that the GDA figures could be overestimates given that the denominator underlying the calculations for the chart could be smaller than reality. Some households may use standposts for domestic purposes and may use bottled water or other sources for drinking. GDA = Groupements de Développement Agricole.

of SONEDE and GDAs, by governorate.[5] It is unsurprising that volumes for GDA users are lower: People who use standposts are most likely to consume lower volumes as a result of having to walk back and forth. These volume figures comprise use for all purposes, whereas the aforementioned household survey data and data from the MICS consider only the primary source used for drinking.

Figure 3.7: Primary Drinking Water Source, by Region, 2012
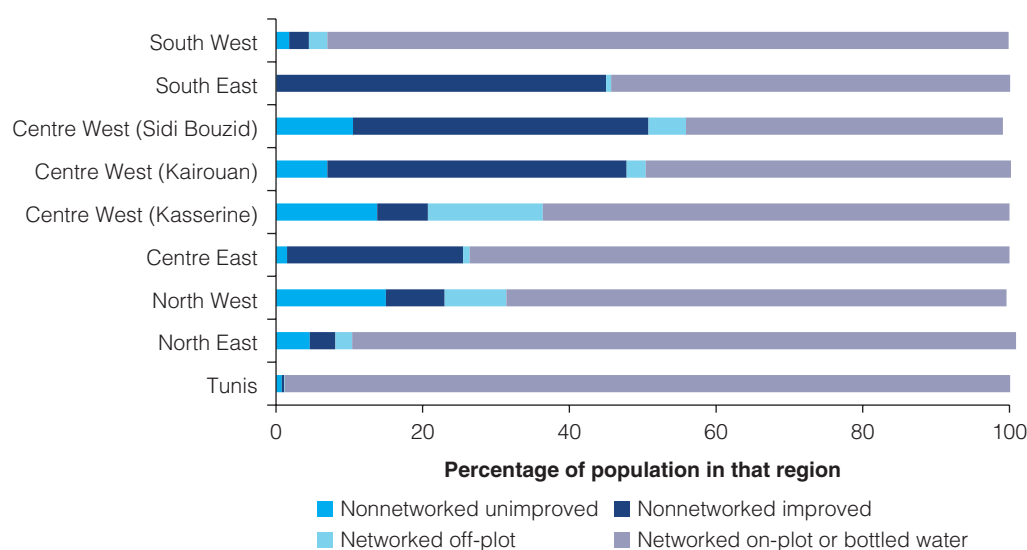
Source: MDICI, INS, and UNICEF 2013.

It is likely that some GDA users and some of those not formally served are not consuming sufficient levels of water to ensure hygiene. The World Health Organization (WHO) considers basic access to be 20 liters per capita per day (at which level hygiene may be compromised) and intermediate access to be 50 liters per capita per day (which hygiene should not be compromised), and optimal access to be 100 liters per capita per day (WHO 2017). Consumption in all governorates appears to be higher than the basic level on average, and the GDA mean is around 50 liters per capita per day, which is the intermediate level. However, given that this is the mean, some proportion of households are likely to use significantly less than 50 liters per capita per day, thus likely to be compromising hygiene in some way.

Another proxy for level of service is to consider service type by geographical area. Some regions clearly depend more heavily on nonnetworked improved sources. Given that the MICS questionnaire only asks about primary drinking water sources, we do not know about other options available to these households for other domestic uses beyond drinking. Figure 3.7 shows primary drinking water source by region. It builds on figure 2.2 by showing in more detail how the Centre West and North West regions have the greatest deficiencies in access to water.[6] The South East and Centre West regions have the largest proportions of people using nonnetworked improved water services, which in these cases are predominantly local rainwater harvesting systems such as a majel or fetsquia.[7]

Open defecation and unimproved sanitation are concentrated in the three governorates in the Centre West region (see figure 3.8). These are also the regions with the lowest access to networked sanitation through piped sewerage and fairly high use of pit latrines.[8] Those in the South West and South East regions most commonly use septic tanks.

Good quality information on water service levels is not available by type of service providers and by governorate. Even at the aggregate level, limited robust data is available. The level of service provided by SONEDE and GDAs varies across the country, which occurs for various reasons (for example, hydrogeology, cost of service delivery, and population density).

Figure 3.8: Sanitation Technology, by Region, 2012
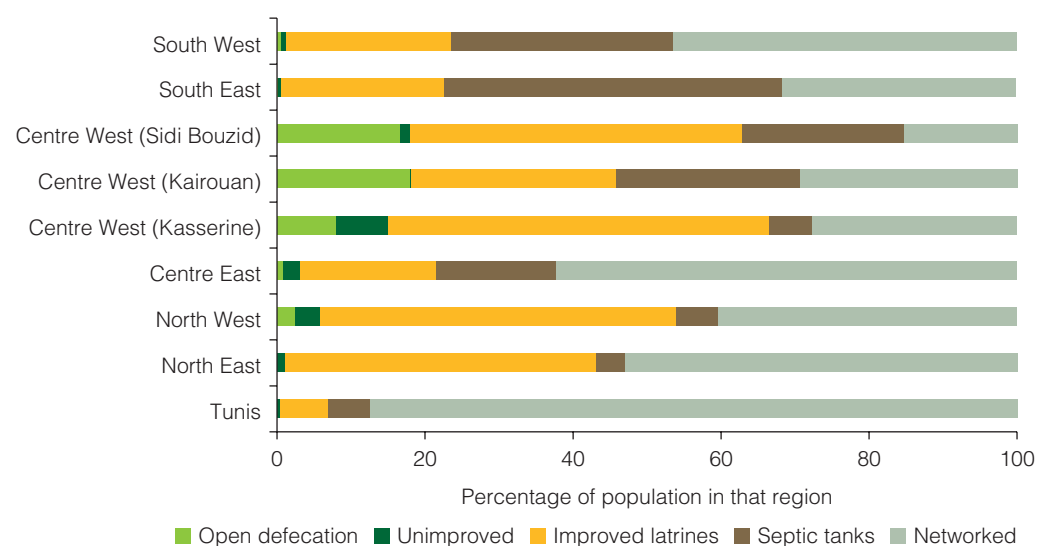
Source: MDICI, INS, and UNICEF 2013.

Table 3.1 summarizes service characteristics of the main water service providers. The following are key points to note.

- SONEDE tariffs are fixed across networks, whereas GDA tariffs vary depending on the system. A household of four people using 40 m^3 per trimester (that is, around 110 liters per capita per day) would likely pay less if bought from a SONEDE connection than from a GDA.[9] In other words, rural households are likely to pay more per liter at the WHO optimal level of consumption.[10]

- Water quality does not appear to be a serious issue for SONEDE customers, but no data are systematic collected for GDAs or as part of regulation of the private sector. There is similarly no robust data on service continuity.

The lack of robust data on service levels prohibits targeting investments to improve services. The key providers tend to manage services either in aggregate or at the individual system level rather than at a level in between. This hinders improving the allocative efficiency of public funds through targeting problem areas. Improving the availability of information on service levels, for example, by benchmarking at the governorate level, should be a priority in the Sustainable Development Goal era.

GDAs are the formal service providers with the highest proportion of their customers who are poor (27 percent). However, SONEDE in urban areas has the largest number of poor customers in absolute terms (see figure 3.9). Those using self-supply are most likely to be poor (59 percent). These estimates were made using data provided by SONEDE and GDAs concerning their users per governorate, and the levels of poverty in each governorate split by urban and rural.[11]

However, private spending on water supply and sanitation services represents a relatively small share of total household spending. The Phase 1 report estimated that spending on water services accounts for 0.54 percent of household spending overall, ranging from 1.5 percent for households in the poorest quintile to 0.3 percent for households in the richest quintile (World Bank 2016b) on the basis of World Bank analysis using data from NSBCL (2010). The report also estimated that sanitation services accounted for 0.26 percent of households' budget overall, ranging from 0.43 percent for the poorest quintile to 0.23 percent for the richest

Table 3.1: Service Characteristics of Providers

	Estimated Number of Poor People Served	Tariffs	Level of Service and Challenges
SONEDE (Urban)	760,000	SONEDE tariffs are the same nationwide, whether rural or urban. They are based on an increasing block tariff structure whereby (after a recent price rise in 2016) the first block costs 0.200 TD/m^3 for up to 220 liters per day.[a] There is also a fixed fee depending on the diameter of the pipe.	Good-quality service with reliable continuity, although this has been worsening in recent years. Water quantity averages around 100 liters per capita per day. On water quality, data from the SONEDE statistical report shows that in 2015, on average, 2.2 percent of samples nationally failed bacteriological water quality tests, although the figure is around 10 percent for Jendouba, Zaghouan and Tataouine.[b]
SONEDE (Rural)	370,000		
GDAs (Rural)	410,000	Tariffs per square meter vary widely from one GDA system to another, even within the same governorate. They range from a minimum of 0.200 TD/m^3 to a maximum of 1.500 TD/m^3. Governorate-level averages range from 0.500 TD/m^3 in Tataouine to 0.796 TD/m^3 in Béja.	Quantities used per capita are generally lower than for SONEDE customers. Because about one third of GDAs obtain their bulk supply from SONEDE, they may be assumed to deliver a similar level of water quality depending on the integrity of their system. The other two thirds obtain their supply from boreholes, and no quality data are available. There are no robust data on service continuity, although it is known to be more of an issue than for SONEDE customers.
Self-Supply (Rural)	160,000	Tariffs vary widely by service type. This category covers a multitude of service types. If people use someone else's cistern, they might pay 5 TD/m^3 or 15–25 TD/m^3 for a tanker truck. If they have their own private source (for example, well or Majel), then the regular tariff is zero (despite a significant capital investment at installation).	Service level depends on the system used; for example, one may have to walk to a handpump or to a neighbor's cistern and therefore not be able to carry large volumes back. Water tanker trucks may arrive intermittently. However, from all these sources, the water is of unregulated quality.

a. The first social block in the increasing block tariff is up to 20 m^3 per trimester (around 220 liters per day), with the second block at 0.325 TD/m^3 being for between 21 and 40 m^3 per trimester. The latter is about 450 liters per day, which should be enough to meet World Health Organization optimal access for the average household size. Other blocks increase further; see present tariffs at http://www.sonede.com.tn/index.php?id=111. The very limited number of SONEDE-managed standpipes are all chargeable at the social tariff of 0.200 TD/m^3.
b. The World Health Organization recommends a threshold of 5 percent.
Note: GDA = Groupements de Développement Agricole; SONEDE = Société Nationale d'Exploitation et de Distribution des Eaux.

quintile. Poorest households spend less overall on sanitation services because they discharge less wastewater. This contrasts with the high percentage of household income spent on energy services, which was estimated at 6 percent (Cuesta, El-Lahga, and Lara Ibarra 2015).

Poor people's total household expenditure is also lower. The Phase 2 analysis shows that the poorer or more rural the governorate, the less the private expenditure on water (see figure 3.10).[12] In this analysis, private expenditure includes expenditure by households on tariffs or self-supply. In this figure, panel a shows private water expenditure against rurality, and panel b shows private water expenditure against poverty.

Figure 3.9: Numbers and Percentage of Poor People Served by Different Water Providers, 2015
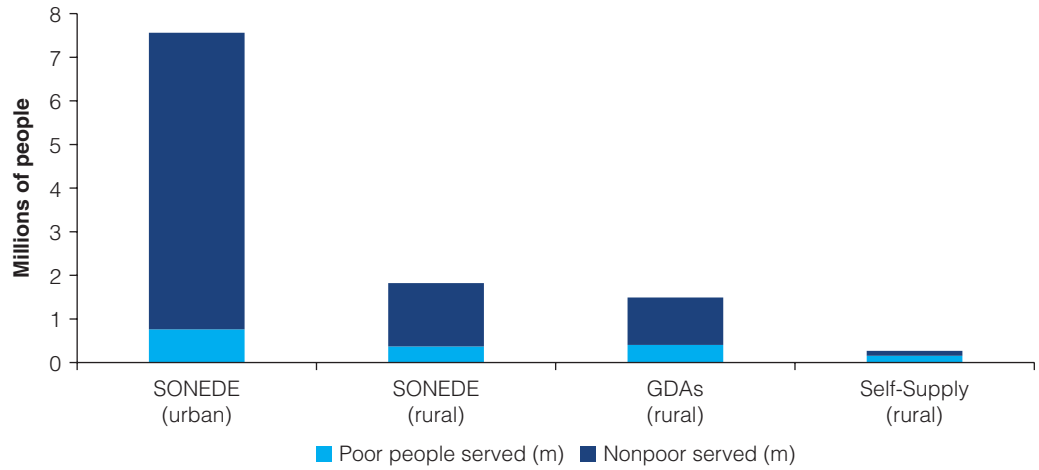
Source: World Bank 2017.
Note: GDA = Groupements de Développement; SONEDE = Société Nationale d'Exploitation et de Distribution des Eaux.

Figure 3.10: Private Water Expenditure Per Person Per Year, by Governorate, 2015
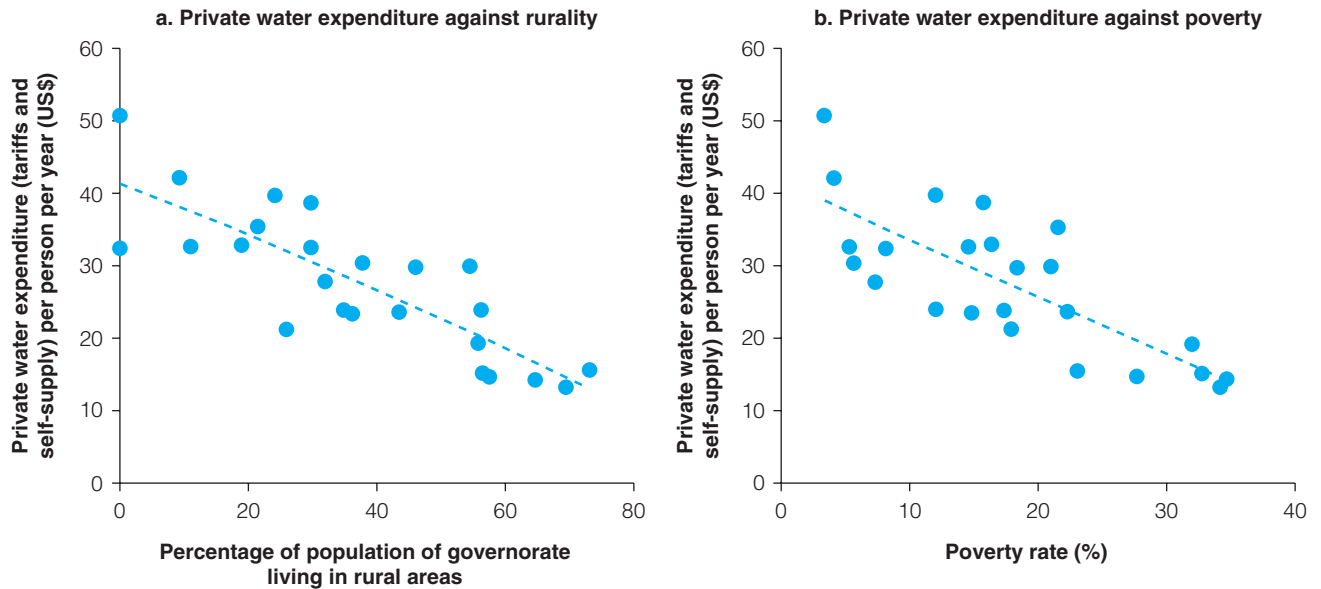
Sources: INS 2016; World Bank 2017.

It is difficult to know the per-liter prices faced by the poor as opposed to the rich, as private water expenditure is a function of the price and the volume consumed. Per-liter prices for those who are served by SONEDE do not vary, and those served by GDAs do not vary much (see table 3.1.). However, prices from informal sources vary hugely per liter, with tanker trucks being very expensive and handpump water being "free," as shown in figure 3.11.

Figure 3.11: Variations in Volumetric Water Tariffs Charged to Domestic Consumers, 2017
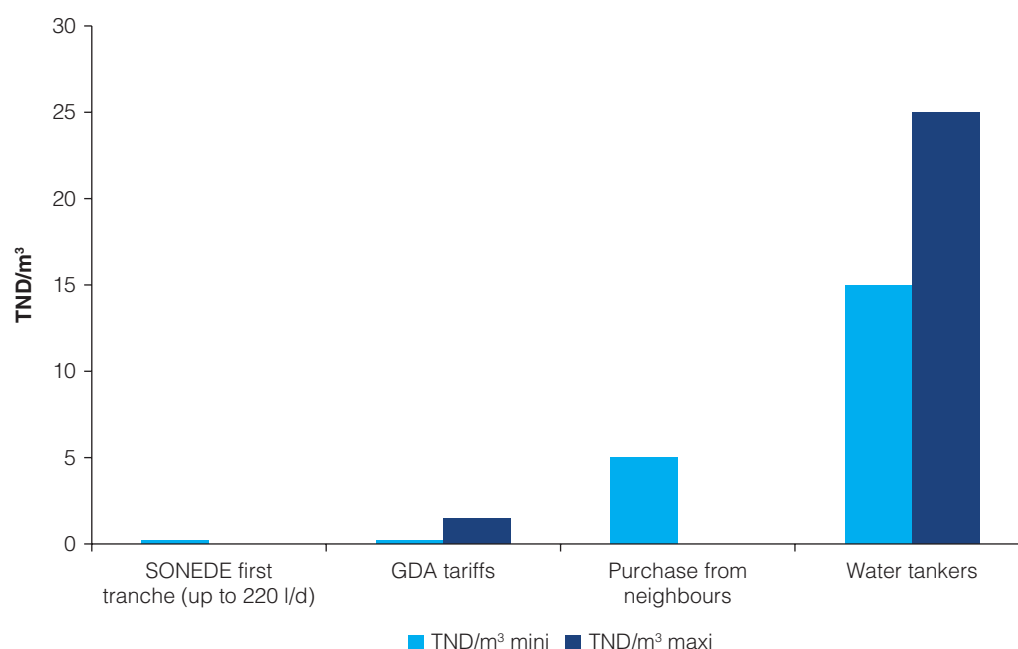
Source: Based on SONEDE tariffs (http://www.sonede.com.tn/index.php?id=111) and author's estimates.

Volume consumed is likely to vary depending on the price. Overall findings are consistent with expectations, because rurality is associated with poverty, and rurality is associated with lower service levels and therefore lower consumption in terms of liters per capita per day (see figure 3.6). Richer people also spend more money on bottled water.

Because ability to pay is unlikely to be the limiting factor, policies should focus on increasing service levels and consumption to increase benefits to households. It is likely that poor households consume less water per capita, but it is unclear whether this is because they face an ability-to-pay limit or whether the services available to them prevent higher consumption levels (as a result of the need to haul water from off-plot). The fact that the very poorest spend only 1.5 percent of household expenditure on water suggests that ability to pay is not the limiting factor. Therefore, the priority should be on increasing service levels to increase consumption and thereby the benefits that poor people accrue from using the service.

Less information on service levels is available for sanitation. ONAS data collection systems are less advanced than for SONEDE, and only 61 percent of the population is connected to an ONAS-managed sewer. Therefore, a large proportion of people (especially the poor, see figure 3.4) are using nonnetworked systems about which very little is known, for example on the fecal sludge management services they use and how much they pay for those. It is not possible to produce a graph similar to figure 3.9 for sanitation, but it is obvious from the MICS data in figure 3.4 that rural sanitation represents a significant challenge for Tunisia. Nearly 1 million Tunisians use 900,000 unimproved sanitation facilities mostly in rural areas.

What Are the Effects of Inadequate WASH Services on Poor People?

WASH services have various benefits that ultimately affect poverty, economic opportunities, and sustainable growth, as shown in Figure 1. Child malnutrition has long-run welfare

consequences in terms of impaired cognitive ability and reduced school and work performance—it has long been known that the determinants of nutrition are multisectoral; therefore, the solution to malnutrition requires multisectoral approaches (UNICEF 1990).

Strong synergies among multiple determinants need to emerge before real progress in nutritional status takes place, especially for those critical first 1,000 days in the life of a child. In other words, concrete improvements in malnutrition are typically the result of integrated policies that include nutrition interventions—such as fortifying foods, promoting breastfeeding, and treating malnourished children with therapeutic foods—and interventions from other sectors, such as establishing childcare programs for working mothers, strengthening safety nets, and developing WASH interventions (World Bank 2016b). In Tunisia, only limited data are available on the effects of improving access to WASH services, although it is possible to consider progress on some key outcomes related to undernutrition and diarrhea.

Tunisia has made significant progress on undernutrition over the past 30 years. Moderate to severe stunting among children between the ages of 0 and 3 years halved from 1988 to 2012. However, progress has fluctuated—stunting recently increased, probably reflecting higher international food prices (World Bank 2016b). In addition, socioeconomic differences prevail: Stunting levels of children in the poorest quintile are double those in the richest. Thus, Tunisia must still do more to eradicate child malnutrition. Considering health outcomes, data from the MICS 2011–12 show that 7 percent of children younger than 5 years of age in Tunisia had experienced diarrhea in the 3 weeks preceding the survey. These data are shown in figure 3.12. It can be seen that the poorest regions (for example, the larger governorates of the Centre West region) are again those that score among the worst on these indicators.

The Phase 1 report found the stunting levels of children in the poorest quintile (of wealth) was double those of the richest quintile, with approximately 16 percent of children in the poorest quintile being stunted as opposed to less than 8 percent for the richest quintile.

The analysis conducted for the Phase 1 of this study suggests that WASH interventions in Tunisia contribute to improved child nutrition (World Bank 2016b). On the basis of UNICEF's framework of analysis for synergies in child malnutrition (see figure 3.13), a method was developed to identify correlations with and synergies among these underlying causes of malnutrition using descriptive and regression analysis (Skoufias 2015), which is summarized in box 3.2. Phase 1 of this study applied such a method to help understand malnutrition in Tunisia, using MICS 2011–12 data. This method does not allow drawing causal estimates; it allows associations only.

Findings suggest positive interactions (synergies) between adequate WASH services, health services, and individual care practices in Tunisia. However, synergies differ across samples of poor, nonpoor, urban, and rural households. In rural areas, access to WASH and health services are correlated with significant improvements in child nutrition. For nonpoor households, adequate WASH and food intake have positive and significant effects. However, for the most vulnerable individuals (the poorest quintile of rural households), positive and meaningful improvements in nutrition are observed only when adequate access to food, health, WASH, and care are all present.

Results from this analysis should be interpreted with caution. First, the positive links between WASH and other interventions were not found to be systematic or always strong. Second, although models estimating these relations reflect the latest advances in statistical and conceptual frameworks, they have limited predictive capacity. One reason for this limited capacity is that they fail to capture other possible vectors of nutritional status—for example, biological factors (which are generally not observed) and exposure to shocks that affect nutrition-related outcomes (which are generally not reported in the data sources).

Figure 3.12: Under-Five Stunting and Diarrhea Prevalence in Tunisia, 2012

a. Under-five stunting (height-for-age)

Percentage of children younger than 5 years of age

b. Under-five diarrhea prevalence

Percentage of children younger than 5 years of age
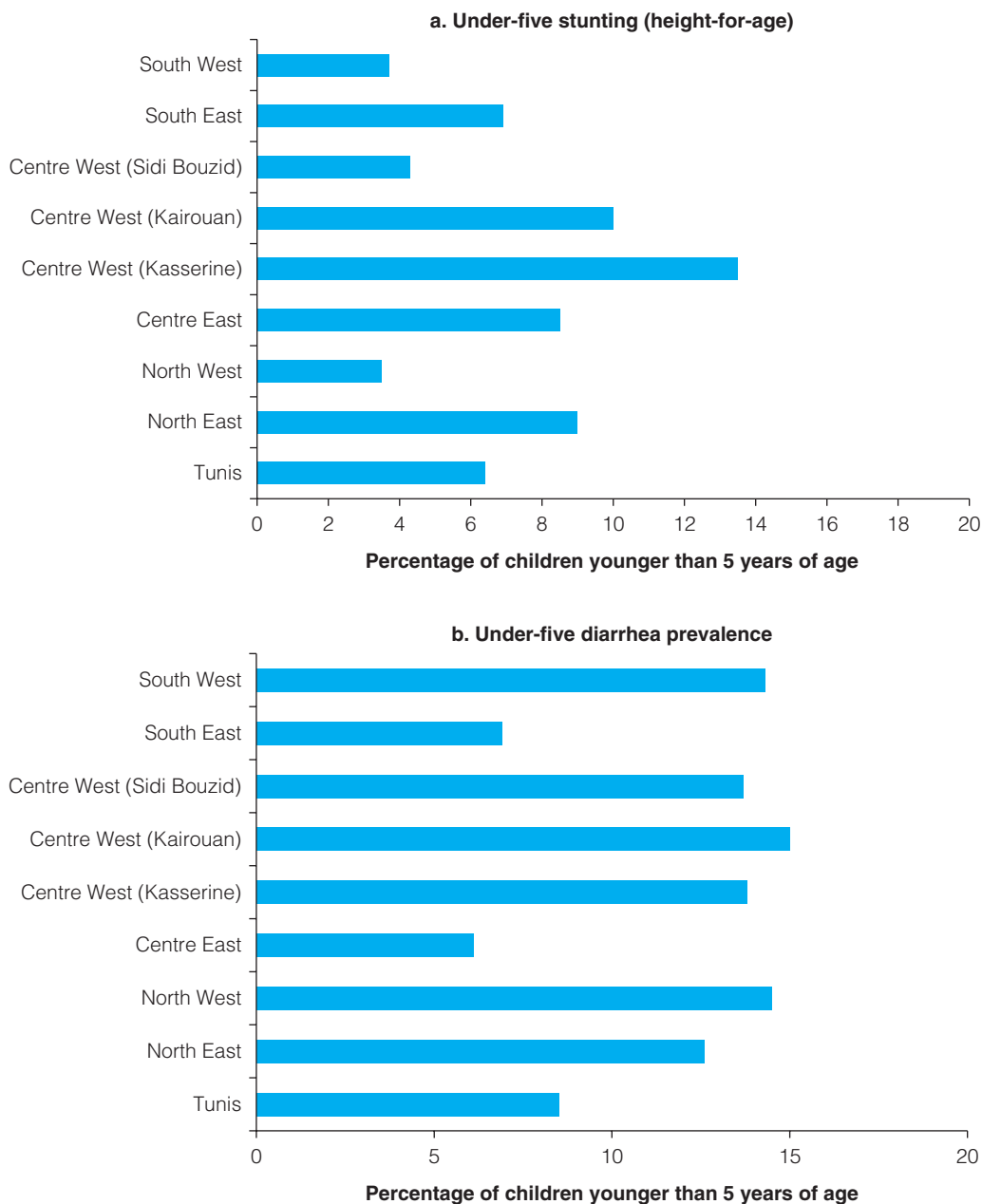
Source: MDICI, INS, and UNICEF 2013.

Figure 3.13: UNICEF Conceptual Framework for Synergies in Child Malnutrition
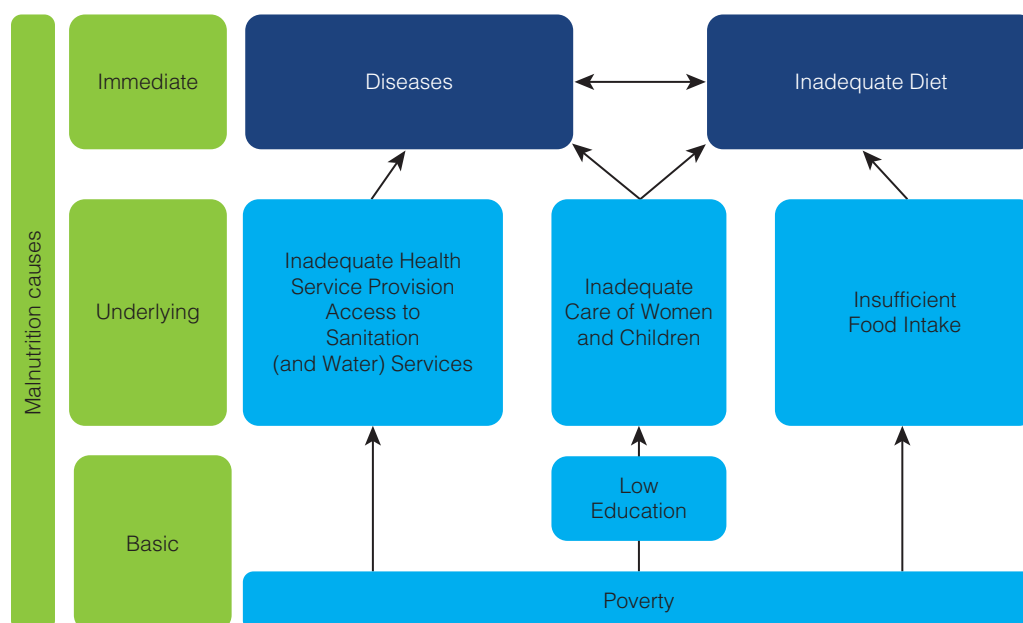
Source: Adapted from UNICEF 1990.

Box 3.2: Method for Estimating Effects of Interventions on the Nutritional Status of Children

Skoufias (2015) developed a method for estimating the individual effects and combined interactions of interventions on the nutritional status of children, which was applied in the Phase 1 of this study. The approach is to estimate both the individual effects of several adequacies (that is, adequate access rates of basic services) and the effects of their combined interactions, on the nutritional status of children. This status is defined by height-for-age z-scores for children ages 0–2 years and 0–5 years. An econometric specification is estimated which correlates height-for-age z-scores with the four adequacy measures (adequate care, adequate food, adequate WASH, and adequate environmental health). It is important to note that the interactions between them are also estimated, and an assessment is carried out to assess which of those interactions is significant in reducing malnutrition among young children. These interactions are interpreted as additional gains or losses to child nutritional status derived from the simultaneous adequate access to basic services.

The model does not allow for causal inference on the effects of the various adequacy components on nutrition. However, it enables exploration of the correlation between the various adequacy measures and nutritional outcomes as measured by height-for-age z-scores. Another caveat is that the estimation of the model is affected by the few observations of some of the synergies considered. Likewise, to the extent that adequacies are more strictly defined, the observations satisfying each adequacy may be very few, thus compromising the quality and precision of the econometric estimation.

Overall, the case for investing in WASH services is strong because of strong associations between poor WASH outcomes and poor health and nutrition outcomes in Tunisia. Alignment of interventions may help target complex, multidimensional problems such as undernutrition, and interventions should be targeted to the specific needs of different types of households, localities, and vulnerabilities. Significant poverty pockets in Tunisia overlap with deficits in WASH services. Even though access is almost universal from a Millenium Development Goal perspective, significant disparities exist in service levels. These disparities have a tangible effect on the health and nutrition-related problems that remain (in addition to other effects on people's time and productivity). Data gaps on service levels are significant; therefore, priority should be given to improve information by governorate on water quality, water quantity consumed and prices paid.

Notes

1. As explained in box 3.2, INS is currently carrying out a review that may lead to changes in poverty estimates for some governorates. However, these are likely to be small and to not affect the broad thrust of the analyses and correlations using these data. This should be considered where 2015 poverty data are used.
2. The mean proportion of population connected to an ONAS-managed sewer nationally is 61 percent, with significant variation between governorates.
3. The data in MICS on sewer connections aligns with ONAS estimates based on their customer database. MICS puts sewerage access at 56 percent in 2011–12, and ONAS puts sewerage coverage at 61 percent 3 years later in 2014.
4. DGREE data suggest that the total number of domestic connections managed by GDAs in 2015 was 169,972. The figure of circa 850,000 is arrived at by assuming that five people rely on each connection.
5. These were estimated using aggregate volumes delivered by each service provider in each governorate (on the basis of metering or pumping hours where borehole-supplied systems are used), number of user households in each governorate, and average household size.
6. MICS 2011–12 divides the Centre West region into its three constituent governorates given that it is one of the poorest regions and so it was oversampled by INS and UNICEF, because they wanted more detail for those areas.
7. A *majel* or *Fetsquia* is an indigenous rainwater harvesting system that collects rainwater from the roof of the house and channels it to an underground clay cistern.
8. On the basis of ONAS data, the proportion of population connected to a sewer nationally is 61 percent, with significant variation between governorates.
9. For example, $((20 \text{ m}^3 \times 0.200 \text{ TD}) + (20 \text{ m}^3 \times 0.325 \text{ TD}) + 5,050 \text{ fee})/40 \text{ m}^3 = 0.389 \text{ TD/m}^3$ on average.
10. Data are available on the "average sale price per m^3" per provider by urban, rural, and GDAs. The sale price per square meter varies because some consumers use more water than do others, and it is an increasing block tariff. We have not used these data because it is potentially misleading and because it includes industrial users and tourism users, so the figure for urban is inflated by these.
11. An assumption inherent in the estimations is that poverty levels among those served by SONEDE/GDAs are likely to be the same as poverty levels in the governorate as a whole. This assumption is unlikely to hold in practice (it is probable that noncovered households are more likely to be poor). However, in the absence of detailed poverty data for users by service providers, the level of bias is likely to be small at the national level.
12. The methods for making these estimates are explained in chapter 4.

References

Cuesta Leiva, Jose Antonio, Abdelrahmen El-Lahga, and Gabriel Lara Ibarra. 2015. "The Socioeconomic Impacts of Energy Reform in Tunisia: A Simulation Approach." Policy Research Working Paper 7312, World Bank, Washington, DC.

INS (Institut National de la Statistique). 2010. "Enquête nationale sur le budget, la consommation et le niveau de vie des ménages." Tunis, Tunisia.

———. 2016. *Flash: Consommation et niveau de vie*. No. 1, December 2016. Tunis, Tunisia.

INS, African Development Bank, and World Bank. 2012. "Mesure de la pauvreté, des inégalités et de la polarisation en Tunisie 2000–2010." Tunis, Tunisia.

MDICI, INS (Institut National de la Statistique), and UNICEF (United Nations Children's Fund). 2013. "Suivi de la situation des enfants et des femmes en Tunisie- Enquête par grappes à indicateurs multiples 2011-2012, Rapport Final." Tunis: MDICI.

Skoufias, Emmanuel. 2015. "Synergies in Child Nutrition: Interactions of Food Security, Health and Environment, and Child Care." Washington, DC, World Bank.

UNICEF (United Nations Children's Fund). 1990. "Strategy for Improved Nutrition of Children and Women in Developing Countries." UNICEF, New York.

WHO/UNICEF (World Health Organization/United Nations Children's Fund). 2015. "Progress on Drinking Water and Sanitation: 2015 Update and MDG Assessment. Joint Monitoring Programme." Geneva: World Health Organization, and New York: UNICEF.

World Bank. 2016a. "Tunisia Poverty Assessment 2015." World Bank, Washington, DC.

———. 2016b. "Tunisia WASH Poverty Diagnostic—Phase 1 Report." World Bank, Washington, DC.

———. 2017. "Republic of Tunisia, WASH and Poverty Diagnostic. Phase 2 Report: WASH Accounts." World Bank, Washington, DC.

Chapter 4
How Is Financing Allocated in Tunisia's Water Supply, Sanitation, and Hygiene Sector?

To better explain observed trends and disparities in water supply and sanitation coverage between governorates, we conducted an assessment of financial flows to the water supply, sanitation, and hygiene (WASH) sector as part of Phase 3 of this study. A key objective for this analysis was to assess whether public expenditures for WASH are adequately allocated across subsectors (water supply, sanitation, and hygiene in urban and rural areas) and governorates—that is, to provide elements to evaluate whether funding to the sector is directed to areas that need it most.

Application of the World Health Organization's TrackFin Methodology in Tunisia

Our analysis is based on the TrackFin methodology to improve the quality of financial information in the WASH sector.[1] Developed by the World Health Organization (WHO) and United Nations Water (UN-Water) to strengthen the quality of sector financial information, this methodology provides a transparent framework for disaggregating expenses by subsectors, sources of finance and service providers, among others. The TrackFin methodology has established standard classifications to facilitate comparison across countries. It is important to note that the analysis supported by the methodology includes not only public finance allocated to WASH but also contributions from households, service providers, donors, and others. Additional information on the methodology is provided in box 4.1.

As table 4.1 shows, financial data were generally available from a number of sources, allowing us to successfully apply the TrackFin methodology in Tunisia. A key part of the exercise, therefore, consisted of mapping existing financial flows in the sector and identifying available data sources to quantify those flows.

The largest part of the financial data that is necessary for producing WASH Accounts is available and was provided by reliable sources. It was estimated that data from reliable sources comprise approximately 85 percent of the total financial flow amounts. Additional estimates were based on the results of the Institut National de la Statistique (INS) censuses, as well as surveys and statistics from the Société Nationale d'Exploitation et de Distribution des Eaux (SONEDE) and the Office National d'Assainissement (ONAS). As such, the WASH Accounts' findings are considered to be reliable and provide a credible overview of financial flows to the WASH sector in Tunisia. The WASH Accounts report formulated specific recommendations to improve the quality of the data for the remaining 15 percent of the financial flows that had to be estimated for this exercise. Implementing

KEY FINDINGS

Total water supply, sanitation, and hygiene expenditures (in nominal terms) have increased by around 14 percent between 2013 and 2015, amounting to approximately 1.5 percent of GDP.

Expenditure allocation between urban and rural areas and across subsectors has remained relatively constant between 2013 and 2015.

Water supply and sanitation expenditures are funded mainly by private sources of finance such as tariffs and households' investments in self-supply.

Although, in general, public expenditures for water are sufficiently allocated to poor governorates, poverty is not a determining factor of public expenditures for sanitation.

Box 4.1: The TrackFin Methodology: Tracking Financial Flows in the Water Supply, Sanitation, and Hygiene Sector

Starting in 2012, the World Health Organization (WHO) and United Nations Water (UN-Water) developed the TrackFin methodology to create a common method to track financing in the water supply, sanitation, and hygiene (WASH) sector encompassing all economic entities (WHO 2016). The methodology overall aimed to inform evidence-based policy and decision making by providing an in-depth understanding of the amount and allocation of financial resources to the WASH sector, including those from public and private funding sources and from repayable financing sources. Private funding sources include all charges paid by customers of the service, including those through tariffs or direct investments in self-supply. Public funding sources typically include domestic government transfers such as subsidies and international transfers such as official development assistance and voluntary contributions from foundations.

The TrackFin methodology aims to provide a comprehensive picture of recent financial flows to the sector (usually using the 2–3 most recent years of available data) on the basis of actual expenditures in the sector. On the basis of classifications specified in the TrackFin methodology, expenditures are classified by type (including operations and maintenance, rehabilitation, capital investments, and financial costs), by subsector (for example, distinguishing between urban and rural water supply and sanitation), by sources of funds, or by geographical areas. This disaggregation allows us to produce a series of tables—referred to as *WASH Accounts*—as well as key indicators, such as the total amount of WASH sector funding and the percentage of public sector expenditures dedicated to WASH. The methodology is largely based on the one that has been used in the health sector for the past 40 years to produce the National Health Accounts. Common classifications and guidance on how to obtain, treat, and estimate the data (where necessary) enhance comparability of WASH Accounts prepared in different countries and over time.

WASH Accounts prepared with the TrackFin methodology can help answer the following key questions:

- What is the total expenditure in the sector?
- How are funds distributed between the different WASH services and types of costs?
- Who pays for WASH services?
- Which entities are the main channels of funding, and what is their respective share of total spending?

Additional country-specific questions can be answered depending on what data are available and what interests key sector stakeholders. WASH Accounts can improve funding transparency, enhance monitoring of funding allocation and implementation of funding strategies, and increase government accountability to national and international commitments to achieve sector targets.

Table 4.1: Availability and Source of Financial Data for the Production of Water Supply, Sanitation, and Hygiene Accounts in Tunisia

Sources of Funding	Availability of Data	Comments
Tariffs of the services provided (networked service providers)	Available	Data on tariffs were obtained from service providers and were generally available from the largest service providers (SONEDE and ONAS) and, to a lesser extent, from operators of the association type (GDAs).
Tariffs of the services provided (nonnetworked service providers)	Estimated	Estimates are based on data from INS and assumptions are made by the WASH accounts consultant, as explained in the WASH Accounts report.
Household expenditures on self-supply	Estimated	Estimates are based on the data from INS, and assumptions are made by the WASH accounts consultant.
National public transfers	Available	Data come from several sources (for example, relevant entities and portal of the Ministry of Finance's site).
International public transfers (public or multilateral donor grants)	Partially available	Data on international public transfers are available at the government level but are not sufficiently disaggregated per subsector (water/sanitation, urban/rural).
Voluntary contributions and transfers (nongovernmental organizations)	Unavailable	No data were obtained on nongovernmental organizations; however, they provide minimal funding to the sector in Tunisia.
Repayable financing (loans)	Available	Data come from several sources (for example, service providers and ministries).

Note: GDA = Groupements de Développement Agricole; INS = Institut National de la Statistique; ONAS = Office National d'Assainissement; SONEDE = Société Nationale d'Exploitation et de Distribution des Eaux; WASH = water supply, sanitation, and hygiene.

these recommendations would require modifying existing household surveys or the conduct of additional household surveys.

Although the TrackFin methodology allowed us to carry out a detailed assessment of WASH expenditures, it does not attempt to assess investment needs. It is thus not possible to compare current sector expenditures with the projected costs to achieve sector targets (including the Sustainable Developmental Goals) of providing adequate water supply and sanitation services in urban and rural areas or by governorates. Estimating investment needs, and how they could be covered from various funding and financing sources, as well as sector efficiencies, should be done through a separate analysis.

Throughout this book, we distinguish between different types of WASH expenditures. The most important difference is between *total WASH expenditures* and *public WASH expenditures*. Total WASH expenditures comprise all expenditures in the sector, whether made by public institutions, private household through self-supply investments, or private household expenditures through

tariffs. *Public WASH expenditures* include those made only through public institutions. Furthermore, we sometimes distinguish between subsectors (for example, public sanitation expenditures). Care is therefore needed in reading figure titles and axes to aid correct interpretation.

We also emphasize the need to identify who "holds the strings of the purse," which means making a distinction between sector financing units that have control over spending decisions and others that act mainly as a channel for financing. This distinction is important in Tunisia, where all public expenditures on WASH services are centrally decided, with local governments serving simply as channels for such financing.

WASH Expenditures Have Increased over the Past 3 Years

Between 2013 and 2015, total WASH expenditures (in nominal US dollar terms) increased by around 14 percent. Expenditures increased marginally as a proportion of GDP (from 1.3 percent to 1.5 percent) and as a proportion of public expenditures (from 4.1 percent to 5.6 percent). The increase in nominal terms in Tunisian dinar was more significant (17 percent), although it was approximately 12 percent in real terms when taking into account domestic inflation rates (5.7 percent in 2013, 4.8 percent in 2014, and 4.1 percent in 2015).

WASH expenditures are funded mostly by households that comprise users of the service, although this share has decreased over time. As shown in the WASH accounts report, in 2013, domestic users funded 68 percent of the total costs of the service through tariffs or households' direct investments. However, this share dropped to 59.6 percent in 2015 as a result of stagnation in tariffs and an increase in public investments. This trend is potentially worrying because tariffs are usually the most sustainable source of funding for the WASH sector.

Public expenditures are very centralized. All public expenditures in the sector are funded by national authorities, with no funding generated at the local level. Even though the regional agricultural development commissions act as a channel for central funding, they do not act as financing units according to the WASH Account classifications, which means that they do "hold the strings of the purse" for any funding allocation decisions to the sector.

Expenditures per capita for both water supply and sanitation are higher in urban than in rural areas. For water, this difference is explained by the higher levels of water consumption (as shown for SONEDE and Groupements de Développement Agricole (GDA) domestic users in figure 3.6), higher operations and maintenance costs for SONEDE, and higher expenditures on bottled water in urban areas than in rural areas. For sanitation, there are significantly lower levels of private and public expenditures in rural areas.

WASH services are managed mainly by network corporate providers: SONEDE for water and ONAS for sanitation. For water, expenses that network providers managed amounted to US$308 million in 2015, increasing from US$263 million in 2013—a growth of 17 percent in nominal terms. SONEDE, the main water service provider, managed 66 percent of the total expenditures for water, whereas the GDAs, which provide services on behalf of the Ministry of Agriculture, managed approximately 13 percent of total expenditures. SONEDE also managed 73 percent of investments in the sector. For sanitation, expenditures managed by ONAS—the only network corporate provider in the sector—account for 94 percent of total expenditures in the sector. This proportion remained almost constant, increasing by only 1 percent from US$158 million in 2013 to US$160 million in 2015.

Most financial resources for both water supply and sanitation are spent on operations and maintenance, followed by investments. In 2013, operations and maintenance for water (including staff costs, fuel, and any other expenses required to keep services running) accounted for 65 percent of total expenditures, whereas for sanitation it accounted for 52 percent.

Operations and maintenance excludes large capital maintenance costs (for example, system renewal and rehabilitation), for which only 5 percent of resources are allocated across water supply and sanitation. Although only 1 percent of total expenditures in water was allocated to capital maintenance in 2015, around 16 percent in sanitation was allocated for the same purpose—the latter is likely to be primarily for sewerage given that this expense relates to urban areas. Table 4.2 below summarizes key WASH Accounts indicators.

To simplify the data-collection exercise, the TrackFin methodology is centered on gathering actual expenditures as the minimum set of data to be comprehensively collected and reported, as opposed to attempting to compare budgeted versus actual expenditures to assess the efficiency of government expenditures or estimate absorption rates. Data on budgeted expenditures were not comprehensively collected to prepare the WASH Accounts for Tunisia. However, some information was collected for certain WASH actors. As reported in the WASH

Table 4.2: WASH Accounts Indicators, 2013–15

Variable	Year		
	2013	2014	2015
Total WASH expenditures (US$, millions)	589.2	658.6	671.1
As a percentage of GDP	1.3	1.4	1.5
As a percentage of total public expenditures[a]	3.6	4.1	4.9
Per capita (US$)	54.2	60.0	60.2
Total water expenditures per capita (US$)			
Urban	39.0	43.4	43.7
Rural	28.5	34.4	37.1
Total sanitation expenditures per capita (US$)			
Urban	22.5	23.3	22.0
Rural	0.9	1.2	1.0
Total WASH expenditures, by type of service provider (%)[b]			
Government agencies	2.6	2.5	2.8
Network corporate providers	71.8	70.9	70.0
Nonnetwork corporate providers	13.9	14.4	14.0
Nongovernmental organizations and community-based organizations	6.3	7.2	8.6
Self-provided users	5.4	5.0	4.5
Total WASH expenditures, by type of cost (%)			
Investment	22.2	26.2	30.7
Operations and maintenance	64.0	65.7	62.3
Large capital maintenance	5.0	5.0	4.8
Financial	2.9	3.1	2.1
Taxes	6.0	6.2	5.3

Source: World Bank 2017.
Note: All reported expenditures are in nominal terms—that is, they do not account for inflation between 2013 and 2015. Values were converted to US dollars using the average annual exchange rate between Tunisian dinars and US dollars as reported by the Central Bank of Tunisia. GDA = Groupements de Développement Agricole; ONAS = Office National d'Assainissement; SONEDE = Société Nationale d'Exploitation et de Distribution des Eaux; WASH = water supply, sanitation, and hygiene.
a. Total government expenditures in 2015 were approximately US$11 billion.
b. Network corporate providers include SONEDE and ONAS, whereas community-based organizations include GDAs. Nonnetwork corporate providers include private companies that sell bottled water or that provide pit-emptying services for sanitation.

Accounts report, the realization rate for SONEDE is low (50–60 percent of budgets are effectively realized), whereas this ratio of realization is much higher for ONAS (95 percent). For SONEDE, one of the potential reasons for such a low realization rate is that budget forecasts are overly optimistic and unrealistic, which means that they are challenging to achieve.

Increase in WASH Expenditures and Urban-Rural Disparities in Resource Allocation

Total WASH expenditures have increased from US$589 million in 2013 to US$671 million in 2015, amounting to around 1.5 percent of GDP. Public WASH expenditures account for around 1.6 percent of total public expenditures, as compared with 14 percent for health (World Bank 2016a).

The distribution between urban and rural areas and across subsectors has remained relatively constant for the period of analysis. Figure 4.1 shows the distribution of total WASH expenditures by type of service. The majority of funding has been allocated to urban water (48 percent), followed by urban sanitation (25 percent) and rural water (20 percent). The expenditures for rural sanitation are almost negligible because of the lack of defined roles and responsibilities for state actors and utilities in this subsector; also, limited data are available for household investments in self-supply (that is, sanitation facilities and associated services).[2]

Total WASH expenditures per capita (which comprise public and private expenditures), have increased slightly from US$51 in 2013 to US$57 in 2015. However, wide disparities between urban and rural areas and between governorates remain. For example, in 2015, total WASH expenditures per capita were around US$66 in urban areas and only US$38 in rural areas.[3] Figure 4.2 further shows a negative correlation (–0.79) between the level of rurality and total WASH expenditures per capita; areas in the Centre West and North West (also some of the poorest regions) have lower expenditures than do the largely urban regions. Although the costs for the provision of services in rural areas are likely to be higher—for example, SONEDE estimates that 1 cubic meter of water sold in rural areas costs around 1.6 times more to

Figure 4.1: Total Water, Sanitation, and Hygiene Expenditures, by Type of Service, 2013–15
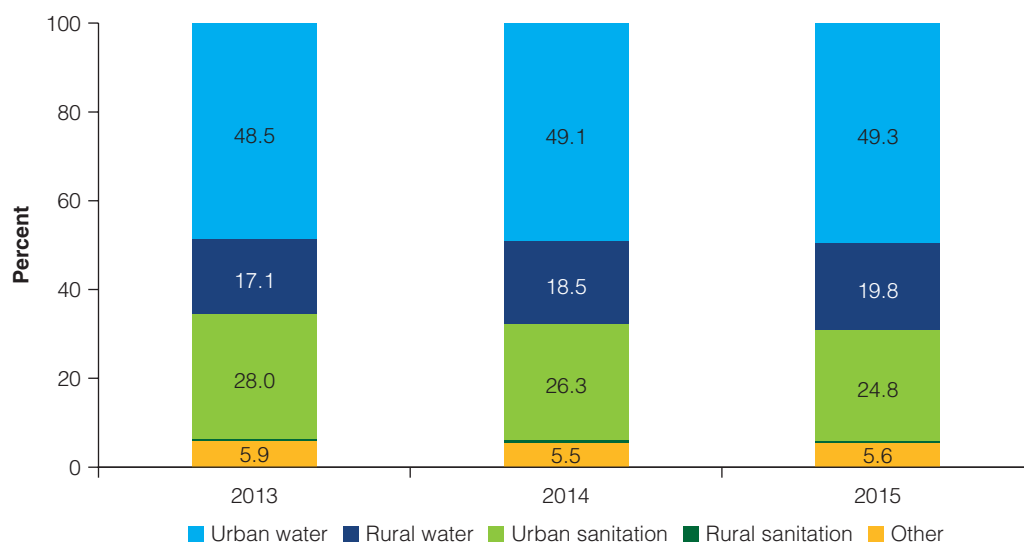
Source: World Bank 2017.

Figure 4.2: Correlations between Total WASH Expenditures Per Capita and Rurality Level, by Governorate
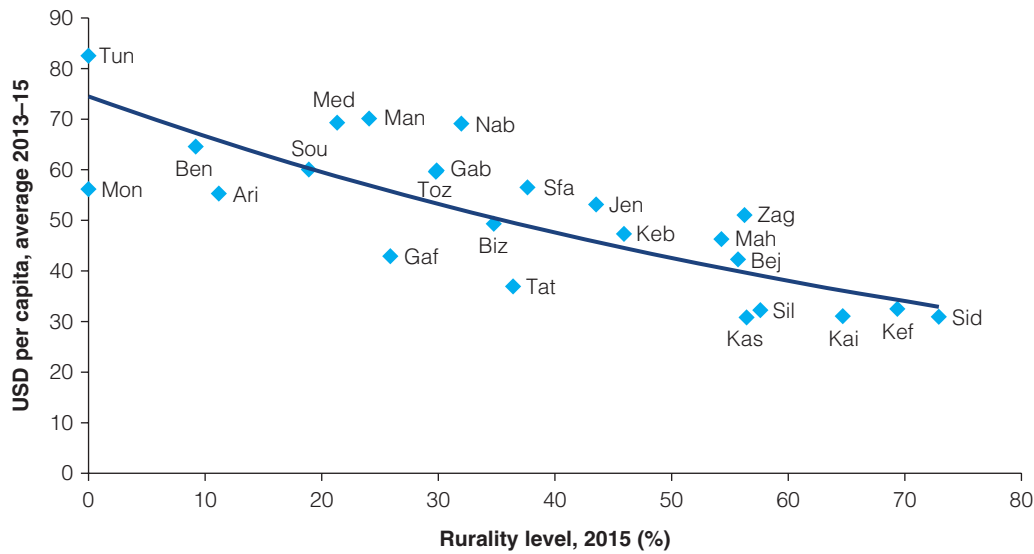
Source: World Bank 2017.

Figure 4.3: Total Water Expenditures Per Capita, by Governorate, 2013–15
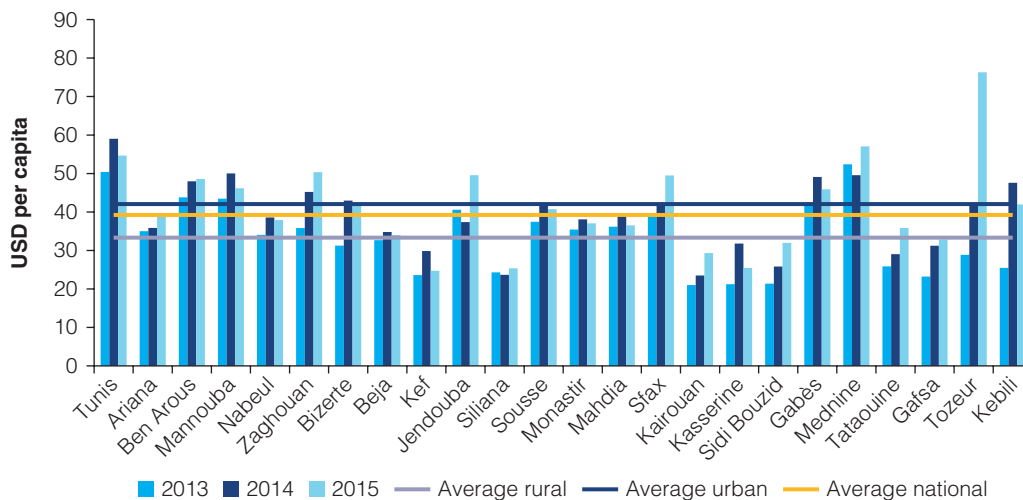
Source: World Bank 2017.

deliver than the same volume sold in urban areas. The lower expenditures are partly explained by lower water consumption, lower expenditures on bottled water, and lower operations and maintenance costs in rural areas in comparison with urban areas.

Inequality is even wider between governorates; total WASH expenditures in 2015 ranged from US$30 per capita in Le Kef (one of the most vulnerable areas) and US$109 in Tozeur. Figures 4.3 and 4.4 show disparities among governorates in total WASH expenditures per capita for water supply and sanitation. Total water expenditures per capita are slightly more equitable than are total sanitation expenditures (excluding Tozeur in 2015, for which the level of

Figure 4.4: Total Sanitation Expenditures Per Capita, by Governorate, 2013–15
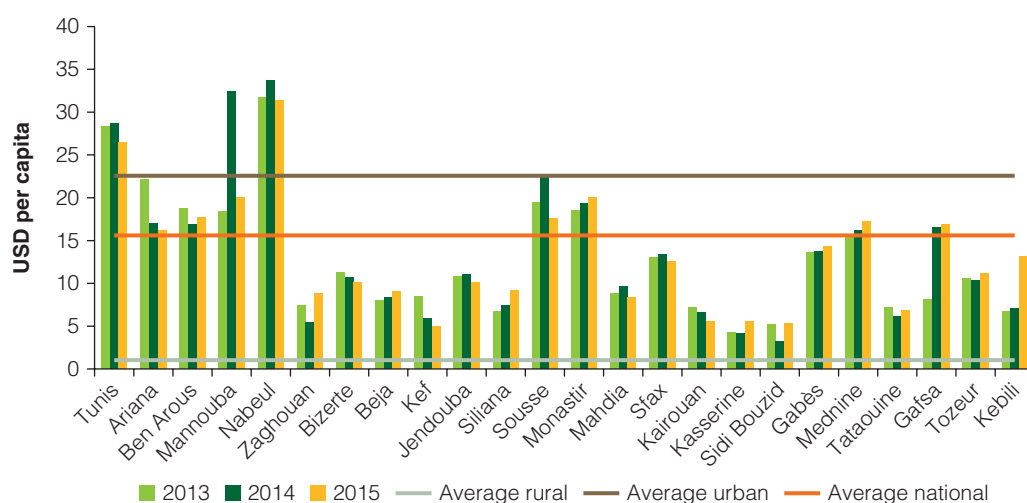
Source: World Bank 2017.

expenditures dramatically increased between 2013 and 2015 because of significant investments in desalination stations in this area). In 2015, although Nabeul's total expenditures per capita in sanitation was US$31, Le Kef spent only US$5 per capita in sanitation.

Public Finance for Water to Reduce Regional Disparities

The majority of WASH expenditures comes from private expenditures provided by households, including through tariffs and investments in self-supply (figures 4.5 and 4.6). On average for the years 2013–15, household finance (for example, tariffs and self-supply) accounted for 75 percent of total water expenditures in water and 57 percent of total sanitation expenditures. Private expenditures are high in predominantly urban governorates, such as Ariana, Ben Arous, Monastir, and Tunis.[4]

Public water expenditures are not clearly linked to the number of people who need access to formal water services. The colors of the governorates in map 4.1, panel a, represent the per-capita public water expenditures, whereas the size of the circles shows the number of people who are not formally served (that is, those who do not have access to a SONEDE or GDA supply). Areas such as Kairouan with high numbers of people who are unserved by formal water providers are not receiving significantly higher levels of public resources per capita (see annex 4A for a map with names of governorates indicated). Overall, the coefficient of 0.19 between public expenditures and the number of people who are unserved is a weak positive correlation. Ideally, this correlation would be strongly positive.

Public sanitation expenditures are similarly not clearly linked to the number of people without sanitation. The water map in map 4.1, panel b, is similar to the water map in map 4.1, panel a, in that the size of the circles shows the number of people who use unimproved sanitation. The colors of the governorates in map 4.1, panel b, represent the per-capita public sanitation expenditures. Kairouan and Sidi Bouzid each have a high number of people who use unimproved sanitation but are not receiving high levels of public sanitation expenditures per capita. Overall, the coefficient of −0.18 between these two variables is a weak, negative correlation. Again, this correlation would ideally be strongly positive.

Figure 4.5: Public and Private Water Expenditures Per Capita, by Governorate, 2013–15 Average
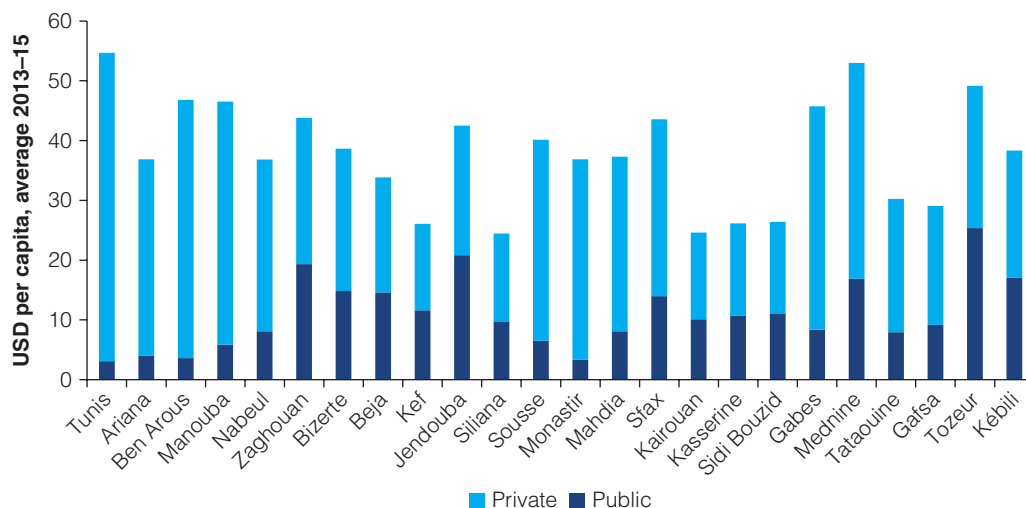
Source: World Bank 2017.

Figure 4.6: Public and Private Sanitation Expenditures Per Capita, by Governorate, 2013–15 Average
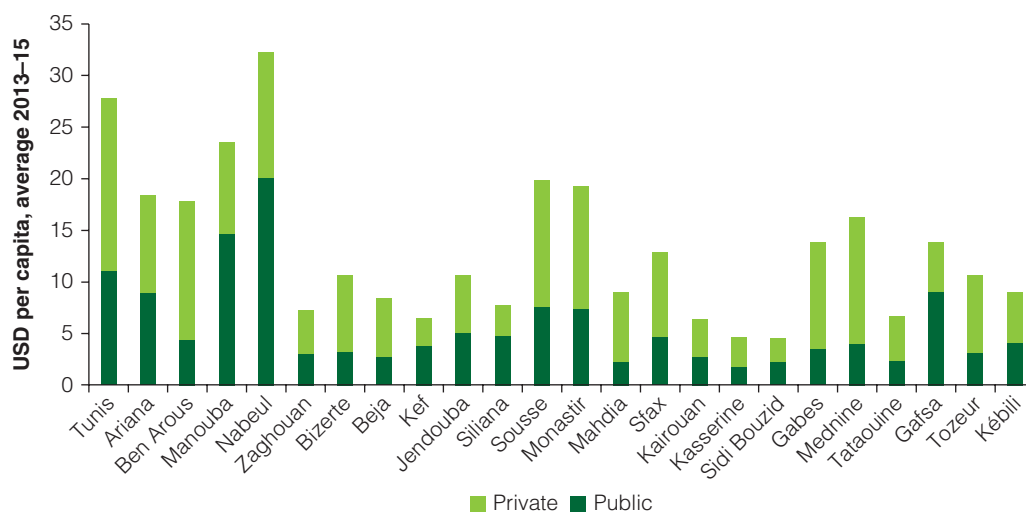
Source: World Bank 2017.

Public water expenditures and public sanitation expenditures are better correlated with poverty levels in the governorate. Figure 4.7 shows that total water expenditures per capita are negatively correlated with poverty (–0.64). This is unsurprising because total water expenditures include all sources, and poor people generally spend less on water (as shown in figure 3.10). However, public water expenditures per capita is positively correlated with poverty rates at the governorate level. This observation means that there is some poverty targeting in public water expenditures, with a correlation coefficient of 0.32. This figure is far higher than the 0.19 in map 4.1, panel a. In short, public water expenditures are better correlated with poverty levels in the governorate than with the number of unserved people in the governorate.

Map 4.1: Public Expenditures Per Capita and Numbers of People Without Services, by Governorate
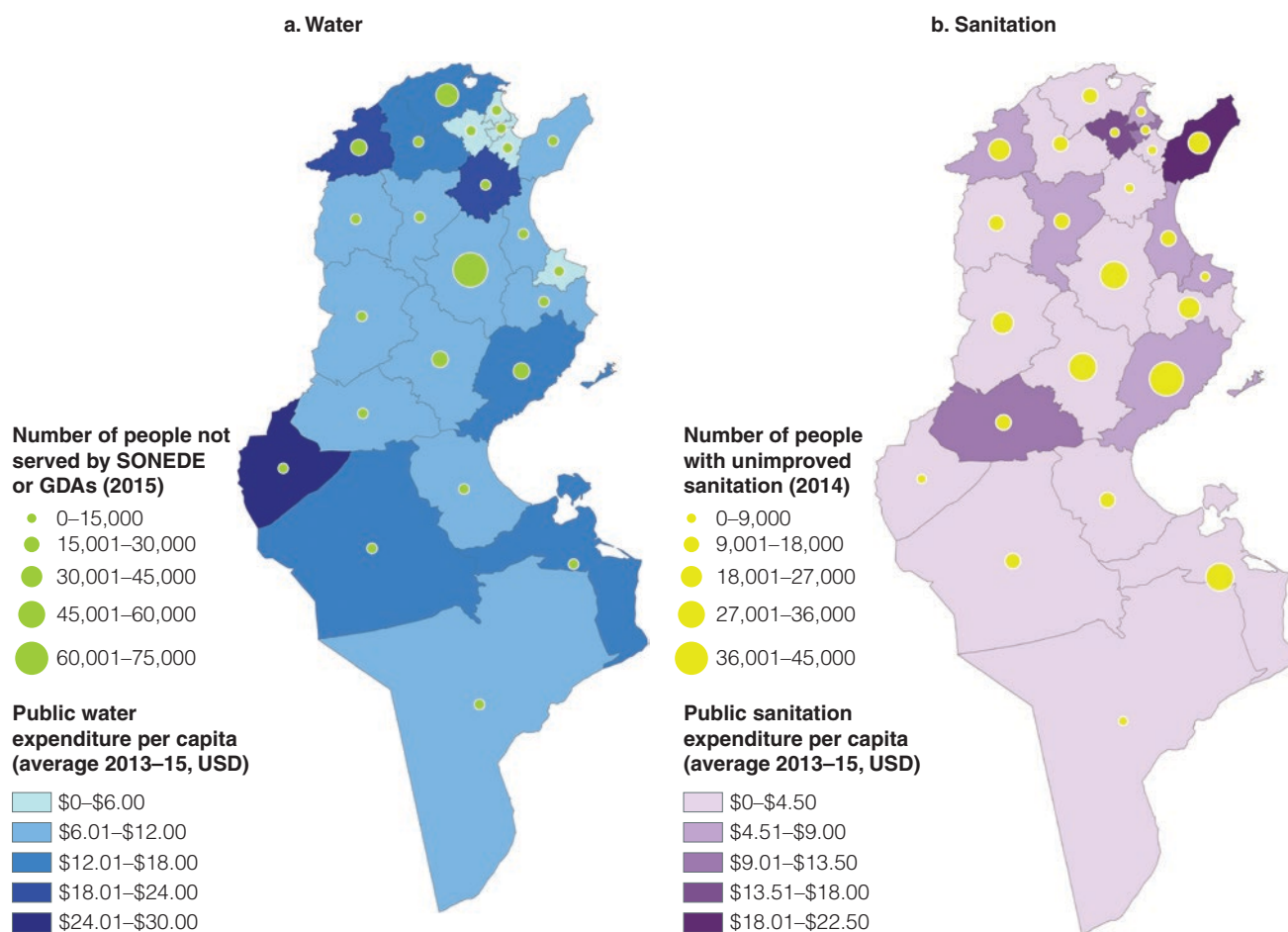
a. Water

b. Sanitation

Number of people not served by SONEDE or GDAs (2015)
- 0–15,000
- 15,001–30,000
- 30,001–45,000
- 45,001–60,000
- 60,001–75,000

Public water expenditure per capita (average 2013–15, USD)
- $0–$6.00
- $6.01–$12.00
- $12.01–$18.00
- $18.01–$24.00
- $24.01–$30.00

Number of people with unimproved sanitation (2014)
- 0–9,000
- 9,001–18,000
- 18,001–27,000
- 27,001–36,000
- 36,001–45,000

Public sanitation expenditure per capita (average 2013–15, USD)
- $0–$4.50
- $4.51–$9.00
- $9.01–$13.50
- $13.51–$18.00
- $18.01–$22.50

Source: World Bank 2017.
Note: GDA = Groupements de Développement Agricole; SONEDE = Société Nationale d'Exploitation et de Distribution des Eaux.

By any measure, public sanitation expenditures are being poorly targeted. The negative correlation between total sanitation expenditures and poverty is not surprising (see figure 4.8, panel a). However, the negative correlation between public sanitation expenditures on sanitation and poverty levels (–0.51) is the opposite of what would normally be expected. This negative correlation is partly explained by the lack of a clear responsibility for service provision in rural areas, which is also where poverty is concentrated. Although ONAS's mandate is to serve urban areas, the sanitation service delivery arrangements for rural areas have only recently been clarified and have not been translated into an effective legal framework with associated financial resources. Thus, despite the need to shift the focus of distributing public resources to sanitation services—especially in poor and rural areas—operationalizing the arrangements for sanitation service provision needs to precede public resource reallocation.

The overall message of this analysis is that public water expenditures are fairly well targeted at governorates with high poverty levels, but they could be better targeted at governorates with large numbers of people who are not formally served as well. Achieving both objectives should be possible. For sanitation, public sanitation expenditures are not at all well-targeted, and addressing the rural sanitation challenge should be a high priority.

Figure 4.7: Water: Correlations by Governorate between Total Water Expenditures Per Capita and Public Water Expenditures Per Capita with Poverty Rates

a. Total water expenditures

b. Public water expenditures
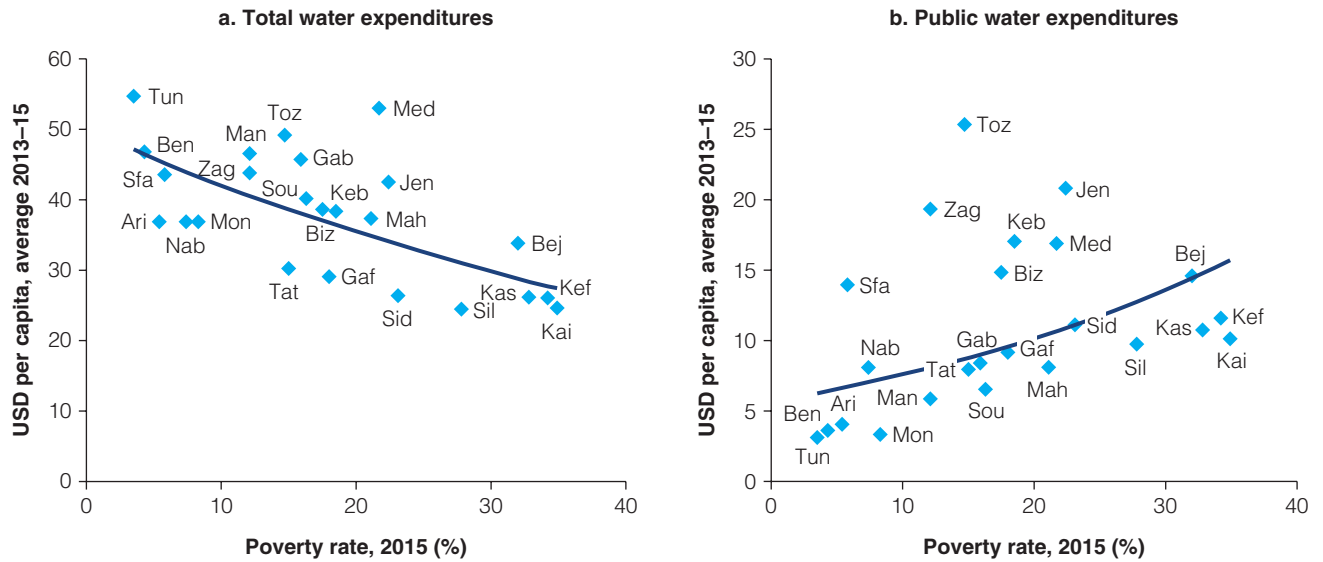
Source: World Bank 2017.

Figure 4.8: Sanitation: Correlations by Governorate between Total Sanitation Expenditures Per Capita and Public Sanitation Expenditures Per Capita with Poverty Rates

a. Total sanitation expenditures

b. Public sanitation expenditures
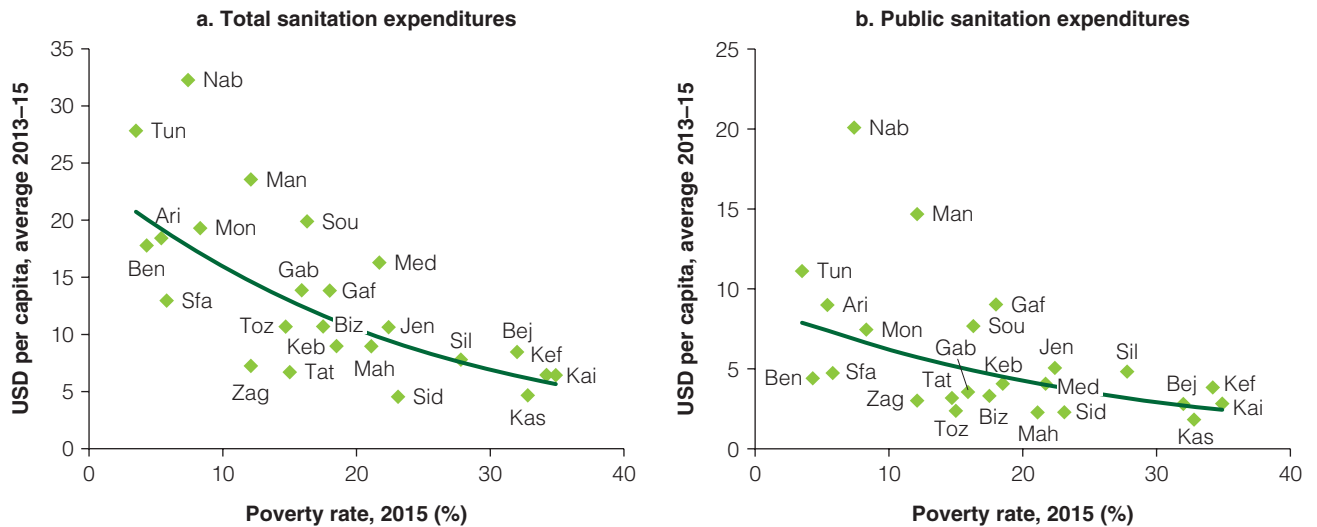
Source: World Bank 2017.

Raising Tariffs, Lowering SONEDE and ONAS Financing Gaps, and Not Hurting the Poor

One immediate way of reallocating funding to the sector and encouraging equity is through reforming tariffs set by service providers. The Phase 1 "WASH Poverty Diagnostics" report noted that because richer people consume more water, they capture far more of the implicit government subsidy to SONEDE and of the explicitly subsidy to ONAS (World Bank 2016b). The incidence of existing subsidies and the potential effect of tariff reforms were estimated using the methodology shown in box 4.2.

SONEDE tariffs are consumption-based and use an increasing-block tariff structure: as such, they are theoretically progressive with the highest block of consumption charged at eight times the price than the lower block. The analysis was conducted using the SONEDE tariff structure as of December 31, 2013, when the first block of consumption (from 0 m^3 to 20 m^3) was

> ## Box 4.2: Phase 1 Report: Methodology for Estimating the Effects of Tariff Changes
>
> Phase 1 of this study applied a methodology for estimating the effect of eliminating the implicit government subsidies by raising water tariffs (World Bank 2016b). This approach is an innovative and robust way to explore the fiscal and distributive implications of price and subsidy policies.
>
> The analysis was based on data from the National Survey on Households' Budget and Consumption and Living Standards (NSBCL) conducted by the Institut National de la Statistique (INS) in 2010, before data from the 2015 NSBCL were available. The NSBCL asked survey participants to report their quarterly household expenses, with annual water expenditures estimated by extrapolating from the quarterly expense on water, assuming constant consumption throughout the year. On the basis of the tariff structure of the Société Nationale d'Exploitation et de Distribution des Eaux (SONEDE) in 2010, Phase 1 authors estimated the amount of water consumed by solving an unknown q (consumed quantity) from the water bills paid in 2010. We assumed a uniform price elasticity of consumption of 0.4 for all quintiles of households. After we excluded households that were not connected to the SONEDE network and missing observations, we used a sample of 9,167 households. To provide an estimate for 2014, Phase 1 authors formulated assumptions about population growth and economic growth. Such assumptions have limitations, but we believe that these are unlikely to affect the key messages.
>
> The study also analyzed sanitation tariffs of the Office National d'Assainissement (ONAS), following a similar method. In this case, the unit subsidy was defined as the difference between the sale price of managing a cubic meter of wastewater by ONAS and the actual cost of managing that wastewater (as estimated by ONAS staff). Simulations for the increase in sanitation prices or the complete elimination of sanitation subsidies were not conducted because of the very limited share of sanitation expenditures on households' total expenditures. In other words, very marginal poverty and distributive effects should be expected from sanitation subsidy removal.

charged at 155 millimes (TD 0.155) whereas the highest consumption block (greater than 501 m³) was charged TD 1.190.

The Phase 1 analysis (World Bank 2016b) found that the richest 20 percent of households that were connected to SONEDE services capture far more of the implicit subsidy, which means that the current tariff regime is regressive. This finding was drawn from several observations and strands of analysis.

First, consumers in the fifth quintile (that is, the richest quintile) consume four times more water than do the poorest 20 percent of consumers (see figure 4.9). On the basis of the results of the National Budget, Consumption, and Living Standard Survey 2010, the study found that SONEDE consumers in the richest quintile consumed on average 135 liters of water per capita per day (which is less than the consumption levels in European countries), whereas households in the poorest quintile consumed on average 60 liters per capita per day. Given these higher levels of consumption, it was estimated that consumers in the fifth quintile consumed approximately one third of the water volumes produced by SONEDE, whereas consumers in the fourth and fifth quintiles accounted for about half of SONEDE's customer base and consumed half of SONEDE's water production.

Second, households in the fifth quintile tend to be smaller, which means that many of them consume water in the cheapest block. The Phase 1 analysis estimated that the average household size in the lowest quintile includes 5.4 members, which is 2 more than for the richest quintile, which includes approximately 3.3 members. Given the smaller household size for richer households, as shown, only 28 percent of households that consume water in the lowest block belong to the first quintile, which means that 72 percent of households that consume water in this block are not the poorest households.

The Phase 1 study assessed that SONEDE falls short of cost recovery, with an estimated financial gap of around TD 107 million in 2012, which was calculated based on the difference between the unit operating cost and the unit sale price and corresponded at the time to approximately 40 percent of total revenues. A subsequent analysis of SONEDE's financial

Figure 4.9: Water Consumption, by Income Quintile, 2010
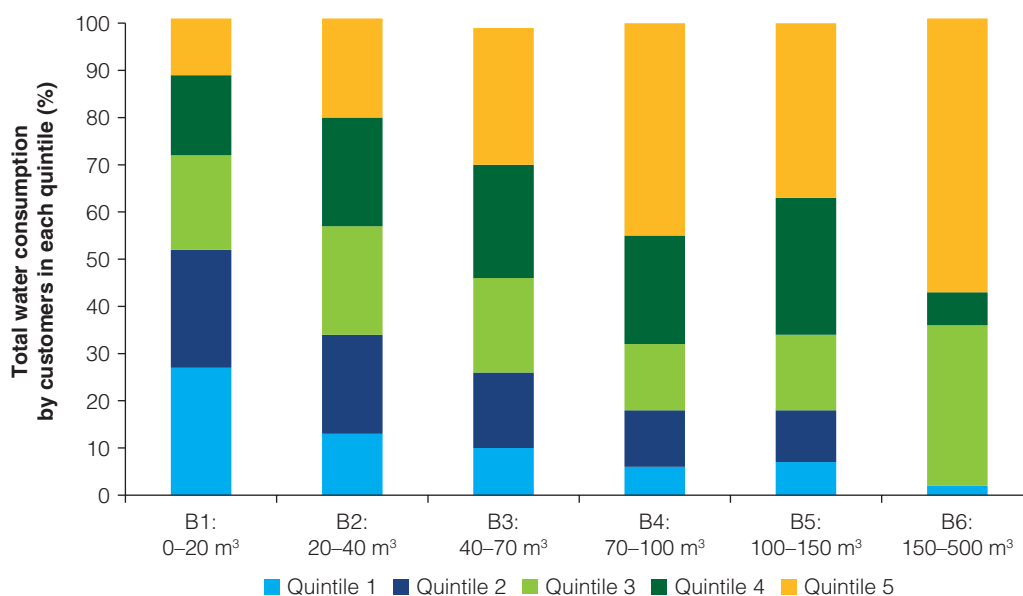
Note: B = block.

position confirmed the need for SONEDE to move closer to cost-recovery levels to strengthen its financial position.

The Phase 1 analysis found that, because of the aforementioned factors, the richest quintile captured a greater share of the total subsidy (31 percent) as opposed to the poorest quintile, which captured only 11 percent. In total, the first two quintiles captured less than a third of the total subsidy (see figure 4.10). This observation was nevertheless found to be more equitable than the distribution of energy subsidies.

Modeling of tariff reforms in Phase 1 found that reducing or eliminating government subsidies would not hurt the poor in a significant way, that is, that poverty rates would not substantially increase as shown in table 4.3. The modeling of reforms was conducted for various scenarios, ranging from imposing a 7 percent tariff increase (which was realized in subsequent years) to eliminating full subsidies. Given the assumed elasticity of demand, it was estimated that per-

Figure 4.10: Share of SONEDE Implicit Subsidy Captured by Income Groups, by Quintile in 2010

Quintile 1 ■ Quintile 2 ■ Quintile 3 ■ Quintile 4 ■ Quintile 5
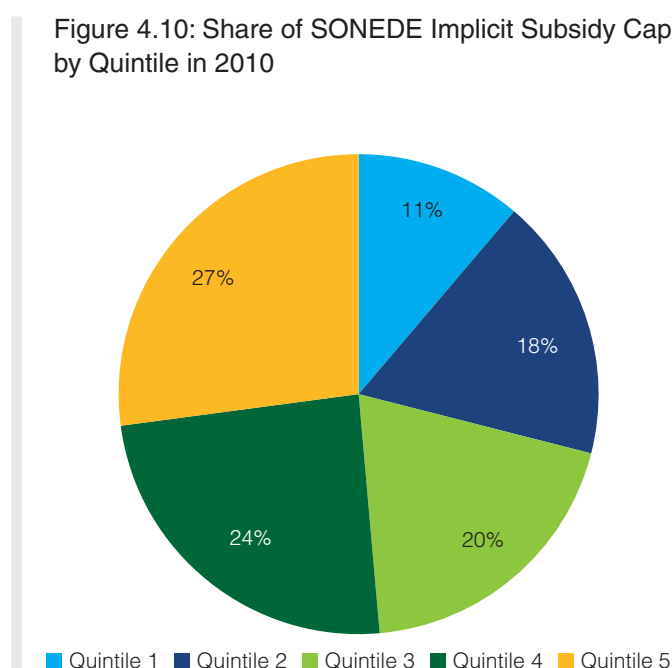
Source: World Bank 2016a.

Table 4.3: Estimations on the Effect of Eliminating Government Subsidies

| | Amount of Increase in Tariffs | | | |
	7%	15%	25%	Full Elimination of Subsidies
Effect on total per-capita expenditures (TD)	−1.7	−3.5	−5.6	−10.7
Effect on SONEDE revenues (TD million)	13.1	27.0	42.7	149.5
Effect on poverty rates (percentage points)	0.06	0.09	0.12	0.22
Effect on inequality Gini (0–100 scale)	0.01	0.02	0.03	0.10

Source: World Bank 2016. Estimates are based on INS 2010 and SONEDE data.
Note: These estimates were formulated before National Budget, Consumption, and Living Standard Survey 2015 results were available in late 2016, but the result is unlikely to have changed much in such a short period of time. SONEDE = Société Nationale d'Exploitation et de Distribution des Eaux; TD = Tunisian dinar.

capita private expenditures on water would decrease. However, it was found that the effect on poverty rates would be negligible (ranging from 0.06 percent to 0.22 percent) because water bills account for only a small part of total household expenditures.

We conducted a similar analysis for sanitation subsidies and found that subsidies to ONAS are pro-rich and regressive. According to the Phase 1 analysis, one third of implicit subsidies to ONAS are captured by households in the richest quintile, with only 10 percent of subsidies given to the poorest quintile. This outcome occurs for several reasons. First, 25 percent of ONAS customers are in the richest consumption quintile, and only 13 percent are in the poorest quintile. Second, the volume of wastewater managed for households in the richest quintile is about nine times higher than the volume of wastewater from consumers in the poorest quintile. Therefore, expenditures on sanitation services follow a marked prorich pattern. About three quarters of total spending on wastewater managed by ONAS is incurred by the two richest quintiles. It is a similar effect as for water, but starker.

Overall, the analysis presented in this chapter found that, although Tunisia has dedicated a growing share of its GDP to support the water sector (including through public subsidies), the distribution of such subsidies could be greatly improved through better targeting to ensure that the poorest consumers truly benefit. This process requires (1) a reallocation of subsidies from the urban subsectors to the rural subsectors; and (2) in the urban subsectors, from comparatively richer to the poorest.

Notes

1. For the guidance document prepared by the World Health Organization to facilitate the preparation of WASH Accounts, see http://www.who.int/water_sanitation_health /publications/trackfin_guidance_document/en/.
2. Estimations were made using the 2014 coverage figures reported by INS and unit costs of construction and emptying of on-site sanitation facilities.
3. This was calculated by (1) estimating total WASH expenditure in urban areas of each governorate, and estimating a separate figure for rural areas, (2) dividing those two figures by urban population and rural population of each governorate.
4. The 2016–2020 Plan consists of five pillars: (1) good governance, reform, and fight against corruption; (2) transition from a low-cost economy to an economic hub; (3) human development and social inclusion; (4) achievement of regional objectives; and (5) green economy as a basis for sustainable development. For more information, see http://www .tunisia2020.com/plan-2016-2020/.

References

INS (Institut National de la Statistique). 2010. "Enquête nationale sur le budget, la consommation et le niveau de vie des ménages." Tunis, Tunisia.

World Bank. 2016a. *World Development Indicators 2016.* World Bank, Washington, DC.

———. 2016b. "Tunisia WASH Poverty Diagnostic—Phase 1 Report." World Bank, Washington, DC.

———. 2017. "Rapport des Comptes WASH." World Bank, Washington, DC.

Chapter 5
Policy Recommendations

Introduction

This chapter formulates policy recommendations that build on the summary analysis presented in previous chapters, complemented by other findings. Tunisia has achieved remarkable progress toward universal access in the water supply, sanitation, and hygiene (WASH) sector, yet has substantial disparities in access to reliable services, which are correlated with poverty. Reaching the last mile is doable but requires specific focus because unserved individuals are harder to reach and require better targeting of financial resources.

Given the magnitude of progress already achieved, reaching the water Sustainable Development Goal (SDG) is a realistic prospect for Tunisia and should be adopted as a clear sector goal to catalyze efforts from all stakeholders in the water sector and beyond. We offer the following five recommendations:

- Recommendation 1: Conduct strategic financial planning for the WASH sector;

- Recommendation 2: Bring tariffs closer to cost-recovery levels and preserve affordability;

- Recommendation 3: Mobilize and target public WASH sector funding more strategically;

- Recommendation 4: Define a clear strategy for delivering improved access to sanitation in rural areas; and

- Recommendation 5: Improve sector monitoring to track progress toward the SDGs.

Recommendation 1: Conduct Strategic Financial Planning for the WASH Sector

At present, there is no long-term strategic financial plan for the WASH sector or no assessment of how much is needed to achieve the water SDG in Tunisia. What exists at this stage is a 5-year investment plan (2016–20) for the sector (prepared by Direction générale du financement, des investissements et des organismes professionnels [DGFIOP]), which does not make a specific attempt to link investment requirements to achieving the SDGs, has not evaluated how much operations and maintenance spending is required to ensure the sustainability of the WASH services provided, and has not determined how such financing requirements will be covered (that is, by who and by what means the funding will be provided). In addition, the required investments in the water supply and sanitation sector in the next 5 years had to be significantly adjusted to take into account available financing sources.

The 5-year plan estimates that investments required for sanitation during the plan period would be TD 1 billion (US$620 million) or TD 200 million per year (US$124 million). When comparing such amounts with the amounts that have been recently invested in sanitation (estimated at TD 100 million per year in 2015), the significant difference between investment needs and current levels of investment in sanitation becomes obvious, and additional funding and financing sources need to be identified.

With respect to water, the 5-year plan includes the Ministry of Agriculture's objective to invest in rural water services as well as irrigation and dams. These amount to TD 2.56 billion (US$1.5 billion) over the period, although these do not include Société Nationale d'Exploitation et de Distribution des Eaux (SONEDE) investments. These include TD 1.13 billion in investments in national projects for water and irrigation infrastructure and TD 1.4 billion in investments in regional projects, although it was difficult to assess the specific share of investments dedicated to drinking water projects in rural areas.

Failing a comprehensive assessment of how Tunisia will achieve the SDGs, one can make only crude estimates to assess the extent to which investment efforts will need to be significantly increased. Hutton and Varughese (2016) estimated that capital financing to extend safely managed water supply and sanitation services to unserved individuals would be approximately 0.49 percent of GDP per year. Tunisia needs to increase capital investments from the estimated 0.44 points of GDP in 2015. Such a broad estimate is based on the finding from the WASH Accounts that total WASH expenditures were about 1.5 percent of GDP for Tunisia in 2015, combined with the fact that capital investment expenditures accounted for about 29 percent of the total expenditures. The share of capital investment expenditures has grown from 22 percent of total WASH expenditures in 2013 to 29 percent in 2015.

This, combined with the allocations made under the 5-year plan, points to the fact that capital investments need to be increased to meet the SDGs, although the exact magnitude and nature of required investments are still unclear. The SDG baseline was made available in July 2017 by the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) Joint Monitoring Programme. For the first time since the SDGs came into force in January of 2016, this presented a comprehensive baseline of what service improvements are needed to increase access in line with the additional SDG requirements.

To address this gap in understanding and to provide the basis for defining a WASH sector investment and improvement strategy, we recommend conducting a strategic financial planning analysis for Tunisia in years to come. Box 5.1 provides additional information on the nature and objectives of strategic financial planning for the water sector.

> ### Box 5.1: Strategic Financial Planning: What Is It For and Where Has It Been Applied?
>
> The Orgnisation for Economic Co-operation and Development (OECD), in the context of the water sector, coined the term *strategic financial planning*, defined as "taking a long-term perspective of the financial needs of the sector, the factors affecting them, the main sources of funds and the balance between them, and how needs can be reconciled with potential resources" (OECD 2009, 10). The OECD observed that policy decisions in the sector are rarely based on such comprehensive long-term analyses, which can result in setting unrealistic sector objectives.
>
> Key strategic financial planning objectives are to evaluate how to maximize existing financial resources, by extracting all potential efficiency gains, define realistic targets within realistic timeframes, and identify the need for and potential sources of additional financing. Strategic financial planning differs from business planning for specific utilities in that the former takes an overall sector view. The OECD developed a number of tools to facilitate strategic financial planning exercises, including the software modeling tool called Financing for Environmental,
>
> *box continues next page*

Box 5.1: Continued

Affordable, and Strategic Investments that Bring On Large-Scale Expenditure (FEASIBLE), although it is often preferable to develop country-specific financial modeling tools that are based on first principles that take account of the way information is available in each country. Strategic financial planning can enable countries that anticipate financial constraints in meeting the Sustainable Development Goals (SDGs) to progressively achieve their targets. For example, they can identify whether it is more beneficial to extend access to basic services to all as soon as possible (referred to as *improved services* in the Millennium Development Goals era) and then gradually move toward safely managed services or to adopt a different improvement path.

Strategic financial planning exercises have been conducted in a growing number of countries. The FEASIBLE tool was first applied with OECD support in former Soviet Union countries, then in Sub-Saharan Africa (particularly in Lesotho) and in Southeast Asia (in Cambodia). In 2016, with financial support from the European Union, the World Bank supervised the preparation of a strategic financial plan in Albania. This plan, called Water for People, allowed Albania to define a realistic and balanced package of investments up to 2030 to expand services in line with what the country could afford. However, achieving the SDGs by 2030 in Albania is unrealistic unless the requirement of extending sewerage services to all (in line with European Union directives, with the exception of small and isolated rural settlements) is waived. On the basis of the modeling exercise, Albania can expect to reach 70 percent piped sewerage coverage in urban areas and 25 percent in rural areas by 2027 as well as 80 percent and 50 percent, respectively, by 2040.

In Tunisia, strategic financial planning could be conducted to assist with the following:

- Evaluating the financing needed to achieve the water SDG and government objectives up to 2030, including for new investments, operations, and—crucially—for large maintenance;

- Freeing up resources by generating efficiency gains at the level of service providers;

- Mobilizing resources to meet spending requirements, such as from public sources through taxation and concessionary finance or through domestic commercial financing; and

- Evaluating the financing needed to achieve the water SDGs and government objectives up to 2030.

The WASH Accounts have provided a strong basis for such an exercise by estimating with a much greater degree of confidence and precision current expenditures in the sector. A strategic financial planning exercise could compare current spending trends with future spending needs, not only to assess how much additional financing is required but also to provide a basis for allocating available resources in a better way to reduce regional and socioeconomic disparities.

It is most likely necessary to continue to invest and, most likely, increase investments in the most disadvantaged governorates, focusing particularly on reducing the service gap in

governorates in the Centre West region. Meanwhile, it is necessary to continue investing in all governorates to stem deterioration in service quality and to reap efficiency gains. In particular, it is important to step up investments in large capital maintenance, which at present is being neglected according to findings from the WASH Accounts, particularly in the urban water sector where investments in large capital maintenance (including repair of leaks and water meter) accounts for only 1 percent of total expenditures. A strategic financial planning exercise could provide a more robust basis for estimating how much needs to be invested in capital maintenance in future.

It is important to identify the potential for freeing up financial resources. An added benefit of the strategic financial planning exercise (as opposed to only investment planning) is that it allows linking efficiency gains projections with financial mobilization. For example, reducing nonrevenue water, as well as saving water, can generate substantial financial benefits, by reducing the volumes of water that need to be treated and by increasing revenues from water sold. In turn, these financial resources can generate revenues for the utility to use for investing in capital investments. The potential for such savings can be captured in utility-level financial modeling (and this is what has been done in the case of SONEDE and the Office National d'Assainissement [ONAS]), but strategic financial planning allows adding up all such potential efficiency gains across the sector.

It is important also to identify what additional financial resources can be mobilized for the sector. Additional financial resources can come from several sources: two of them are sources of nonrepayable revenues for the sector, including tariffs (see recommendation 2 on increasing revenues from tariffs) and public resources (see recommendation 3 on mobilizing public financing for WASH more strategically); in addition, repayable revenues can be obtained from commercial sources (the focus of the present recommendation). At first sight, commercial finance may seem more expensive than development financing provided for free or at very concessional rates. However, many advantages can counteract higher financing costs over time. In countries with a relatively high currency risk and significant inflation (as in Tunisia), borrowing in domestic currency can eliminate foreign exchange risk. It also allows tapping into pools of domestic financial resources that have so far been largely ignored, such as pension funds, institutional or social impact investors, when the latter may be looking for low-risk, low-financial-return investments with high social benefits. In addition, using commercial finance can help public utilities introduce robust commercial principles in their operation and management and boost transparency in the sector.

Both SONEDE and ONAS need to introduce substantial internal reforms before becoming fully credit worthy. During an interim period, they could explore tapping into commercial finance for specific projects that can generate revenues (for example, for investments to reduce nonrevenue water in the case of SONEDE or for investments in the framework of public-private partnership contracts to improve the efficiency of sewage management in the case of ONAS). If utilities that can borrow commercially do so instead of borrowing from concessional financing sources, this would free up borrowing capacity and public funds to reallocate public transfers to those sectors that need them the most (such as rural sanitation, as per recommendation 4). To do so, utilities need to commit to a tariff increase path that can assure commercial lenders that financing can be repaid. This most likely requires initial public funding as well, to support blended finance strategies whereby public funds are used in a more catalytic manner than currently (for example, through the provision of guarantees).

Recommendation 2: Bring Tariffs Closer to Cost-Recovery Levels and Preserve Affordability

This study's analysis has identified that current private expenditure on WASH services is affordable by the majority of the population, including poor households. Service providers receive public funding, and the share of public transfers to the sector as a whole has increased

from 18 percent of total sector expenditures in 2013 to 21 percent in 2015 for all subsectors combined. Meanwhile, the share of tariffs in total sector expenditures decreased from 68 percent in 2013 to 60 percent in 2015. This is explained by the fact that the increase in sector spending has not been accompanied by a simultaneous increase in tariffs. Such an evolution has been particularly significant in the water sector, which decreased from 81 percent of water sector costs being funded through tariffs in 2013 to 69 percent: Reversing this trend is essential for the sector to move toward financial sustainability.

In line with recommendations that have been formulated in the SONEDE audit report (Nodalis, ASPA, and SCET Tunisie 2016) and in the Tunisia WASH Poverty Diagnostic report (World Bank 2016), it is possible to reform water tariffs without significantly affecting poor customers. The financial and operational diagnostic modeled a number of scenarios projecting that, while increasing SONEDE coverage in rural areas to 75 percent and improving performance in terms of staff utilization and nonrevenue water, SONEDE may reach its financial equilibrium by 2021 (with four tariff increases of 11 percent between 2017 and 2021).

A 2016 report by the World Bank assessed that current water tariff subsidies could be eliminated without significantly affecting poor customers, given that comparatively richer consumers currently benefit the most from subsidies because they usually consume more (World Bank 2016). Removing SONEDE tariff subsidies would help strengthen the company's financial viability and credit-worthiness while freeing up scarce public resources for being allocated to other subsectors (such as rural sanitation) where public funding is critically required and where it would be harder to mobilize commercial financing.

Reforming tariffs requires conducting a tariff study that examines how to rebalance the existing increasing-block tariffs to reduce the leaking of subsidies to comparatively richer households. Potential tariff structure that can be explored are lifeline tariffs (whereby the cheapest tariff block is available only to those who consume less than a certain volume of water) or targeted tariff subsidies (whereby only customers who meet a certain number of socioeconomic criteria can obtain water at a subsidized rate). The feasibility of such targeted tariff subsidies should be explored in light of other social safety net regimes in Tunisia.

Recommendation 3: Mobilize and Target Public WASH Sector Funding More Strategically

The financial flow analysis, based on the WASH Account methodology, has found that public funding for water is fairly well targeted at the poorest governorates, just not necessarily those with the largest numbers of unserved people. By contrast, there is a negative correlation between public expenditure for sanitation and poverty levels (–0.51). This negative correlation is partly explained by the lack of a clear allocation of responsibilities for urban service provision in rural areas, which is also where poverty is concentrated. Although ONAS has a mandate to serve urban areas, the sanitation service delivery arrangements for rural areas are not clear. Thus, despite the need to shift the focus of distributing public resources to sanitation, especially in poor and rural areas, a clear definition of responsibilities for service provision needs to precede public resource reallocation, as discussed in the next recommendation on the need to prioritize sanitation.

Going forward, public expenditure for water supply and sanitation need to be allocated to the areas that need it the most—that is, the governorates that have lower levels of coverage and limited capacity to generate their own resources (mainly governorates in the North West and Centre West regions of the country and in rural areas) and where malnutrition is more acute. WASH is a necessary but insufficient intervention to combat stunting. As Tunisia gets closer to achieving the SDGs, reaching the harder to reach will likely cost more and beneficiaries may have less ability to generate private financing. At present, the Ministry of Development, Investment, and International Cooperation decides where to allocate funds on the basis of

formulas that take into account poverty levels and access to service levels in some way but that are not made public.

To ensure that public funds are fairly distributed to the WASH sector, it is advised to define and make publicly available a formula for allocating sector funds to the regions that need it most. Focused investments in the most deprived regions are needed to correct current inequities, with a view to positively discriminate in favor of such regions. Countries such as South Africa have defined such transparent fund allocation formulas, with different formulas for the allocation of both operating subsidies and capital investment subsidies. Such a mechanism could provide inspiration for Tunisia in the context of communalization and decentralization, which will create the need for more transparent formulas for public funding transfers as part of broader public funding reforms (see box 5.2).

Box 5.2: Transparent Public Transfer Mechanisms in South Africa

The end of apartheid and democratic transition in South Africa brought forth the need to serve all citizens. The 1996 Constitution ensured water as a human right and guaranteed that everyone has a right to basic services. For water supply and sanitation, basic services are defined as a standpipe within 200 meters of the house and a Ventilated Improved Pit toilet. In 1998, South Africa introduced Equitable Share, a system that provides operational subsidies from national to local governments using transparent formulas to fill the funding deficit and eliminate the backlog in infrastructure provision in previously disadvantaged areas.

In 2001, South Africa adopted the Free Basic Water policy to guarantee the constitutional rights, following early experimentation by the eThekwini municipality. This policy provides basic levels of water supply and sanitation services to poor citizens (including 6,000 liters of free water per month per household). In 2004, South Africa adopted the Municipal Infrastructure Grant, which provides capital investment subsidies for basic services. This conditional grant covers capital costs and provides infrastructure for a basic level of service for poor households.

Equitable Share is a transparent and predictable government transfer that redistributes tax revenue from national government to provinces and municipalities. Equitable Share transfers are nonconditional and cover operating costs. Equitable Share is specifically designed to support rapid expansion and improved quality of basic services for the poor. Equitable Share has several features of well-designed national subsidy programs: it is transparent, targeted, predictable, and reliable.

Transparent

The Equitable Share is established through a clear formula on the basis of the number of poor people according to the census (this can result in some misallocations if census data are not up to date). The formula used to determine allocations is made up of components that are based on the particular functions and characteristics of municipalities. The formula used to calculate Equitable Shares has been revised a number of times after in-depth discussions. A review of the local government Equitable Share was completed in 2012, and a new formula is being phased in through 2018. The formula for disbursement of the funds provides higher amounts to municipalities with a higher number of poor people. A portion of the Equitable

box continues next page

Box 5.2: Continued

Shares subsidy is also allocated to fund local institutional development. The basic services component (which includes water supply and sanitation) accounts for more than 90 percent of the local government Equitable Share. This component aims to assist municipalities in providing free basic services to poor households and funding municipal health services. The Free Basic Services package is estimated at US$265 per household and the underlying breakdown is based on the following assumed distribution between basic services: water, 31 percent; sanitation, 26 percent; refuse removal, 22 percent; and energy, 21 percent. Yet, local government Equitable Share grants are unconditional, meaning that municipalities can spend the amount however they choose (Llano-Arias and Norman 2015).

Targeted

Equitable Share subsidies are introduced specifically to provide services to the poorest residents. The allocations assume that municipalities provide poor households with a quantity of free basic services in line with national policy norms. If local governments choose to provide a more generous subsidy, then it is their responsibility to fund those additional levels of service.

Predictable

The national government sets out 3-year indicative allocations for the Equitable Shares and updates them on a rolling basis. Departures from the indicative amounts are always marginal.

Reliable

The Constitution provides that each branch of government—national, provincial, and local—is entitled to an Equitable Share of revenue raised nationally to enable it to provide basic services and perform its allocated functions.

In conclusion, the Equitable Share subsidy is a bedrock of South African democracy and revenue redistribution. It has not been questioned even with changes in political leadership. In 2016/17, the Equitable Shares to local government amounted to approximately US$4 billion, of which approximately 40 percent was for water supply and sanitation. The Municipal Infrastructure Grant amounted to approximately US$1.1 billion, of which water supply and sanitation accounted for 49 percent. These subsidy mechanisms were among the components that led to remarkable progress in terms of water supply and sanitation coverage in South Africa, which increased from 59 percent in 1994 to 93 percent in 2010 for water and 48 percent in 1994 to 79 in 2010 for sanitation (World Bank 2011).

Mobilizing public finance for WASH will call for the identification of new sources of public funds and cross-subsidies. The analysis has identified the need to allocate funding to rural areas to address the outstanding service gap. Given that water tariffs are low as a percentage of income, this could include, in the context of well-designed tariff reforms, the introduction of a WASH service solidarity levy, to be applied to SONEDE customers for the benefit of users who are either served by Groupements de Développement Agricole (GDAs) or self-providing

the service. Such a cross-subsidy scheme would be easier to administer if SONEDE increased its service area and absorbed service areas currently served by GDAs. However, operationally this might be neither feasible nor desirable, particularly for isolated service centers. An alternative is to establish a fund for rural WASH services solidarity, as was done in 1954 in France with the establishment of the Fonds National pour le Développement des Adductions d'Eau Potable, which is managed by the French Ministry of Agriculture. When first created, the fund was a special Treasury account to finance water and sewerage network extensions, partly with the proceeds of the revenues from betting around horse races (Pari Mutuel Urbain). Since 1997, it has extended its support to covering investments in depollution relative to agriculture. In 2000, it became a subgroup in the newly set up Fonds National de Solidarité pour l'Eau, and has subsequently been remodeled.

Where public investments are required, the efficiency of these investments could be improved if financing was linked to the achievement of preagreed results. An increased focus on results could be fostered through channeling all concessional and public funding on the basis of the results, with the incentives for results being transferred from external funders to public recipients to service providers. Experience with results-based financing modalities has rapidly expanded over time, starting with Output-Based Aid models (that link payment of subsidies to service providers to the delivery of specific outputs) to the application of such models to World Bank lending, with the Payment for Results lending instrument, which ties fund transfers to the achievement of specific performance indicators, some of which can be defined in terms of the delivery of specific reforms. Such a Payment for Results has been considered for further World Bank financial support to SONEDE.

Recommendation 4: Define a Clear Strategy for Delivering Improved Access to Sanitation in Rural Areas

Rural sanitation needs to be prioritized given that neither ONAS nor GDAs have made significant investments to improve service delivery in rural areas. According to the WASH Accounts, rural sanitation accounted for a mere 0.5 percent of expenditures between 2013 and 2015, and public expenditures on rural sanitation services was very minimal. Households are expected to be the main and only investor in the rural sanitation sector, but they lack formal guidance and stimulus to do so in a structured manner. This largely reflects the fact that there is no clear allocation of roles for rural sanitation, including for important functions such as policymaking, standard-setting, demand promotion, technical assistance with design and construction, enforcement, and monitoring and evaluation. This lack of focus is an issue because rural sanitation was found to be the most lagging subsector, with 900,000 people in Tunisia lacking access to improved sanitation services, most of whom live in rural areas.

To reverse this current state of affairs, public investments are needed in a number of critical areas. For example, support is required for demand promotion activities, to deliver supply-side support (that is, to train and strengthen sanitation entrepreneurs in rural areas) and to invest in shared facilities (such as fecal sludge treatment plants or decentralized wastewater treatment plants). In addition, stronger public enforcement and monitoring and evaluation are needed, which require public resources. Household investment in more durable sanitation solutions need to be facilitated by providing access to finance, which may include microfinance, possibly combined with government subsidies. Facilitating access to finance for rural sanitation likely requires public investment in the first place, however, to encourage the limited number of existing microfinance institutions to explore this market and develop financial products. The costs of such activities need to be estimated and factored in future financial plans for the sector, something that can be done as part of the strategic financial planning exercise that is recommended (see recommendation 1).

Overall, to effectively allocate public financing for rural sanitation, it is necessary to identify who is responsible for what and how funding can be mobilized and channeled. ONAS has developed a strategy for scaling up rural sanitation: It is important to implement such a strategy with clear institutional models and an estimate of the costs of the different activities to undertake to reach SDG standards for rural sanitation. For the rural localities with fewer than 3,000 inhabitants who are not supposed to be served by ONAS, it is important to define locally based support structures that can perform some of the needed activities to support household investment. Given that the needs are on a manageable scale, it may be possible to delegate these responsibilities to the private sector with clear targets for increasing access to improved sanitation and financing on the basis of results in terms of achieving such targets. This will be done in the context of a clear policy framework, which need to define the acceptable standards for on-site sanitation and fecal sludge management, and would ideally be combined with a robust communication campaign to highlight the benefits of investing in improved sanitation services to households.

Recommendation 5: Improve Sector Monitoring to Track Progress Toward the SDGs

The present study has identified several areas to improve sector monitoring to enable tracking of SDG implementation. With a view to track progress with the implementation of the water target of the SDGs, such monitoring should particularly focus on equity in access, including in terms of service levels and affordability.

Refinements to Tunisia's WASH monitoring framework are required to measure progress on the SDGs. Although significant progress has been made, the SDGs raise the bar significantly in terms of higher levels of service and universal access. Existing data availability on levels of service for WASH in Tunisia (for example, on water quality and service intermittency) are not sufficient to monitor the SDGs. The WHO/UNICEF Joint Monitoring Programme's SDG baseline summary will be available in July of 2017 and will clarify efforts needed to meet the SDGs.

In line with SDG objectives, water quality monitoring need to be improved, particularly for GDAs and self-supply. This calls for strengthening water quality monitoring authorities, as well as for transitioning to more formal service delivery arrangements for rural areas that can deliver services in line with SDG requirements (such as at-home water supply and full management of fecal sludge including downstream treatment or reuse). For water quality monitoring, fecal matter, fluoride, and arsenic have been identified as the highest priority parameters for the SDGs (WHO/UNICEF 2016). The measure recommended for assessing fecal contamination is the presence of indicator bacteria such as *E. coli* or total thermotolerant coliforms in a 100 milliliters water sample.

The lack of robust data on service levels is a serious barrier to targeting investments to improve services. This, for example, hinders improving the allocative efficiency of public funds by targeting identified problem areas, where service levels may be lower than in areas served by SONEDE but where no robust data are available. Improving the availability of information on service levels (for example, by benchmarking at the governorate level) should be a priority in the SDG era. Doing so will allow comparing the service levels delivered by service users of the two main providers (SONEDE and ONAS) with those delivered by smaller providers (GDAs) or by households themselves through self-supply.

Information on service levels should be collected around key performance indicators, including data on water quality, continuity of service, consumer service indicators (such as the time needed for repairs) tariffs, consumed water quantities, and prices paid. To address inequity issues, better data is needed for nonnetworked households (usually the poor), not only about WASH service provision, but also about other socioeconomic characteristics that are affected

by inadequate WASH services, such as waterborne diseases, on which no specific data could be located to explore linkages between inadequate WASH services and diseases.

Improved financial sector monitoring is also needed to ensure appropriate targeting of public funding for WASH services and to support advocacy efforts for the sector. Sector financial monitoring could be supported by regularly preparing WASH Accounts to track how financial resources are allocated. The WASH Accounts prepared for this study encompass the period 2013–15 and provide a complete view on how much is spent on WASH services, by whom, and for what. Disaggregation of expenditure data by governorate has allowed us to identify the governorates that receive comparatively less funding and compare these data with poverty data. Such an exercise provides a solid initial snapshot of WASH sector financial flows but need to be complemented by deeper analysis of the costs of service provision to the different population segments and of the potential for reaping efficiency gains in the sector. This requires conducting strategic financial planning to estimate the sector's future financial needs and the potential for reassigning public funds to the subsectors that need them the most, while leveraging commercial finance for the sectors that are able to do so over time (such as urban water supply and sanitation).

Tracking financial flows to WASH can be achieved only if the WASH Accounts are periodically prepared to track evolutions, such as any potential improvements in the targeting of public funds. A second exercise should ideally be carried out in 2019 to cover the period 2016–18. To improve the next exercise of preparing WASH Accounts, work on improving data sources should be undertaken in the intermediary period, as follows:

- A better definition of the expenditure categories "sector support and water resources management" needs to be developed by sector stakeholders so as to be able to clearly identify associated expenses with these critical support functions for the sector;

- A better database of the rural areas covered by the GDAs should be prepared, and the reliability of the information collected for the GDAs should be strengthened;

- Additional WASH-related questions should be included in the standard household surveys (particularly the National Survey on Households' Budget and Consumption and Living Standards) to better estimate household expenditure on self-supply; and

- A specific survey should be carried out to estimate nondomestic, nonnetworked WASH expenditures—that is, by institutions, industries, or commercial establishments.

For the WASH Accounts to be prepared in 2 or 3 years and to include improved financial data, it is necessary to promptly identify the institution that supervise the preparation of WASH Accounts and ensure that the aforementioned recommendations on data improvements are duly followed through. As for the first exercise, the Ministry of Development, Investment, and International Cooperation could take on this responsibility but would need to identify financial and human resources to do so.

References

Hutton, Guy; Varughese, Mili. 2016. The Costs of Meeting the 2030 Sustainable Development Goal Targets on Drinking Water, Sanitation, and Hygiene. World Bank, Washington, DC.

Llano-Arias, Valeria, and Guy Norman. 2015. "South Africa's Equitable Share Formula: A Useful Model for WASH Financing?" Finance Brief 5, Public Finance for WASH, London, United Kingdom. http://www.publicfinanceforwash.com/sites/default/files/uploads/Finance_Brief _5_-_South_Africa_Equitable_Share_model.pdf.

Nodalis, ASPA, and SCET Tunisie. 2016. "Etude sur l'équilibre financier de la SONEDE, Synthèse générale, September 2016." Tunis, Tunisia.

OECD (Organisation for Economic Co-operation and Development). 2009. "Strategic Financial Planning for Water Supply and Sanitation. A Report from the OECD Task Team on Sustainable Financing to Ensure Affordable Access to Water Supply and Sanitation." OECD, Paris.

World Bank. 2011. "Water Supply and Sanitation in South Africa: Turning Finance into Services for 2015 and Beyond." An AMCOW Country Status Overview. Water and Sanitation Program. World Bank, Washington, DC. https://wsp.org/sites/wsp.org/files/publications/CSO -SouthAfrica.pdf.

———. 2016. "Tunisia WASH Poverty Diagnostic—Phase 1 Report." World Bank, Washington, DC.

WHO/UNICEF (World Health Organization/United Nations Children's Fund). 2015. "Progress on Drinking Water and Sanitation: 2015 Update and MDG Assessment." Joint Monitoring Programme. Geneva: World Health Organization, and New York: UNICEF.

———. 2016. "Thematic Report on Safely Managed Drinking Water Services." Geneva: World Health Organization, and New York: UNICEF.

Annex 5A Governorates and Regions in Tunisia, 2017

Regions

- Greater Tunis
- North East
- North West
- Centre East
- Centre West
- South East
- South West