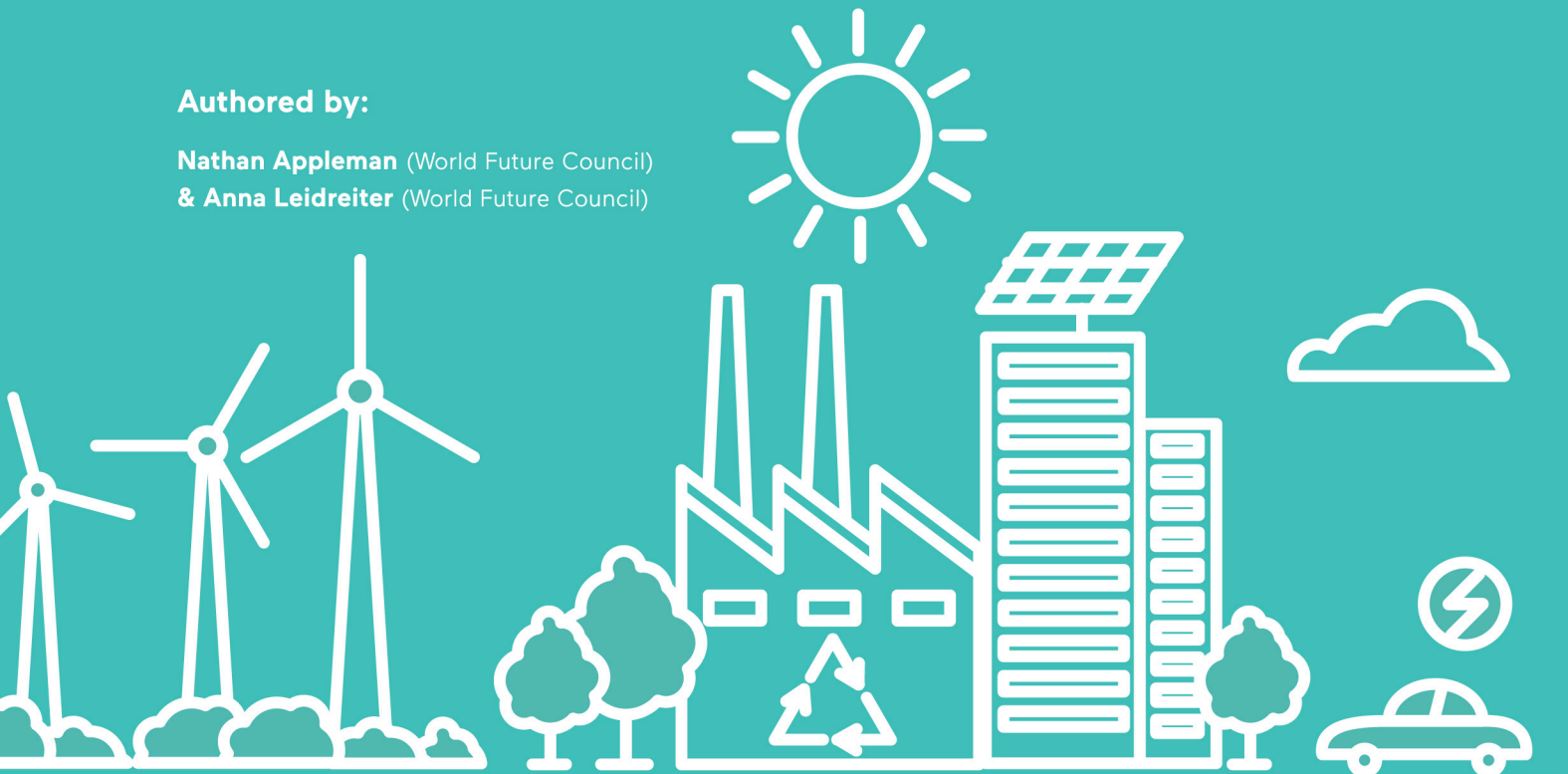


POLICIES OF THE FUTURE:

A Guide to Local Environmental Governance in Tunisia

Authored by:

Nathan Appleman (World Future Council)
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Executive Summary

Since the regime change of 2011 that saw the toppling of former president Zine el Abidine Ben Ali, Tunisia has engaged in a slow, yet consequential pathway towards democratisation and good governance. These processes have fueled a society-wide discussion on the role of subnational governments, and more specifically on that of municipalities. The adoption of the new constitution in 2014 has reflected these tendencies, as decentralisation constitutes a major theme of the course set by the new regime for the country's future. However, limited progress has effectively been achieved in this regard since. A new Code on Local Authorities ("Code des Collectivités Locales") was first drafted in 2014 but has yet to be fully approved by the assembly of representatives. This legislative delay has spurred renewed political discontent among civil society, further reinforced by the postponement of local elections, which had been initially planned for late October 2016 but, as of the time of writing, have been rescheduled to the Spring of 2018. Still, the Code on Local Authorities is expected to bring about substantial autonomy for municipalities, both financially as well as administratively, and, as such, will confer them enhanced control over the delivery of key public services.

A notable aspect of this decentralisation process revolves around the effective realisation of sustainable development. Under the dictatorial regime, the delivery of public services were subject to strict control from the central authorities, multiple overlaps, and pervasive corruption which constrained the potential for local environmental action. However, the years following the 2011 revolution have in fact seen municipalities being just as overburdened by inefficiencies, if not more in some cases. This has not only resulted in the perpetuation of unsustainable practices, as local governments lack both the administrative and financial capacity to improve services, but also in their deterioration. Taking the example

of solid waste management, the coverage of collection services has become more uneven, while the number of uncontrolled and unsanitary landfills has risen, hence further worsening air and soil pollution. Therefore, the reconfiguration of competences between the central and local authorities and the re-evaluation of the current revenue-sharing scheme provided by Tunisia's decentralisation framework are key for ensuring the modernisation and sustainability of local decisions responding to essential public needs. Lastly, the reinforcement of local capacities for supporting sustainable development will also complement the central government's current efforts to tackle rising environmental threats such as desertification, coastal degradation, air pollution, and a loss of biodiversity.

The present guide hence aims at supporting local environmental action by highlighting the challenges and opportunities that lie ahead of local authorities, as the new allocation of responsibilities provided by the Code on Local Authorities will enable them to drive environmental protection and climate change mitigation. The guide notably draws on the current economic, environmental, and institutional situation in Tunisia to assess the ongoing decentralisation process and its expected benefits for local environmental governance. Further, it builds on international best practices from three emergent nations (Chile, South Africa, and Jordan) where decentralisation further enhanced the contributions from local governments towards sustainable development in key sectors. Finally, practical recommendations for adopting environmental and sustainable policies and actions throughout six different domains (energy, water, waste, urban planning and infrastructure, transport, and agriculture/land) intend to support local policy makers in Tunisia in the course of the next months and years to take action:

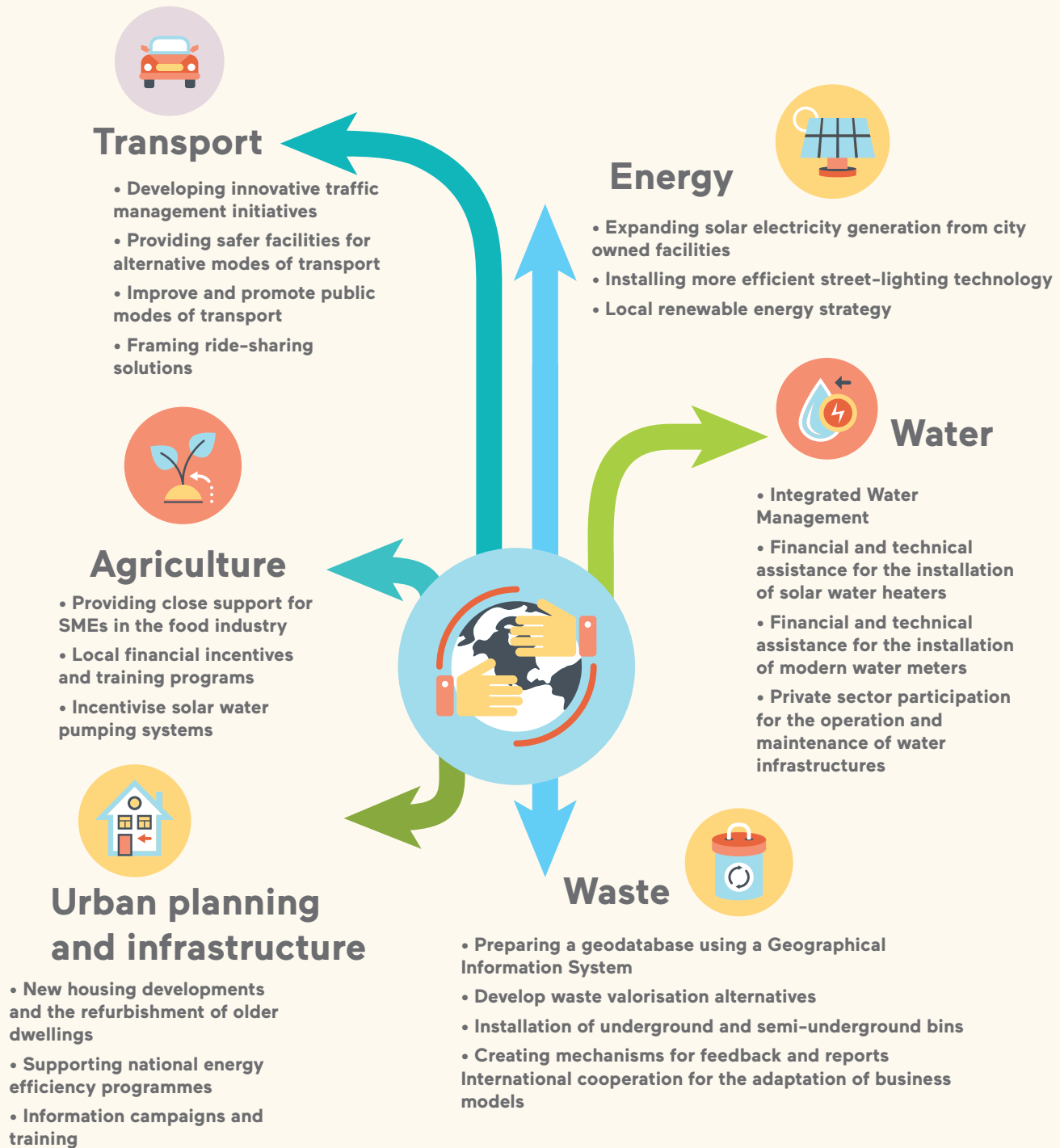
CROSS-SECTORIAL POLICY RECOMMENDATIONS INCLUDE:



- Strategic planning
- Land-use policies
- Environmental Fiscal Reform
- Inter-municipal cooperation
- International cooperation
- Monitoring of indicators
- Awareness campaigns and training
- Target setting



SECTOR-SPECIFIC POLICY RECOMMENDATIONS INCLUDE:



Contents

Executive Summary	3
1. Introduction	9
2. Understanding the current situation in Tunisia: opportunities and challenges for sustainable development	12
2.1 Between economic recovery and structural problems	12
2.2 Challenges to Sustainable Development	13
2.3 Pathway(s) for Tunisia's green growth	18
3. Tunisia's new decentralisation framework: implications for local environmental action	20
3.1 A highly centralised regime, still to this day	20
3.2 What capacities for local environmental governance and urban planning?	21
3.3 A much needed, yet still opaque, decentralisation framework	23
4. Lessons from International Best Practices for Local Environmental Governance	28
4.1 Local renewable energy development in Chile	28
4.2 Water management in South Africa: operational and fiscal autonomy of local governments	30
4.3 Improving waste management in Jordan through international cooperation	31
5. Recommendations for Local Environmental Governance	34
5.1 Cross-sectoral policy options	34
5.2 Sector-specific policy recommendations	39
5.2.1 Energy	39
5.2.2 Water	40
5.2.3 Waste	42
5.2.4 Urban planning and infrastructure	41
5.2.5 Transport	45
5.2.6 Agriculture	43
6. Conclusion	46
7. Bibliography	48

1. Introduction

1. Introduction

More than seven years after the Tunisian uprisings that resulted in the fall of the dictatorial regime of Zine el Abidine Ben Ali and four years after the adoption of a new constitution, Tunisia stands at a crossroad regarding its development. Having experienced a period of economic turmoil following the terrorist attacks of 2015 combined with a slump in European demand for Tunisian goods and services, the current government, led by Prime Minister Youssef Chahed, is developing a set of ambitious decentralisation reforms as foreseen in Chapter 7 of the 2014 Constitution.

This marks a strong break with the governance practices of the old regime, which was characterised by a high degree of centralisation of power, while the progressive division of competences resembled more a form of deconcentration rather than real decentralisation. The limited political space for sub-national governments, and particularly municipalities, to formulate their own strategies and implement appropriate measures themselves has proved to be a hindrance for sustainable development in the country¹. This is further amplified by vast inter-regional disparities resulting in the inadequation of national programmes with local priorities in several parts of the country.

After the electoral law for municipal elections was adopted in early 2017, a parliamentary vote on the “Code des Collectivités Locales” (or Code on Local Authorities), regulating competencies, budget and political domains for Tunisian municipalities, is yet to come. The Code is expected to accomplish a new milestone in the country’s democratisation process, while at the same time defining new structures for environmental governance, particularly at the local level.

Since the 2011 revolution, municipalities throughout the country have been administered by appointed “special delegations”. Local elections to democra-

tically elect municipal councils and mayors were scheduled for 30th October 2016 by the Electoral commission (ISIE). This date was however postponed to 2018 due to the resignation of Chafik Sarsar, President of ISIE in May 2017, and allegedly to delays to the adoption of the Code on Local Authorities, which has been considered by some as a necessary condition for holding free, fair, and meaningful local elections².

Important delays in the legislative process and the intensity of discussions pertaining to the governance framework that will emerge from the decentralisation process have caused frustration among civil society. Furthermore, the actual implications of this framework for the financial and administrative autonomy of local governments, and the resulting capabilities for municipalities to pursue local sustainable development policies are laden with uncertainty. In sum, many municipalities are facing challenges that keep accumulating, and yet are incapable of knowing whether or how they will be able to respond to these challenges in the foreseeable future.

In this regard, this Guide aims at supporting local action as early as possible in the decentralisation process. Furthermore, it also envisions wide-ranging policies that can facilitate the realisation of co-benefits for the local economy.

The findings are based on stakeholder consultations with key influencers as well as on a literature review. It targets newly elected municipal councils, mayors, regional actors, and the Ministry of Local Affairs and the Environment to apply the knowledge.

A summary of the status quo in Tunisia analyses competencies, challenges and opportunities that Tunisian municipalities currently face in the context of sustainable development. This initial diagnosis

further informs the structure and approach undertaken in the following chapters. Based on the situational analysis, the guide outlines the drivers, uncertainties, and implications of the new decentralisation framework that was envisioned in the 2014 Constitution. It furthermore considers the types of competences that Tunisian municipalities can expect to draw from the adoption of the Code on Local Authorities as well as other sectoral reforms, and how this new allocation of responsibilities can enable them to drive environmental protection and climate change mitigation. Concrete questions address the administrative and financial autonomy of municipalities, their ability to apply for international funds and pool resources, the degree of flexibility for developing Public-Private Partnerships, and key implications for the resulting scope of action.

While acknowledging that political, social and geographical contexts vary across world regions, local government initiatives from other countries can inform Tunisian municipalities and local authorities in initiating and implementing local environmental action. When contextualised, they offer valuable learnings and recommendations to overcome existing challenges. This Guide therefore presents relevant international case studies, drawing on experiences of Chile, South Africa, and Jordan. Each description showcases a set of local policies for the provision of essential municipal services spanning across several policy areas, which were developed in institutional environments that varied with regards to the division of competences across governance levels.

Finally, the Guide puts forward concrete recommendations which reflect the varying realities of the 350 Tunisian municipalities, some of which have only recently been created resulting from the desire to have a fairer representation of the Tunisian territory, as prescribed in the constitution. As a result, the guide offers a wide range of complementary measures by drawing a distinction between cross-sectoral initiatives and sector-specific tools. Six distinct policy areas are identified, namely energy, water, waste, infrastructure and urban planning, transport, and agriculture. As the targeted municipalities differ in terms of institutio-

nal capacity, budgetary capability, and experience with environmental change, the various proposals presented in this report reflect different priorities, degrees of capital intensity, and time-horizons.



2. Understanding the current situation in Tunisia: opportunities and challenges for sustainable development

Having submitted an ambitious commitment to its intended nationally determined contribution (INDC) ahead of COP21 in 2015 with a particular focus on deploying low-carbon energy technologies, Tunisia now intends to become a regional and international model for climate change mitigation. These efforts come at a decisive moment in the country's political and economic development.

Given the country's dwindling natural resource endowment (particularly with regards to water resources) as well as several constraints largely determined by local climate conditions (variability, aridity, desertification, etc.), future Tunisian economic development is contingent on the adoption of new modes of production and consumption compatible with climate change adaptation objectives that will ensure long-term sustainability and prosperity.

While environmental issues had already been largely acknowledged before the 2011 revolution, as suggested by the country's ratification of previous international climate accords as well as its participation in several international initiatives, sustainable development has been placed at the very core of the new regime's long-term vision for Tunisia. This is notably enshrined in the Preamble of the 2014 Constitution defining "climate security" as a primary goal of the new regime, Art. 12, which concerns itself with sustainable development, and Art. 45, which guarantees "the right to a healthy and balanced environment and the right to participate in the protection of the climate", for which "the state shall provide the necessary means to eradicate pollution of the environment."³

Securing a pathway towards sustainable development nevertheless requires a robust understanding of current economic and political dynamics and the opportunities and challenges that they offer. Indeed, Tunisia presents a contrasting picture of a country with tremendous potential and resources for advancing its sustainable development agenda, be it with regards to wind and solar endowment, a young workforce, and a growing middle class. The country nevertheless faces growing economic, environmental, and social challenges calling for a better coordinated response from policy-makers across levels of government.

2.1 Between economic recovery and structural problems

Comparatively speaking, Tunisia benefits from a generally diversified and open economy, as the tourism, industry, services and resource extraction sectors all contribute a non-negligible share of national GDP. However, growth has stalled since the 2011 revolution. According to the most recent World Bank estimates⁴, GDP growth in 2015 was estimated at 0.8 percent, though it is projected to reach 2.3 and 2.8 percent in 2017 and 2018 respectively⁵ as the economy recovers from the combination of deadly terrorist attacks and exacerbated social and economic tensions that impacted the country in 2015. Considering some of the economic sectors that contribute most to the country's prosperity, manufacturing and services are projected to recover slightly from the 2015 slump, as suggested by a recent surge in imports of raw materials and exports of textile and mechanical products. Moreover, after tourism

had been at an all time low in recent years due to a lasting terrorist threat, the industry is finally picking up. Nevertheless, other sectors such as agriculture, textile, and mining have yet to catch up with other industries, thus limiting the scope of the country's economic recovery⁶.

Reaching shared prosperity is furthermore contingent on the capacity of the current government, led by Mr. Youssef Chahed, to address several widespread socioeconomic problems. While unemployment, particularly among the youth and women (standing at 35.7 and 23.5 percent, respectively) remains a primary concern for voters and policymakers alike, other structural difficulties such as widespread extreme poverty (4.6 percent in 2010), gender inequality with regards to economic opportunities, deterioration of the ecosystem, inefficiency of public administration, political instability, and corruption also pose major roadblocks to development. Moreover, structural regional disparities, which in 2010 led to the wide-scale protests that eventually resulted in the toppling of former president Ben Ali, favour fast development based on services and manufacturing in the coastal regions, while the hinterland lags behind. According to the World Bank⁷, poverty rates ranged from a low rate of 8–9 percent in the urbanised areas to a high of 32 percent in some parts of the in-lands. Taken together, the north-western and centre-western parts of Tunisia are home to about 46 percent of the nation's poor while representing less than a quarter of the population⁸, and have the lowest regional development scores across three indicators – education, employment, and health.

As a means to secure a sustainable growth trajectory, the Tunisian government adopted a 2016–2020 Strategic Development Plan (SDP) in 2015. This five-year plan proposes a series of major reforms and public works projects across five strategic areas: public administration reforms and anti-corruption measures for improved governance; human development and social inclusion; higher-added-value economic activity; mitigation of regional disparities; and the development of a green economy. With a total value of about TD120bn (€51.5bn), this ambitious

plan is expected to boost the country's annual growth rate to 4% by 2020 through an increase in the public investment budget, with public-private partnerships (PPP) playing a substantial role. While these measures are estimated by independent observers to result in a reduction of the national unemployment rate to below 12% with the creation of some 400,000 new jobs, new social programmes are also expected to play an important part in reducing poverty to around 2% by 2020.⁹

2.2 Challenges to Sustainable Development



While the SDP constitutes an essential step in Tunisia's transition towards a low-carbon society, the plan has yet to specify in which way it will address the numerous environmental problems that stand in the way. According to an AfDB report¹⁰, the main environmental problems at hand concern the deterioration of water resources, waste, air pollution, desert encroachment and soil degradation, degradation of the coastal environment, and loss of biodiversity, which have all been linked to various degrees to climate change. Many of these issues are further exacerbated by existing regional imbalances, as the interior of the country not only lags behind the coastal regions in economic terms, but also suffers disproportionately from the effects of environmental change. These issues are thus of primary concern to sub-governments and particularly to municipalities, whose responsibility it is to ensure an efficient and sustainable delivery of public services relating to water management, waste collection and transport, intra-urban mobility, land use, as well as electricity access and energy standards.

Regional inequalities are perhaps most apparent with regards to water resources, as rainfall totals

800 mm per annum in the north, and between 50 mm and 150 mm in the south. What is more, over half of Tunisia's total water consumption came from surface water while the rest originated from mostly non-renewable groundwater between 2002 and 2012¹¹. Throughout the rainy season, rainfall is concentrated within a few days. Overall, two thirds of the country are endowed with 50 days of rain or less throughout the year. The south of the country is particularly vulnerable in this regard with less than 10 days of rain. In contrast, certain northern regions experience 100 or more days of rain¹². This translates into the quasi-entirety of the territory consistently being faced with water shortages, with the exception of the coastal North-West.

Geographical variations in the distribution of water are problematic for several reasons. First of all, one can observe that, in contrast to the Greater Tunis and the Northern part of the country which are host to essentially (renewable) surface water, the Southern region depends much more on its groundwater reserves which are estimated to be largely non-renewable and, according to a UN Habitat report¹³, are expected to be severely affected by environmental change in the coming years. At the same time, the distribution of water resources is at odds with existing economic imbalances and future development needs. By way of illustration, the South-West of the country, where fragile groundwater reserves constitute the main water source, is also where the most polluting industries such as phosphate mining are found, hence resulting in heavily polluted water reserves and exacerbated resource rivalries between economic actors. These developments have resulted in the emergence of many social movements and public protests in recent years, demanding secure access to quality water from either the national distributor for drinking water (Société Nationale d'Exploitation et de Distribution de l'Eau, or SONEDE) or the sanitation services (l'Office National d'Assainissement, or ONAS). Important protest movements include the « révoltes de la soif » and movements in and around Kasserine in 2015.

Looking at water uses, the Tunisian agricultural sector is the largest water consumer (around

80%), while household consumption, industrial and touristic needs make up the rest. With around 87% of the population having direct access to tap water, the major problems that Tunisia is confronted with have to do with the distribution of drinking water, and losses and waste of water in agriculture. A 1994 SONEDE report indicated that losses were estimated at around 27 percent with regards to drinking water, and 40 percent in agricultural use¹⁴. Due to institutional rigidity and public deficits, little has been done since then to correct issues of aging and non-maintained infrastructure, evaporation, and soil infiltration. The historically highly centralised nature of water management in the country and the costliness of infrastructure investments have delayed large scale public investments to a large extent, while even less has been done on a local level in governorates and municipalities. Though Agricultural Development Cooperatives (GDAs) have been set up in parallel to SONEDE in order to operate more efficient rural water supply based on experience sharing between farmers, these entities have frequently had too little capacity to have substantial effects¹⁵.

Although heavily polluting industrial activities and wasteful utilisation of resources are increasingly regulated by the central authority¹⁶, future competition for water and land use is bound to intensify. Indeed, the anticipated changes in temperature and rainfall patterns and their associated impacts on groundwater availability will most likely accelerate soil degradation, which will in turn reduce both the yield and productivity of agriculture as cultivable land becomes rarer.

The introduction of integrated water management systems, more efficient water use and enhanced demand management are explicitly mentioned in the Tunisian government's long-term strategies. Desalination has also been proposed as a viable solution for meeting water needs in the Tunisian south, in spite of the high energy costs associated with the process. Furthermore, Tunisia's long-term plan relies on a substantial increase in wastewater re-use for irrigation as well as improvements to agricultural efficiency and a gradual reduction in the share of water allocated to agricultural uses. However, these new approaches also require

substantial change in the institutional framework currently in place. The responsibility for water supply and sanitation in both urban and rural areas is highly centralised, and lies in the hands of the SONEDE and ONAS, which themselves fall under the supervision of the Ministry of Agriculture and Environment. In a 2014 report¹⁷, the OECD observes many opportunities for public-private partnerships (PPPs) and private sector participation (PSP) in the water management sector, while at the same time identifying several structural barriers such as the lack of transparency, inefficient public spending, and the financial instability of several historical operators.

Important regional disparities are also relevant for questions of waste management. In contrast to water, however, the issue seems to have as much to do with natural endowments as with public administration inefficiencies. Waste has been recognised as a vital policy area in general efforts towards the improvement of living conditions, given that Tunisia produces more than 2.5 mio. tons of solid waste every year¹⁸ (in comparison to 1.8 mio. in 2002) and that these numbers are

set to increase at a rate of 3% per year, most of which is made up of organic waste. In response, the Tunisian government, through the action of the ANGeD (Agence Nationale de Gestion des Déchets), has in previous years deployed important efforts to optimise waste collection while at the same time sensitising the population on recycling. New discharges are being planned at the moment to complement the existing landfill capacity already under the agency's control and to reduce consumers' reliance on illegal disposal of large quantities of waste. Furthermore, in response to a lingering problem concerning plastic waste – Tunisians use over 1 billion plastic bags every year – ANGeD has established 372 collection points to this day all over the country to encourage citizens to dispose of their plastic waste separately¹⁹.

Despite these repeated efforts, the work accomplished by the ANGeD and, by extension, the national government has been particularly questioned on two fronts, namely efficiency and accountability. Concerning the former, environmental observers have on several occasions claimed that the agency does not fully implement all the required measures to ensure that every step from garbage collection to disposal is made in a sustainable way. One particular point concerns the disappointing realisation of Tunisia's waste-to-energy potential. Among other factors, the involvement of the private sector in the collection, recycling, and treatment of solid waste has delayed the development of more efficient processes. Because private subcontractors are paid by the amount of waste that they collect, transport, and treat, there is limited incentive for these actors to reduce and revalorise solid waste. Furthermore, it is alleged that the government's commitment to recycling does not reach the lower rungs of the waste management ladder. As for accountability, a 2014 Horizon2020 report states that on average 85% of urban areas are covered by waste collection services, while coverage in rural areas is said to be "very patchy"²⁰. In several of these areas, municipalities, local associations, NGOs, and other informal waste collection services have had to in effect take over several of the responsibilities that normally lie with the ANGeD.

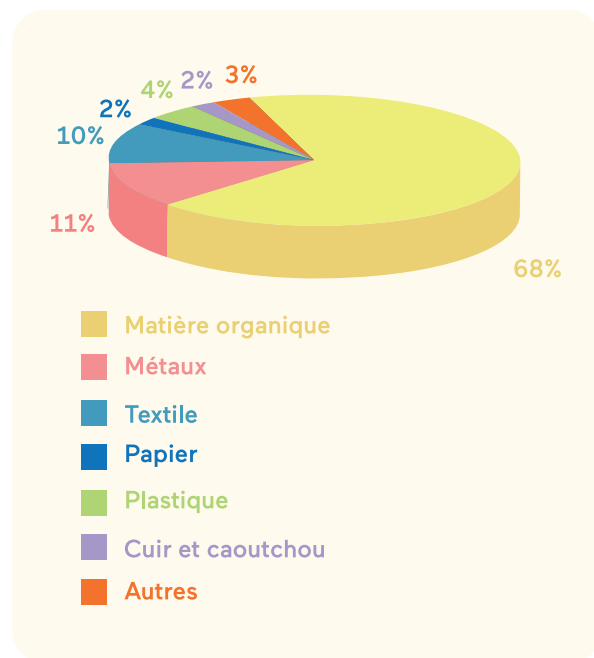


Figure 2: Composition of Household Waste in Tunisia in 2007. Source: Ministry of Agriculture and Environment of the Republic of Tunisia (ANGeD), 2010

Overlapping competences and structural regional inequalities also constitute key aspects of the challenge posed by transportation to governorates and municipalities. Economic development, accompanied by an intensification of transport infrastructure and trade activities as well as rapid population growth since the 1970s have contributed to rising GHG emissions, of which transport represents around 30% today. While investments in infrastructure and equipment additions (tunnels, viaducts, etc.) have been significant, their geographical distribution across the Tunisian territory remains very unequal.²¹

Mobility in Tunis is considered to be above average in comparison to other large metropolises in the MENA region²². Yet, public modes of transportation on urban and suburban routes are still saturated at peak hours, (90 % to 100 %), “whereas at off-peak times traffic on certain routes drops off considerably, to the extent that the average fillage rate for buses is very low (an average of 12 passengers for the TUT)”²³. These mismatches, which translate into additional constraints for users such as insufficient provision of services when they are most needed, have created incentives for many to keep relying on individual vehicles or private transport means. According to a Euronet report²⁴, 60 to 70% of Tunis

residents rely on private means of transportation. In smaller municipalities and rural areas, the rate falls to less than 20%. Furthermore, the share of railway transport for goods has significantly decreased in previous decades, from 30 percent in 1985 to 3 percent in 2009, to the advantage of more carbon-intensive alternatives such as heavy-duty road transport²⁵. As such, much of the rest of the country not only lags behind with regards to public transport, but also urgently requires important infrastructural changes to reduce congestion, encourage alternative modes of mobility in cities, while at the same time reducing CO2 emissions by incentivising more efficient practices for goods transport.

Several cities such as Sousse and Sfax have proposed detailed plans in their urban development strategies (SDVs) for encouraging daily commutes via public transport, including budgets for acquiring new buses of different sizes (and running on alternative fuel-sources), modifying tariff levels, re-structuring roads in order to allow for the installation of bus lanes and additional stops, as well as improving the overall services (particularly with regards to providing accurate and reliable information to commuters). However, reports of administrative delays, insufficient

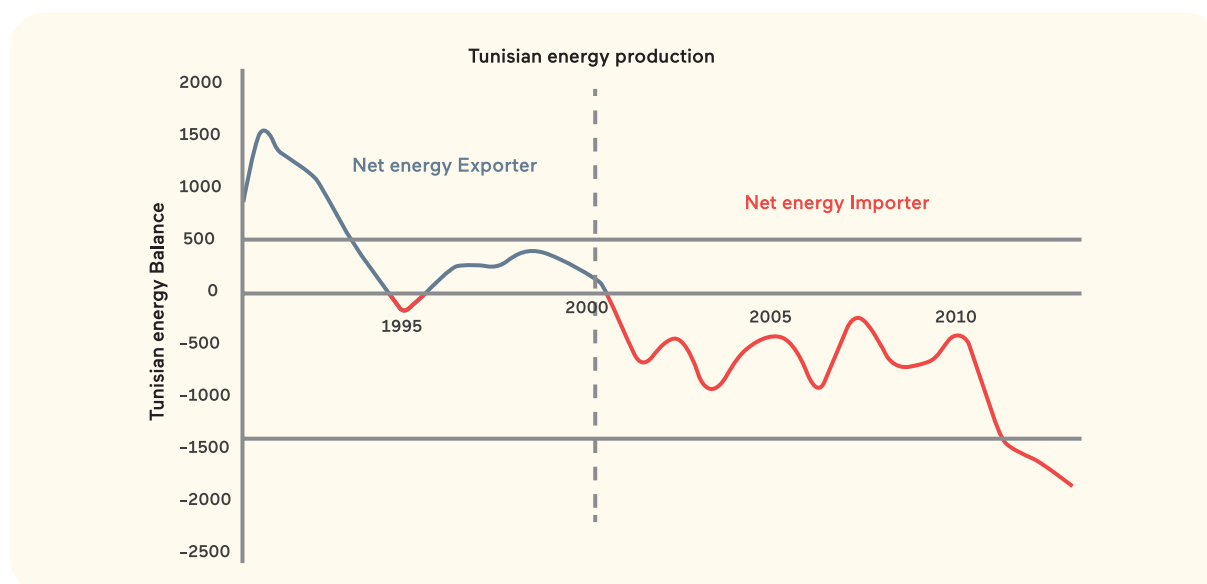


Figure 4: Tunisian Energy Production Source: Bearing Point, Energy strategies and policies in North Africa : Tunisia, The pursuit of energy independence, n.d.

municipal and/or regional funds, and a national unwillingness to support autonomous municipal strategies demonstrate the limits associated with a centralised form of governance in this context.²⁶

With regards to energy, Tunisia has experienced a significant rise in energy imports in the past two decades (Figure 4), while exports have dwindled. This illustrates the necessity of renewed efforts to reduce the country's dependence on fossil fuels, as the sector produced more than half of the country's total GHG emissions²⁷. Still, progress towards a more efficient, less wasteful, and less carbon-intensive system has been hindered by the country's overreliance on natural gas, half of which is imported from Algeria.

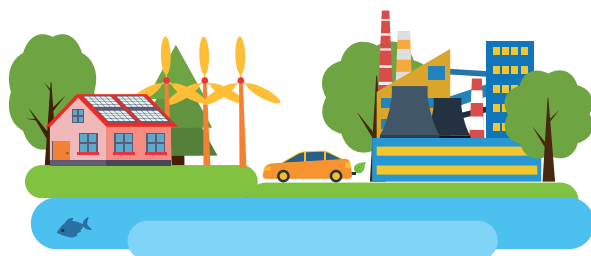
In the power sector, where generation, transmission, and distribution are dominated by a single integrated public utility ("Société Tunisienne de l'Electricité et du Gaz", or STEG), the electrification rate has grown to almost complete coverage in rural areas (28% in 1986 to 98.5% in 2006). Furthermore, the rural hinterland also shows promising prospects with regards to the installation of distributed renewable energy technologies, as a new wave of renewable tenders have recently been announced^{28 29 30} as part of the central government's larger long-term renewables strategy (e.g. Tunisian Solar Plan), which aims at increasing the share of renewable electricity in the country's generation mix from 4% in 2015 to 30% in 2030. Other progressive measures have already been in place, such as net-metering (2003), tax exemption for the import of low-carbon technologies, and state subsidies (up to 30%) for the installation of Solar PV panels.

For new buildings in the public sector, provisions have gradually increased the mandatory level of energy efficiency, while also raising standards for new constructions altogether. For instance, thermal insulation has been obligatory since April 2005, and is notably complemented with promotional programmes such as PROMO-ISOL, a financial incentive scheme aimed at encouraging investments in building insulation which is intended to help insulate 20,000 homes and 1,500 tertiary sector buildings, and PROSOL, a similar mechanism destined at solar water heaters³¹.

These ambitious targets nevertheless raise some important questions, not least with regards to grid capacity and electricity market reform. As of today, the power sector still lies in the hands of a single vertically integrated utility company, the STEG, which will eventually need to undergo substantial reform in order to accommodate market newcomers and foster further private investment in additional electricity generation capacity. In part because of the existing market monopoly, private homeowners have only been able to produce electricity and sell excess production to the utility since August 2008. Furthermore, other issues such as the absence of financial guarantees to investors under power purchase agreements, the absence of feed-in-tariffs, and the limited role of public authorities with regards to allocating land for the development of renewable energy projects have further slowed down the penetration of clean energy sources.

With regards to energy efficiency, most of the initiatives outlined above seem to focus on attracting large-scale investment projects, thus raising concerns as to the allocation of gains coming from the modernisation of energy systems, and whether or not small players will effectively benefit from such programmes. Furthermore, these programmes are still facing financial, technical and communication-related challenges that prevent them from reaching their full scale-up. For example, while some energy efficiency actions have been achieved in large energy consuming industries such as cement, most actors have yet to engage in more ambitious steps such as the installation of more efficient machinery and thermal energy storage technology. Several factors account for these insufficient efforts, among which the lack of local expertise, high fixed costs (which, depending on the type of action, are not necessarily covered by existing incentive schemes), and the lack of sensitisation of key stakeholders to the benefits associated with these measures.

2.3 Pathway(s) for Tunisia's green growth



Though many questions remain unanswered with regards to defining the necessary steps for achieving a low-carbon society especially towards territorial re-organisation, a multitude of initiatives, whether at the national, subnational, or municipal level, have been put forward and indicate positive signs for future developments.

Despite the limits described above, the GDAs ("Groupements du Développement Agricole") still constitute promising forms of cooperation around agricultural projects between farmers, local businesses, and entrepreneurs. Organised along a democratic structure, they have in effect been addressing important challenges that face the sector as a whole such as dealing with the erosion of cultivable soils, integrating low-cost irrigation techniques, and redefining land-use rivalries. In 2011, it was estimated that 2742 GDAs were active in Tunisia, the majority of which focused on the management of water resources³². While their overall impact on water and land use in the country is still developing, these cooperations provide essential services in key rural areas not covered by national actors. GDAs have notably been estimated to ensure access to tap water across 50% of the rural territory³³. In addition to their economic value, GDAs³⁴ have also helped promote democratisation at the local level and serve as knowledge hubs for sustainable agriculture, building and craftsmanship. Indeed, through the provision of public goods by private means, these organisations have made alternative economic and political participation options available to small actors in agriculture.

Several challenges have also emerged as a result of the country's growing reliance on GDAs. Firstly, this dependence poses the question of

non-intervention on the part of state actors such as SONEDE in a sector that, on paper, is the responsibility of the government. Furthermore, while national and regional actors have a limited role with regards to the delivery of water services in these rural areas, they do however exert control on GDAs, notably through the "Commissariats régionaux de développement agricole" (CRDA). These CRDAs are committees specially appointed by the Ministry of Agriculture which are responsible for supervising the administrative and financial management of GDAs. Assessments of the control of public authorities over the supposedly independent GDAs have diverged. On the one hand, several observers have pointed out the legal rigidity which grants wide-ranging competences to CRDAs and other supervisory bodies, notably as a result of the law of October 18, 2005, thus limiting the potential scope of action of GDAs. On the other hand, the actual implementation of several provisions made by the aforementioned law has been sporadic. The third and last question raised by the country's reliance on these associations is that of budgetary and corruption control. GDAs are substantially indebted towards state-actors (SONEDE, CRDAs, etc.). Overall, said debt was estimated to approximately 39 Million dinars in 2014 (over 13 Million euros)³⁵. This is in part due to the failure of several large consumers to pay their water bills, notably after 2011. As a whole, the accumulation of unpaid debts, in addition to existing administrative corruption issues within GDAs, has hampered their ability to respond to urgent needs, while at the same time preventing any internal reorganisation. Concerning waste management, several cities have responded to the uneven distribution of public services by starting campaigns and volunteer work to keep their cities and beaches clean (especially in areas relevant for tourism). Moreover, ANGED has put into effect a programme for the collection and treatment of biogas at landfill sites. Supported by the World Bank, collection and treatment of biogas is in operation at the landfill of Djebel Chakir (since 2008) and the controlled landfills of the governorates of Bizerte, Gabes, the island of Djerba (since 2010), Sfax, Medenine (since 2011), and is planned for Nabeul, Sousse, Monastir, and Kairouan. Other initiatives have included the sorting of waste in specific

economic sectors. For example, under the GODEM project the municipalities of Mahdia and Djerba (Tunisia) have succeeded in involving large hotels in a sorting campaign.

Finally, while several initiatives and projects have been carried out in recent years to not only advance the sustainable development agenda in Tunisia, but also to help Tunisian municipalities improve the quality and efficiency of key public services, these still lack the regulatory framework required for many more to flourish. Whether in the cases of Sousse and Sfax, both of which pioneered the adoption of ambitious urban development strategies (SDVs), or that of promotional programmes in which they took part (such as PROMO-ISOL), municipalities' slim revenue and scope of action necessitated the technical and financial backing of international institutions. A change in the definition and division of roles between the national government, regional governorates, and municipalities would contribute much to the latter being able to autonomously decide on the measures that best suit the local conditions and the main challenges at hand.³⁶

In conclusion, addressing both the structural institutional factors behind Tunisia's socioeconomic problems as well as the challenges facing sustainable development in the country requires an integrated framework that enables not only the central government, but also local authorities and civil society at large to push down on all levers simultaneously. Moreover, since different parts of the country are unequally affected by pollution and climate change and differ with regards to the resources at their disposal for dealing with these problems, differentiated response options are needed in order to exploit the co-benefits of sustainable development.

3. Tunisia's new decentralisation framework: implications for local environmental action

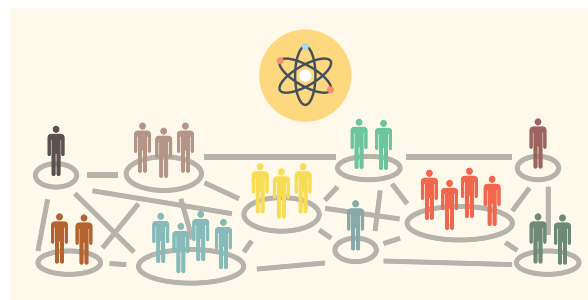
Local authorities play an essential role for adequately matching public policy to the needs of their constituents given a variety of local challenges and opportunities. However, they have largely been underestimated in the country's political and economic development. Local management, planning, service and infrastructure delivery have historically lied in the hands of the central powers. Though decentralisation had already been recognised as a necessity in previous decades, the role of cities and other local political structures was particularly emphasised in the wake of the Jasmine revolution, especially with regards to including citizens in the decision-making process and deliberating on a fair and sustainable development pathway³⁷.

While the regime change and the resulting new constitution placed decentralisation at the core of the political narrative, the pace of the transition from a highly centralised and concentrated system to a decentralised, participatory framework has disappointed many³⁸. Indeed, the long-awaited "Code des Collectivités Locales" (Code on Local Authorities) that aims at regrouping and extending all existing legislation on local competences has not yet been voted on by the parliament, although drafting began in 2015. Public discontent was further fuelled by the repeated postponement of the first Tunisian municipal elections (originally planned in early 2016), which has, according to several actors, allegedly been justified by abovementioned delays in the legislative review process of the Code³⁹.

Furthermore, the Code on Local Authorities will most probably not suffice for achieving the necessary transformation of Tunisian institutions, especially when it comes to certain areas of sustainable development. Several more years of political reforms, administrative changes, and

targeted legislation will be necessary to create new structures that put the country on a path towards sustainability and better address the basic needs of Tunisian citizens in the sectors mentioned previously.

3.1 A highly centralised regime, still to this day



The various (transitional) governments in place since the fall of Ben Ali very quickly undertook initial measures aimed at combating regional development disparities. In 2014, a new constitution providing for the sustainable development of the country, equal living conditions in all regions and administrative decentralisation was adopted⁴⁰. In the regions, elected regional councils are set to take responsibility for regional development in the future and have their own funding at their disposal⁴¹. The transfer of competences and fiscal responsibilities from the State to municipal councils is also envisioned in the Constitution⁴². However, below the surface of the initial, visible success, structures have barely changed. The country remains highly centralised, the regions and municipalities still enjoy limited fiscal and administrative autonomy and are therefore hindered in their efforts towards shaping development, while their priorities are, in some places, in competition with the plans of national ministries and agencies⁴³.

In the two-tier system of local government that has been preserved in Tunisia after the regime change, 24 governorates, which represent the state administration and operate under the Ministry of the Interior, co-exist with elected local officials. Each governorate is presided by the governor, who is directly appointed by the central government. Furthermore, elected regional councils have replaced the regional assemblies, which were made up of deputies, comprising the governor, municipal mayors, presidents of rural councils and other appointed members. Regional councils are responsible for the management of regional affairs, regional development plans and town plans in non-urbanised areas, and generally implement the agenda set by the central authorities⁴⁴.

Regions are divided into urbanised and non-urbanised territories. Among the so-called urbanised territories there are around 350 municipalities in urban areas and rural centres governed by an elected municipal council that elects its mayor from within its ranks⁴⁵. Local authorities have at their disposal three types of competences, namely their own, those shared with the central power, and those that are delegated by the latter to them in accordance with the principle of subsidiarity⁴⁶. While the current legislation that delimits these competencies is being redefined (as described later in this chapter), the spheres of public life over which local authorities have so far enjoyed exclusive authority encompass the quietude, cleanliness, and conservation of living conditions that enable the “integration of citizens in their environment”⁴⁷. While seemingly broad, this description of local competences is barely matched by the actual public services for which local authorities are responsible. Indeed, these services are limited to the issuance of construction permits, the management of public lighting networks, the modernisation of certain roads, the management of parking spaces, and safety⁴⁸. The delivery of all other public services is either shared with the regional or state actors, or expressly delegated by the latter.

To this day, local authorities are still subject to strict rules put in place by the central government and its representatives in the districts. More precisely,

municipalities are subject to dual supervision: administrative supervision exercised by the Ministry of the Interior and its delegates, and financial supervision exercised by both the Finance Ministry and the services of prior control of public spending depending on the first ministry⁴⁹. This pressure heavily constrains the political options available to municipal authorities with regards to financing new infrastructure projects, improving the delivery of services, and having a say in the way in which they cooperate with national agencies as well as international organisations.

Local Councils of Development were established by law in 1994 as a means to create a bridge between the State and local powers⁵⁰. These consultative bodies are composed of presidents of municipalities and rural councils, sector chiefs, representatives from public institutions, and representatives of ancillary services providers. They are responsible for making recommendations to the regional assemblies on economic development matters – however, without any formal authority over the decision-making process, these bodies have had limited success in closing the gap between the local, regional, and national spheres of policymaking⁵¹.

3.2 What capacities for local environmental governance and urban planning?

Despite notable contributions towards environmental governance, such as the implementation of the UN Agenda 21 in 1995⁵², Tunisia finds itself constrained by the institutional legacy of the previous regime, which hinders substantial efforts towards achieving a low-carbon economy. The OECD in particular observes a lack of appropriation over environmental and climate issues throughout Tunisian society, which it attributes to low implication levels on the part of the main stakeholders, an overly formalised centralisation of decision-making processes, and relatively weak public awareness⁵³.

Under the former regime, the absence of a national structure exclusively focused on tackling climate change hindered the emergence of an effective strategy, as limited synergy between the relevant

regulatory bodies did not allow for institutional tools and policies to be implemented adequately⁵⁴. Despite an encouraging international context, marked by the Rio Earth Summit and the Kyoto Protocol, which fostered the emergence of new policies and institutional responses to climate change in developing countries, the rigidity of the Ben Ali regime has led to several important points being overlooked, including the monitoring and evaluation of decarbonisation and sustainability strategies in sectors other than energy⁵⁵. Even in most research studies, the OECD notes, little synergy is found between the various aspects of sustainable development and climate change. This compartmentalisation in the production of knowledge, whereby the assessment of environmental degradation and pollution as well as the monitoring of programmes is uncoordinated across actors and areas of expertise, is a further example highlighting the need to engage in a far-reaching restructuration not only of public administration, but of all stakeholder groups directly and indirectly involved at all stages of the policy-cycle in the context of sustainable development⁵⁶.

The weaknesses of the current institutional setting are most visible when looking beyond the national structures. Indeed, by considering the insufficient capacity of 'subnational governments' at the regional and particularly municipal levels, structural inadequacies become all the more obvious. The 1959 Constitution has institutionalised processes

that, to this day, still restrict the policy leeway of local governments. Under this system made of top-down control mechanisms (known as "régime de tutelle"), local action very often necessitates the approval of the central planner, who examines its legal and political adequacy before the policy can be implemented. In cases where the central authority rejects the policy, the municipality is often required to reconsider the action and re-adjust it according to the governmental norms. In other cases, State decisions may take direct primacy over that of local policy-makers⁵⁷.

In a recent international comparisons report, the UCLG finds that municipalities are not only suffering from institutional deficiencies, but that they are particularly vulnerable to centralised control over their own revenue (See Figure 5). Currently, only 4 percent of the government's budget is devoted to municipalities, lower than all other countries in the region: Morocco, for instance, devotes 11 percent of its budget to municipalities while, in Turkey, 20 percent the budget is allocated to local authorities⁵⁸.

Transfers from the central government to local governments constitute the overwhelming majority of local government revenues and are organised mostly through the Common Fund for Local Authorities (Fonds Commun des Collectivités Locales or FCCL) created in 1975⁵⁹. The allocation to municipalities is done annually according to a formula (10 percent distributed to

REVENUE BY TYPE	%GPD	%General Government	%Subnational Government
Total revenue 2012	2.1%	6.5%	100%
Tax revenue	0.4%	2.0%	20.0%
Grants and subsidies	1.6%	-	75.8%
Other revenues	0.1%	-	4.2%

Figure 5: Subnational Government Finance in Tunisia
Source: UCLG, OECD & AFC: Tunisia, 2016

all municipalities; 45 percent allocated according to municipal population; 41 percent allocated according to past years' property tax revenue; 4 percent aim at equalising municipal revenues). Municipal taxes, on the other hand, include taxes on industrial and commercial activities (53 percent of tax revenues), property taxes (rental value tax on housing paid by owners and the tax on unbuilt land, both representing 15 percent of tax revenue), hotel tax and market tax. Other transfers to municipalities include capital transfers to finance investments on a case-by-case basis from sectorial ministries. These capital grants are also usually linked to municipal borrowing from the Municipal Development Fund⁶⁰.

As a direct consequence of the revenue sharing framework described above, local authorities lack the flexibility and adaptability to respond to public needs in a timely and adequate manner. The costliness of modernising public services or putting in place infrastructure projects has been linked to certain issues such as public hygiene becoming a problem in the cities of Sousse and Gabes, where local governments lack the capacity to deliver basic services⁶¹. Whether it is for improving the local carbon footprint through the installation of LED public lighting, or powering public buildings with renewables, time-consuming applications for state loans or extra funds through the Municipal Development Fund are inevitable. Furthermore, the implementation of several projects and strategies at the local level falls outside the exclusive competences of local authorities, and is thus contingent on the approval of the governorates and the central government⁶².

3.3 A much needed, yet still opaque, decentralisation framework

Decentralisation and competence sharing had been part of the general narrative offered by the Tunisian government as early as under former President Ben Ali. Already in the mid-1980s, the central government offered several procedural changes so as to address local disparities – which, however, failed to hide the fundamentally centralised and rentier nature of the regime⁶³. In fact, the succeeding economic reforms

implemented throughout the 1990s that insisted on promoting urbanisation have actually widened the gap between the different regions.

Nowadays, the current administration is revisiting the relationship between the central government and local authorities. Since the 2011 revolution, Tunisia has made the inclusion of municipalities into the country's regional and national economic planning process key focus. For example, the new Constitution of 2014 is a significant achievement in this regard as it dedicates a specific chapter to local governments. It recognises decentralisation processes as the fundamental basis for a better organisation and distribution of power in Tunisia, ultimately generating more efficient and unmediated administration. The first article dedicated to local authorities states that «local power is based on decentralisation» (Chapter VII, Article 131). It further states that local councils – chosen by universal, free and transparent vote – will have their own legal personality, as well as administrative competences and financial autonomy. The degree to which this inclusion will determine municipalities' independence over infrastructure planning and delivery of key public services is still being discussed in parliament, and will undoubtedly play a major role in the local elections scheduled (at the time of writing) for 2018⁶⁵.

The State made a substantial attempt to reconsider the legal framework to govern future local communities. While the Constitution of 1959 had declared municipal councils and regional councils as entities responsible for the management of local and regional affairs, the Constitution of 2014 contains 12 Articles providing rules and principles relating to local power. The new principles and rules included in the text are as follows:

- The principle of free administration of local authorities (Article 132)
- The principle of democratic election of local leaders (Article 133)
- The principle of participatory democracy and good governance (Articles 137 and 139)

- The principle of financial independence (Article 132)
- The principle of subsidiarity and its progressive implementation by means of a scheduled transfer of skills and resources (Articles 135 and 136)
- The principle of granting own means and resources to local authorities in line with the powers assigned to them (Article 135)
- The principle of the transfer of resources to deal with any transfer of new powers (Article 135) and the principle of balance between revenue and expenditure (Article 136)
- Equalisation rule to reduce inequalities between communities under the principle of solidarity (Article 136)
- Recognising the benefit of decentralised authorities as a regulatory power in their jurisdiction (Article 134)
- The recognition of a right to court proceedings against the State for the benefit of local communities to assert their prerogatives and rights and to protect their lives and their territory (Article 142)
- The removal of guardianship and a priori control of the legality of their acts (Article 138)

The main hopes for decentralisation lie, however, in the already mentioned “Code des collectivités locales” (Code on Local Authorities) that has been discussed in Parliament since the first draft was submitted in 2014. However, it is still uncertain what new provisions this lengthy legal procedure will bring, and thus hopes that they could empower participatory democracy and open up new possibilities for local governments are valid but as of yet unsubstantiated.

The Code on Local Authorities will unify all local government organisations in one legal framework that combines the many separate laws currently on the books. This would allow legislators to handle these laws in a coordinated and coherent manner and, as the decentralisation process continues, amend or create new laws that are compatible with the constitution. The code has undergone many

revisions since the first draft was issued in October 2015. The latest draft—submitted to the Assembly of Representatives on May 11, 2017—outlines the prerogatives of local authorities, delineates their management of assets and budgeting, and defines their relationships with other entities, including civil society organisations, higher tiers of government, and international bodies. Applied to sustainable development, municipalities can, for instance, independently decide to call upon international organisations or non-governmental organisations to assist them with planning and realising policies and projects pertaining to the delivery of public services, given these partnerships respect national sovereignty (Art. 37). Additionally, several articles explicitly refer to municipal councils, as opposed to regional councils, as the primary and often the only necessary institution from which approval is needed to carry out infrastructure projects and urban policies (Art. 82, Art. 109). Municipal councils will furthermore have one obligatory commission for cleanliness and environment, responsible for creating cooperation frameworks with local stakeholders and organising public consultations on the delivery of key public services (Art. 69). The direct influence of governorates and regional councils on local-level policy-making, on the other hand, sees their direct influence on local-level policy-making limited, while several of their functions are defined as merely ‘consultative’ for to harmonising individual local strategies (Art. 88, Art. 131). Nevertheless, these regional authorities retain veto rights with regards to municipal financial management (Art. 137, Art. 143) and, as such, take on a set of procedural roles meant to keep the municipalities spending and borrowing behaviour in check.

The Code also provides new rules with regards to contracting out certain public services to private actors, thus paving the way for Public-Private Partnerships (PPPs) between local authorities and the private sector⁶⁶. Should the draft of May 2017 be passed, the oversight of the central government over the way in which municipalities can negotiate contracts with private providers would be substantially reduced. While private contracting would still be subject to approval by

the municipality council (Art. 78), a local authority could delegate the construction of infrastructure or even the acquisition of goods and equipment necessary for public service delivery to a private entity without needing the prior approval of a representative of the State. Furthermore, public contracts would be awarded based on a transparent and competitive framework in compliance with national laws, thus opening possibilities for competitive bidding (Art. 81).

This particular provision would introduce important changes to the sectors considered in this paper, as PPPs would be enabled to carry out projects when these do not conflict with the exclusive jurisdiction of national agencies (Art. 79). For example, waste collection and transport to transfer points (which, until now, has been the responsibility of local authorities) could be contracted to private agents more flexibly without referring to the region or a State representative. Additionally, the management of real estate would, unless specified otherwise, fall in the hands of the municipality, along with the implementation of building efficiency standards. Although the allocation of responsibilities for electricity, transport and water infrastructure remains dependent on the region and competent national agencies, the text seems to suggest that the delivery of services in these sectors would fall under the category of shared competencies with the municipality (Art. 346), thus leaving some scope of action for local actors. Local authorities would however retain full competence over so-called “proximity services”, including rooftop PV installations on public buildings (Art. 224).

Most importantly, the new code is expected to help local authorities be more financially independent and flexible. As stated in Article 121 of the Code, municipalities are free to manage their resources, given compliance with their stated budget and the principle of self-administration. Although both the preparation and determination of the municipal finance and the ensuing budget can still be contested by the governor, local authorities control how they set the tariffs of various taxes and royalties (Art. 132). This covers taxation on housing, local services, concession royalties, as well as special contributions for public works.

Furthermore, as stated in the Code, any additional competences endorsed by the municipality will be matched by a consolidation of available resources (Art. 140). Local budgets would additionally be complemented by state loans, subsidies, resource transfers or tax breaks based on financing needs (Art. 124). Finally, local authorities are also granted greater responsibility in the context of incentivising local economic activity. Article 102 poses that, when justified by economic or social motivations, local authorities may grant direct or indirect support to economic enterprises, given compliance with the general norms on transparency, competition, gender equality and an efficient use of public goods.

By diversifying their sources of financing and providing guidance on how to allocate this money, the code will, after being voted in parliament, ensure that municipalities can afford to design and implement developmental projects to provide jobs and drive growth. As part of this diversification, the code thus transfers some tax collecting duties from the central government to local authorities, though further legislation will be required to manage the specifics and ensure they correspond to the responsibilities attached to each decision-making level. In addition to local taxes and levies, the revenues generated by the exploitation of municipal spaces will also fall under the exclusive control of municipalities.

Overall, the envisioned gains with regards to the administrative and financial autonomy of local authorities constitute substantial progress towards achieving sound governance. It furthermore is expected to create substantial opportunities for environmental regulation and greater sustainability in the delivery of public services. Nevertheless, the exact nature of the competence sharing agreements between national ministries and agencies, regions, municipalities, and even districts in certain policy areas needs to be further detailed through reforms to the existing legislation.

While the Code on Local Authorities already constitutes an essential step towards achieving local environmental governance⁶⁷, other sector-specific reforms are also underway (or have already

been passed) to further complement it. Some of the new legal texts that are already in place and support decentralisation and liberalisation in the relevant sectors include the law on Public-Private Partnerships that was adopted in parliament in 2015⁶⁸. The text directly pertains to sustainable development and its adoption represents a crucial step in the country's ambitious aims with regards to achieving its energy transition. Indeed, PPPs and concessions were, until recently, principally framed by individual sector-specific laws and mandates, thus causing complexities for prospective investors. The changes brought by the law will provide additional clarity and attractiveness to the Tunisian economy, as well as greater investment stability⁶⁹. Most importantly perhaps, it will simplify procedures for public actors at various levels of governance, which otherwise would lack the institutional capacity to maximise the potential of the private sector⁷⁰. Naturally, PPPs do not constitute a panacea against all challenges posed to the delivery of public services and would still require a strong participation of public agencies (at all governance levels), not least to ensure that private sector participation is efficient, accountable, and entails genuine benefits for the population. Private sector participation could nonetheless enhance climate change adaptation capacities in Tunisia, as suggested by the ongoing development of projects such as the desalination plant in Djerba⁷¹.

At the time of writing, a newly submitted code for water management is under review. This proposed law, or « Code des eaux », is characterised by lawmakers' recognition of the significant role that decentralisation processes will play in the context of water governance. As such, the law proposes the creation of regional councils for water, whose role would be to set up the foundations of a decentralised and participatory approach towards water management that would also accommodate the current developers and exploiters, which have been a fundament in the existing system but suffer from several weaknesses. In short, the "code" aims not only at granting greater powers to local decision-makers, but would also tackle the overexploitation and pollution of water resources while integrating societal needs and contributions by civil society⁷².

The "Code de l'Amménagement du Territoire et de l'Urbanisme" (Code on Land-Use Planning and Urbanism), which was initially passed in 1994 and reformed on several occasions since then, has defined in many respects the role played by the various institutional actors with regards to regional and local planning policy. It nevertheless provided limited means for local powers to act autonomously, and therefore is in contradiction with the fundamental decentralisation principles enounced in the 2014 Constitution. In recent years, talks about reforming this text by promulgating a new "code on urbanism" have been underway in order to not only comply with, but also further support the transfer of competences provided by both the Constitution and the Code on Local Authorities. This expected "code on urbanism" will, in conjunction with the aforementioned texts, grant greater flexibility to local authorities, while at the same time substantially reducing project delays by improving the efficiency of administrative procedures⁷³. Laws and measures that specifically refer to energy production from decentralised renewable sources are also expected.

However, the realisation of the commitments to decentralisation made in the country's new constitution has been constrained by both institutional resilience to change and slow legislative processes. More than seven years after the revolution, the scope of action of local authorities is still limited by constraints posed to the allocation of the budget as well as excessively rigid structures of governance – a legacy of the previous regime. Furthermore, important reforms that touch upon decentralisation and liberalisation of the public sector have lagged. Legislation such as the Code on Local Authorities is essential in order to advance towards greater decentralisation and economic prosperity. In the context of sustainable development, other long-awaited reforms touching on water governance and territory planning are expected to further enhance the scope of action of local authorities defined in the Code on Local Authorities. Taken together, these elements constitute the building blocks of the government's wider strategy for local sustainable development which, despite key questions on its pace and scope remaining open at the time of writing, is essential

for achieving the country's long-term energy and climate goals.

While the uncertainties surrounding the Tunisian decentralisation process may be thought of as slowing down efforts towards a more sustainable future, the assessment of several international best practices and their applicability to the Tunisian context can help overcome these apparent constraints by informing the discussion on the short-term and medium-term policy options that are available to local authorities. The next chapter turns to this by building on experiences from Chile, South Africa, and Jordan.

4. Lessons from International Best Practices for Local Environmental Governance

While acknowledging that political, social and geographical contexts vary across world regions, local government initiatives from other countries can inform Tunisian municipalities and local authorities in initiating and implementing local environmental action. When contextualised, they offer valuable learnings and recommendations to overcome existing challenges. This chapter therefore capitalises on experiences from Chile, the City of Johannesburg in South Africa, and the Greater Irbid Municipality in Jordan in order to formulate concrete policy recommendations. Different sectors have been analysed to show the full breadth of potential: Renewable energy in Chile, water management in South Africa and waste management in Jordan. Each country's national government has set the stage for decentralisation in another extent, equipping municipalities with differing political mandates. Respectively, responsibilities of local decision makers is analysed to derive key learnings and proposals for local governments to pursue enhanced environmental action in Tunisia.

4.1 Local renewable energy development in Chile

Chile has increasingly relied on imported oil and gas to fuel its continuous economic growth over the past decade. While in 1980, the country imported 42% of its energy consumption, this figure now stands at 75% today⁷⁴. This import dependency led to rather high electricity spot market prices, which created a significant competitiveness disadvantage for the Chilean economy. Meanwhile, these high prices revealed an attractive renewable energy market, supported both by private-sector firms – namely, large mining corporations – and

the Chilean government⁷⁵. To support renewable energy, the government implemented Law No. 20.257 in 2008, which established a minimum clean energy quota in the national grid of 5% as of 2010 and 10% by 2024⁷⁶. After emphasising the need for further diversification, a bill in 2013 raised the target for renewable energy sources to 20% by 2025. In January 2016, Chile's new energy strategy "Energy 2050" set a target of generating 70% of the country's electricity from renewables by 2050⁷⁷.

To achieve these targets, the Chilean government has implemented a range of policies including net metering, energy auctions, tax policies such as a carbon tax, and utility obligation quotas⁷⁸. Furthermore, a specific programme to promote local-scale energy development in municipalities has been launched by the Ministry of Energy in September 2015: the "Comuna Energética" (energy community). It aims at contributing to "Chile's energy development model by giving more emphasis to projects raised from the community, exploiting the potential of energy efficiency and renewable energies in each municipality and raising awareness among citizens regarding the energy issue in general and towards responsible and participative consumption behaviour in particular."⁷⁹ The energy community programme constitutes an accreditation process, which supports the competition between communities in deploying renewable energy and enables them to become nationally recognised "energy communities". For this, a community has to present a local energy strategy and its renewable energy potential. Projects include the installation of photovoltaic panels, the construction of biomass plants, wind farms, and the creation of technical and educational programmes.



In detail, the “Comuna Energética” consists of 3 phases: the pre-evaluation, the development of a Local Energy Strategy (EEL) and the accreditation. For the pre-evaluation, a municipal commitment, an initial analysis of the local energy situation, concrete actions that can be implemented in the municipality, a list of relevant stakeholders interested in participating, and possible funding sources for implementation must be presented⁸⁰.

The Local Energy Strategy (EEL) is a tool that enables municipalities to analyse their energy resources and estimate the potential for renewable energy and energy efficiency in their territory, thus defining an energy vision and actively involving the community in the energy development. This instrument allows the different local authorities to make decisions based on data⁸¹.

When the project was launched, six communities benefitted from the Programme (Antofagasta, Caldera, Penaloén, Providencia, Temuco and Coyhaique). Today, these municipalities are formally considered energy communities by the Ministry⁸².

There are different financing options for municipalities for the development phase of the EEL and the implementation. The EEL can be financed through municipal resources, national and international funds, or by engaging private companies⁸³. For the implementation phase, the national government may co-finance up to 70% and further builds the programme on innovative



Figure 7: Elements of LEE (just replace the existing one)

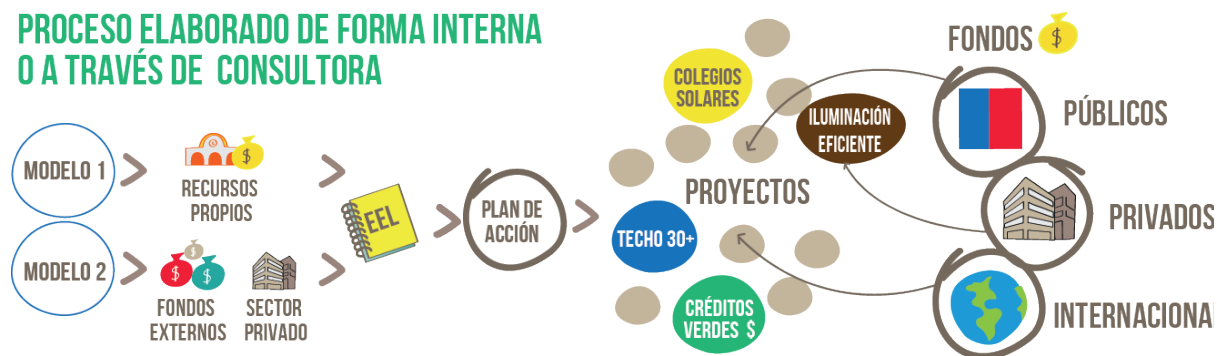
Source: Ministerio de Energía de Chile, 2017

- 1) definition of municipal manager
- 2) definition of boundaries/limits?
- 3) actor workshop
- 4) identify key actors
- 5) Identify energy demand per sector
- 6) identify energy potential for supply per sector
- 7) extrapolate demand til 2030
- 8) potential of energy efficiency
- 9) potential supply by renewables
- 10) vision workshop
- 11) target setting
- 12) participation process
- 13) List Projects
- 14) definition of management and communication model
- 15) final validation and integration of comments and publication

business models that generate value for the private sector and citizens. Examples of new business models are energy cooperatives, «ESCO» models and crowdfunding platforms, among others^{84 85}. Since the Comuna Energética project is in its early

stages, so far only the creation of educational programmes and trainings has been completed. The municipalities Independencia, Santiago and Recoleta for example initiated a “Center for energy saving, efficient consumption, conscious saving»⁸⁶.

PROCESO ELABORADO DE FORMA INTERNA O A TRAVÉS DE CONSULTORA



It is a mobile demonstration center, consisting of an exhibition of explanatory posters on solar energy, thermal insulation and energy efficiency as well as solar panel, efficient appliances, thermal insulators and efficient luminaires. The objective of is to raise awareness and educate the public on issues of energy efficiency, solar energy and thermal insulation. The Municipality of Temuco provided training for technicians on energy efficiency in buildings, facilitating knowledge exchange and presentations by international experts and private sector representatives as part of their Local Energy Strategy⁸⁷.

financing with the national government but are not selected¹ can obtain support from other private or public parties for the development of their Local Energy Strategies. After that, they are also eligible to sign an agreement with the Ministry of Energy and participate in different activities, such as training and dissemination⁹⁰.

4.2 Water management in South Africa: operational and fiscal autonomy of local governments

In 2016, the Ministry of Energy formally launched a first call to communities to present their strategies and as a result, twelve more communities joined the project. In January 2017, a second call was launched, with an investment of USD 112 million from the national government⁸⁸. A total of 22 communities joined the programme, although 14 are still working on their legal status as an energy community⁸⁹. Municipalities that apply for co-



1 - Out of the 71 municipalities that submitted an application in the 2017 call, 12 distributed in 6 regions were selected.

municipal water service authority “Johannesburg Water”, which has the reduction of water losses as one of its key priorities. The following analysis may specifically support Tunisian municipalities, who consider making use of the opportunity, unveiled by the CCL, to cooperate with private developers who undertake the management of municipally-owned water infrastructure such that the monitoring, operation, maintenance, and modernisation.

Johannesburg Water supplies 1.4 million domestic, commercial and industrial customers in the City of Johannesburg metropolitan municipality and serves an estimated consumer base of 4.5 million people with approximately 1,574 ml/da. It operates a water distribution network of 11.300km, 86 reservoirs, 33 water towers, 108 bulk water supply meters, thus managing an average daily demand of 1.366.000m³ while holding supplies that equate to the usage between 24 and 30 hours. The local utility employs approximately 2.500 people, is fully owned by the City and governed by a board of executive and non-executive directors⁹¹.

Despite being uncommon, water provision in South Africa does in several instances include a wide range of stakeholders, including the private sector. According to a report by the National Treasury, “a key characteristic of the sector is the diversity of Water Service Providers in terms of both scale and type: a water services provider could serve one small rural community, one or more towns, a large metropolitan area or a whole region; it might be a community-based organisation, a local municipality, a district municipality, a public utility (owned by local and/or national government), or a private organisation. The sector is further characterised by public ownership and control (at the national and municipal level) and limited participation by private companies”⁹². Aging infrastructure, rapid urbanisation and growing informal settlements have strained the capacity of municipalities to cater, in particular, for residential areas.

In the case of Johannesburg, several interventions such as the replacement of water mains, pressure management, leakage detection and repairs, monitoring of towers and reservoirs, and education

programmes for the public have led to significant improvements over the past years: Water savings of 102.500.000m³ have been achieved over two years, which equals over 10% of the annual demand, or 3 - 4% when annual growth in demand is taken into account⁹⁴. In addition, a 77% reduction in pipe bursts has been recorded. Savings on the purchase of bulk water are estimated at \$113.7m over the two years. \$15.65m spent on active leakage control for an anticipated saving of 20.800.000m³ and \$2.86m spent on pressure management generated savings of about 38.000.000m³ of water .

This public private partnership essentially separates responsibilities between the technical operator with economic interests and the local government with steering rights and political priorities. Hereby, benefits from both institutional models (private as well as public operations) can be capitalised. This is particularly important in a public-private partnership as it is important for local government to maintain control and in fact the capacity to oversee the operator’s activity. By ensuring transparency, local governments can open an opportunity for civil sector organisations to participate in the important role of supervision and upholding accountability fighting corruption. The water utility remains a significant contributor to the city’s revenue base⁹⁵, because the City of Johannesburg has the fiscal autonomy with regards to revenue management and budgeting. The details and national requirements which the city is subject to are regulated through a comprehensive national framework, consisting of different legislations and regulations. To fully grasp Johannesburg’s approach, this is outlined in the following paragraphs.

In South Africa, the constitution that has been developed in the post-apartheid period, legislates access to sufficient water as a basic right for all. It mandates the national government with the responsibility to take “reasonable legislative and other measures, within its available resources, to achieve the progressive realisation” (Bill of Rights, Section 27(2)) and grants provinces and municipalities a certain level of self-governance (Chapter 7, Article 151-156). It states that it is the “objective of a local government to ensure

the provision of services to communities in a sustainable manner” (Chapter 7, Art. 152 (b)). This particularly includes “water and sanitation services limited to potable water supply systems and domestic waste-water and sewage disposal” (Schedule 4 – Part B) for which “a municipality has the executive authority and the right to administer” (Chapter 7, Art. 156). Based on this, South African municipalities have established water service authorities, for which they also have, to some extent, fiscal autonomy (Art. 229).

Regulations such as the Water Services Act No. 108 (1997), National Water Act No. 36 (1998) and the Municipal Systems Act No. 32 (2000) guide local governments in fulfilling their functions as water service authorities. They provide the framework for the local and national government to work together as well as for forming partnerships with the private sector, while retaining government obligations to the public.

The Water Services Act No. 108 (1997) gives the national government the legislative and executive authority to oversee the effective performance of municipalities in their function as a water service authority. The act distinguishes between the water services authority and the operational responsibilities of the water services provider. The National Water Act No. 36 (1998) provides for the progressive establishment by the Minister of catchment management agencies. “The purpose of establishing these agencies is to delegate water resource management to the regional or catchment level and to involve local communities, within the framework of the national water resource strategy.” (Part 2, Art. 81 (1)) Finally, the Municipal Systems Act No. 32 (2000) obliges local governments to protect the poor by controlling the cost of essential services such as water. Poor households must have access to basic services through: (i) tariffs that cover only operating costs; (ii) lifeline tariffs for basic levels of service; and (iii) any other direct or indirect method of subsidisation of tariffs for poor households (Chapter 8, Art. 74(2c)). According to indigent policy, 6.000 litres of safe water per month must be provided free of charge to poor households⁹⁶. To fulfil this mandate, municipalities “may assign to a service provider responsibility”

(Municipal Systems Act No. 32 (2000), Chapter 8, Art. 81(2)), that can manage “its own accounting, financial management, budgeting, investment and borrowing activities within a framework of transparency, accountability, reporting and financial control determined by the municipality” (Municipal Systems Act No. 32 (2000), Chapter 8, Art. 81(2 ((a) (v))). This may include the collection and management of fees (Municipal Systems Act No. 32 (2000), Chapter 8, Art. 81(2 ((a) (vi))).

While the legislative framework regulates water management comprehensively and provides a high level of decentralisation, there are still obstacles to overcome. This is particularly the case with regards to equity and equality. Also, after more than a decade of South African democracy, Johannesburg as well as most other local authorities struggle with “providing and improving the quality of water and sanitation services in areas that historically received service of abysmal quality, if any”⁹⁷. While the national policy framework holds local authorities accountable to uphold equity principles such as a free allocation of basic water services, a lack of financial capacities and human resources often hinder implementation. This “often leads them to put efficiency objectives in the forefront, with the hope that the equity issues will be dealt with down the line”⁹⁸.

4.3 Improving waste management in Jordan through international cooperation

The projected Code on Local Authorities in Tunisia paves the way for more flexible direct cooperation between sub-governments and international or intergovernmental agencies, municipalities and regions to further enhance environmental action. The example of the City of Irbid in Jordan provides some ideas and approaches on how such cooperation can be set up and which mechanisms and actions it could entail.

Irbid, which is the third largest city in Jordan, located in the far North West in the Yarmouk River basin and Jordan Valley, has developed a new standard of cooperation to improve its solid waste management. The city is also called ‘the

cultural capital' of the country and its economy is characterised by agriculture, real estate, transport and communication, services linked to higher education institutions, and public administration⁹⁹. 94% of all industrial establishments are micro size businesses (less than 5 employees)¹⁰⁰.

Facing challenges including urban expansion into fertile agricultural land, high population density, preservation of nature and cultural heritage as well as a lack of visions and guidelines for development, Irbid embarked on a process in 2009 to implement a "Master Plan Development", working with various municipalities, across all competent government ministries and agencies, and with international partners¹⁰¹ within the framework of the "Greater Irbid Municipality" (GIM). GIM amalgamates 16 areas surrounding the City of Irbid. It comprises 23 districts totalling 410 km², and it has 650,000 inhabitants of whom 200,000 live in the City of Irbid. GIM is the largest of the 18 municipalities that form Irbid Governorate (IG) in the Northern Part of Jordan (area 1621 km², population 1,110,000)¹⁰².

While the Master Plan Development sets a framework for defining responsibilities, regulating growth, fostering stakeholder engagement and coordinating authorities/ institutions and hierarchies. Waste management is a key target sector¹⁰³. The overall goal was to improve the environmental waste situation in Greater Irbid Municipality (GIM) by adopting the model of the Danish municipality Viborg.

Implementing this, GIM has established a twinning cooperation with Viborg Municipality as part of the Danish support to decentralisation in Jordan under the Danish-Arab Partnership Programme (DAPP)¹⁰⁴. Since 2011, this cooperation has been financed by DAPP and facilitated through Local Government Denmark (LGDK)¹⁰⁵.

The main objectives of this cooperation with regards to waste management are¹⁰⁶:

- Waste separation
- Creating ownership and dialogue with citizens (especially school children) and other stakeholders

through education and fostering good governance (sustainable and reliable public initiatives)

- Increasing public institutional cooperation on waste handling
- Improvements in the handling of hazardous waste and management of landfills

The approach of municipal twinning has provided several inspirations and solutions for Irbid, including new ways of service delivery and interaction with citizens. By adopting a comprehensive good governance approach, the project has improved the basis for planning and GIS work in the Jordanian municipality¹⁰⁷.

Concretely, a new agenda for waste management and planning was established among political decision makers and citizens¹⁰⁸ based on the new understanding and knowledge on the collection and re-utilisation of waste materials, thus converting previously useless waste into a resource for economic growth and job creation¹⁰⁹. A detailed catalogue of ideas on possible waste initiatives was developed, which outlines a range of low cost and easy to access solutions for the short and long term handling of waste to be considered by GIM and other Jordanian municipalities¹¹⁰. The following image provides a glance into this catalogue of ideas:

Finally, GIM increased the dialogue on waste between the regional and central government, civil society institutions, business organisations, universities, and initiated pilot projects on waste collection particularly in schools¹¹¹.

It is not a coincidence that this cooperation process was initiated in 2011. In fact, while the role of local governments has been acknowledged for several decades in Jordan already, it was only with the Arab Spring "that the decentralisation project was brought back to light in response to the heightened democratic aspirations of the population"¹¹². In the context of these political developments, decentralisation was primarily linked to the necessity for the government to create jobs. Through national and international support

programmes, local authorities were encouraged to engage private sector companies in the fight against unemployment¹¹³.

The Danish-Arab Partnership Programme (DAPP) is one example for operationalising this momentum.

Idea catalogue table					
Present technical Set-up					
Ideas	Problems	Solutions		Consequences	
		Short term	Long term	Environmentally	Economic/ Financially
The waste producers					
Source separate organic biological waste for compost production	A lot of organic waste from food processing industries, kitchen waste, green market waste and biological supermarket waste, garden waste and agriculture waste could be used for compost production.	Compost facility. Learning and training in the composting process. Start with easy fractions like waste from vegetable marketplaces etc. Learning and Information.			
The waste collection, recycling and disposal system					
Deposit system and/ or producer fees on: batteries, cans, glass bottles, plastic bottles, tyres etc.	Need to increase amount for proper disposal and recycling	When the consumers return it to the shop where it was bought or to the local recycling station (or others) they will get the deposit in return	Automats for different types of waste (batteries, bottles, cans etc.) probably placed on a local recycling station/ containers. When you put a recyclable AND coded product into the automat, you will get a receipt, which you can cash in a local supermarket or wherever. The automats should be able to receive non-coded products – there will be no receipt, but the product can be recycled.	When new deposit systems have been introduced in Europe, amounts for recycling have increased dramatically. E.g. the Danish deposit system for glass bottles secures that more than 90% of the bottles are reused. Recycling and reusing uses less energy than producing from raw materials.	Coding products for deposit systems is expensive, and administering the systems is expensive – but it seems that it is profitable in Europe. Automates are expensive to buy but cheap to run.

5. Recommendations for Local Environmental Governance

Given the rapid pace of demographic, economic, institutional and environmental change in Tunisia, all of which have created additional pressure on the delivery of public services at the local level, it is imperative for local governments to consider a wide range of mutually supportive policy options, both in the short- and medium-term. It is generally accepted that decarbonisation goals are primarily the concern of the national planners. Municipalities and regional authorities do nevertheless play an important part in achieving these goals. Local concerns for decarbonisation should be all the more significant given the heavy implications for air, soil, and water quality, as well as overall quality of life in the affected areas. While several general tools and reforms are needed to address key structural problems at the local level, it is also necessary to implement sector specific actions and develop targeted projects involving not only local stakeholders, but also a variety of regional, national, and international actors.

For these reasons, it is important to identify how the development of cross-sectoral and sector-specific measures in Tunisia can support the key priorities for sustainable development in the ongoing decentralisation efforts. This chapter therefore outlines the most significant policy recommendations that would need to be taken into consideration, building on the findings of previous chapters:

5.1 Cross-sectoral policy options

Strategic planning practices constitute a valuable tool for achieving effective, efficient, and lasting progress. Instead, there is a need to restructure existing processes, institutional arrangements and procedures according to the individual needs, priorities and resources of the particular region or locality. Such strategies have already been adopted

in certain Tunisian cities, in some instances even before the regime change¹¹⁴: Tunis, Sousse and Sfax have taken part in programmes like the Urban Development Strategies (“Stratégies de Développement des Villes”, or SDVT), which were later complemented by Sustainable Energy Action Plans (“Plans d’Action Energie Durable”) (see textbox 1). Strategic urban planning programmes are also underway in a number of other medium-sized cities (Jendouba, Gabes, Medenine, Kairouan) with the support of the World Bank, GIZ, and other international agencies¹¹⁵. These strategies enable local authorities to anticipate and maximise the benefits brought by conjectural economic changes and evolving environments. Other benefits also include a more positive image through concerted marketing and lobbying efforts, as well as synergies between neighbouring municipalities from the joint development of infrastructure and services.

Based on the experiences of Tunisian municipalities, as well as on international cases, a strategy for sustainable development should comprise a co-ordinated set of participatory processes covering analysis, debate, capacity-strengthening, planning and investment, which seeks to integrate the short and long term economic, social and environmental objectives of the community – through mutually supportive approaches wherever possible –and manages trade-offs where it is not¹¹⁶.

Furthermore, the anticipated changes brought by the Code on Local Authorities should help these programmes gain resilience, as municipalities will, in the medium-run, achieve the financial autonomy as well as the capacity to take on greater responsibilities in the formulation and implementation of their own strategies. As such, municipalities would become less dependent on the financial assistance of the central government and external actors with respects to formulating and implementing its own decisions.

TEXTBOX 1: Sfax is Tunisia's second-largest city after Tunis, and its commercial epicentre. For decades, its thriving manufacturing industry and large Mediterranean port made Sfax an attractive investment destination.

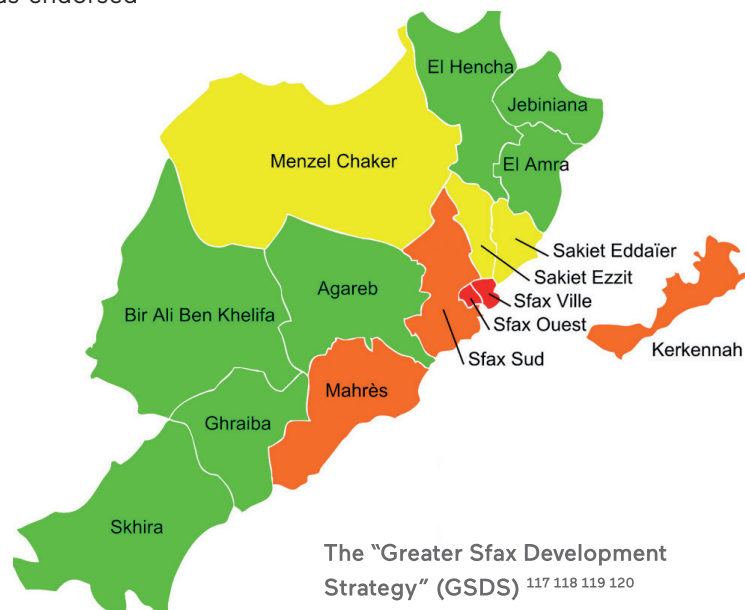
However, in the late 1990s and early 2000s, the city grappled with industrial stagnation, rising unemployment and other socio-economic challenges. In addition, Sfax has been suffering from high pollution levels due to the local phosphate and chemicals industry. These had a serious impact on the city's growth trajectory. As a result, a City Development Strategy for Sfax and its neighbouring municipalities (Sakiet Eddaler, Sakiet Ezzit, Chihia, Gremda El Ain and Thyna) was agreed on in 2002. The enterprise consisted of two phases: from 2002 to 2006 and from 2007 to today.

Phase I produced a shared vision of the city of Sfax with a 2016 horizon, based on a collective analysis that used strategic planning "think tools" developed by GIZ, and a strategy and action plan consisting of 15 structuring projects and 37 related actions. In 2006, these efforts resulted in the drafting of a Greater Sfax Development Strategy (GSDS) to revitalise the Sfax area through economic development, with the support of international agencies. The strategy was endorsed not only by the 7 municipalities, but also by national ministries.

A series of diagnostic studies was then conducted to assess the extent of the problems facing Greater Sfax. Specifically, the studies focused on local economic development, underserved neighbourhoods, employment, and mass transport. These efforts eventually contributed to the identification of a set of priority projects for the Greater Sfax area. This informed Phase II of the strategy, which aimed at addressing certain key issues, such as access to jobs, intra-urban disparities, public transport modernisation, and inter-municipality cooperation for city and regional development projects.

In parallel, the Greater Sfax metropolis conducted a carbon audit of the city, resulting in a 24 step action plan being formulated in 2013. This assessment, which was supported by the GIZ and the Tunisian national energy agency (ANME), provided policymakers and civil society with a detailed image of Sfax' carbon footprint and dependence on fossil fuels. The GSDS was further complemented by the adoption of a sustainable energy action plan in 2015.

While much more still remains to be achieved – the re-design of the harbour has yet to advance, while highly polluting chemical companies are still operating – the experience yields valuable lessons for Tunisian municipalities. All in all, the GSDS enabled the development of local processes for territorial appropriation by municipal stakeholders, the dissemination of learning and experience-sharing, and for the coproduction of a common vision for sustainable urban development, involving a multitude of actors, ranging from civil society to state actors and international organisations. With regards to environmental advances, the GSDS has been hailed as a success story by various observers and was a recipient of «Climate Initiatives Awards-COP22» in 2016.



Sound long-term planning must also be supported by other concrete measures, which can either be fully integrated into local strategies or be implemented in coordination with them. Among these measures, land use policies and controls are a critical means for ensuring sustainable development. The development plans of the local planning authorities are the principal policy tools on land use, and may include, in the appropriate urban and rural contexts, development objectives regarding the “zoning” of land for particular uses, the renewal of obsolete areas that are no longer in use, the provision of environmental services and the preservation of amenities such as the built environment, natural features and quality landscapes. In the larger sustainability context, several key issues are directly relevant to development and settlement policies. These include, for example, contended rezoning plans adjacent to urban areas, local concerns about the siting of particular industries, rural settlement patterns – i.e. the impacts of resources, and agriculture, forestry, tourism and aquaculture development on the landscape and natural resources. Against these concerns, smart zoning practices have repeatedly been mentioned^{121 122} as valuable policy options allowing critical public services to be located in residential zones, closer to where people live, and shifting away from traditional zoning that restricts mixed-use developments and multi-occupancy dwellings. Several German municipalities have relied on smart zoning practices to maintain a balance between urban development and the preservation of ecosystems. As such, authorities may associate several uses (recreational, economic, habitat, etc.) with the same green space depending on how well human activities and the local flora and fauna coexist¹²³.

Environmental Fiscal Reform (EFR) and Charges refer to a range of taxation and pricing measures which can potentially raise fiscal revenues, increase efficiency and improve social equity while furthering environmental goals. While EFR is often associated with national taxation schemes, it can also prove to be a valuable set of instruments when designed, implemented, and enforced by local governments¹²⁴. EFR instruments fall into the following broad groups: (1) natural resource pricing

measures such as taxes on the exploitation of forests and seas; (2) reforms of product subsidies and taxes; (3) cost recovery measures, such as user charges for energy and water, which are broadly applicable but must be carefully implemented and complemented by flanking measures to protect the poor; (4) pollution charges, which are particularly relevant for countries where industrial pollution is a serious problem, but require high administrative capacity. The types of EFR tools that are available at the municipal level can include annual circulation taxes, road tolls, congestion charging, air pollution charging, fines for failure to meet air quality standards in industrial zones, wastewater charges, pay-as-you-throw schemes (PAYT) for waste, and pesticide and fertiliser taxes in the agricultural sector. Congestion charging imposes a fee on drivers that want to use the roads most congested during peak times (“rush hour”), and is used in several cities, including London, Stockholm, Milan, and Singapore. Congestion charges were introduced in Stockholm in 2006 as a seven-month trial, followed by a referendum where a majority voted in favour of the charges which have since been operational. The charging system consists of a perimeter defined around the inner city, whereby users are charged a toll that varies depending on the time of day and the direction (inbound or outbound), which has resulted in a 20% traffic reduction in and around the city¹²⁵. These specific tools will be further addressed later in the chapter. All in all, the benefits associated with EFR encompass better management of natural resources and environmental incentives for conservation made by shifting relative prices to increase resource efficiency and by taxing “bads” such as pollution as opposed to goods and services, as well as greater local budgetary autonomy.

Inter-municipal cooperation describes a framework for local authorities meant to enable municipalities and their natural partners to pool resources for the execution of certain public services. Several inter-municipal frameworks are available, from putting in place an informal structure for dialogue and exchange of experiences to a legally defined collaboration over the development and operation of projects. The cases of the Greater Sfax and

the Greater Tunis are such examples of advanced cooperation. Inter-municipal cooperation not only takes advantage of more efficient administrative procedures, but more fundamentally can avoid one of the greatest risks associated with decentralisation and devolution of responsibilities: Indeed, municipalities may lack the financial, human and technical capacities to operate or monitor certain services such as modernising infrastructure for the treatment and transfer of solid waste. Where localities are small, economies of scale fail to materialise, thus generating higher relative costs. However, inter-municipal cooperation helps overcome this issue and widens the scope of action of local actors¹²⁶.

Although municipalities should, as stated earlier in this chapter, aim to become financially less dependent on national actors for implementing essential strategies for local development, the financial burden of certain actions can be particularly acute. This is the case as local and regional authorities may have limited financial resources and means to mobilise local resources.

In this regard and as already illustrated in the example of Irbid in Jordan, international cooperation has proved to be greatly advantageous with regards to sharing best-practices to amplify learning effects. With the projected Code on Local Authorities paving the way for more flexible direct cooperation between sub-governments and international or intergovernmental agencies (Art. 37), municipalities and regions could further enhance their prospects for realising the co-benefits of sustainable development while also achieving the ambitious national decarbonisation goals by building on these partnerships. The role of external partners can and should be catalytic and supplementary, offering mainly methodological support while keeping a strong focus on using and developing local capabilities.

Among the institutions that have substantially contributed to local sustainable development in Tunisia in recent years, CILG (International Development Centre for Innovative Local Governance) has provided advisory and financial support in areas such as urban planning, strategy development, project development, and local

capacity building¹²⁷. In recent years, it supported the drafting of municipal charters for several medium-sized cities¹²⁸. Other institutions such as Cities Alliance and MedCities have supported the coordination of municipal actions (in Gabes and Kairouan, for example¹²⁹) notably by providing technical assistance. Finally, programmes targeting local authorities have also been developed by the UNDP, World Bank, and the GIZ.

Finally, the rationale for engaging in strategic partnerships with international institutions is further reinforced by the fact that strategies for sustainable development prepared by individual developing countries can be greatly compromised by external policies and institutions (e.g. those concerning trade and investment) over which municipalities often have little direct control. Development agencies can help by communicating such vulnerabilities to international stakeholders, including the private sector.

With the multiplication of sustainable development programmes and strategies, the monitoring of indicators and communication of progress is crucial for evaluating the effectiveness of current policies and for maintaining close cooperation between the main stakeholders. Methods of obtaining the necessary information for such monitoring and review include:

- participating in monitoring programmes: This involves local authorities taking part in local, national and international programmes, for example, monitoring air/water quality, emissions and waste produced, and performance of environmental services;
- local state of the environment reporting: Local authorities could produce local / regional reports, if appropriate, adapting the format of national environmental reports. Publication and dissemination of information will be important for the continuing consultative and participatory processes. Reporting could notably be conducted in cooperation with key institutional actors such as the ANPE, environmental NGOs and international partners;

- tailoring local indicators of sustainability to local conditions and problematics: Although national and international work on sustainability indicators is plentiful, it may be appropriate for local authorities to adapt / develop some ideas and approaches, tailoring the selection, definition and weight given to various indicators in order to best reflect the local conditions and relevance to the local community .

Further, **awareness campaigns and specialised training** to sensitise public servants, private corporations, and citizens to sustainable development practices can create substantial benefits for municipalities. Local authorities can consult with educational institutions on providing appropriate lectures, training, or courses on the environment and sustainable development for the community. As experiences from Chile suggest, this may even be a strategic element of a local environmental strategy.

Besides compiling environmental information as described above, local authorities can pursue many options to make it widely available – for example, by using their own public library facilities (or online registry), citizen information centres, community groups, local radio stations (especially community radio), or by publishing it in their annual reports, local or community newspapers and magazines. Local authorities could also develop environmental information desks for their areas – either centrally or through their public library services and building on existing citizen networks. Finally, the use of awareness campaigns and nudges constitute a highly effective, low-cost option for discouraging users from resorting to CO₂-intensive activities or consumption patterns. Nudging, which represents low-cost simple interventions aimed at tweaking “choice architectures” to encourage people to make better decisions, can be particularly useful for short-term incitation to behavioural change with

regards to consumption patterns. One particular type of nudge would be to set the default option as the one most-preferred by the regulator. While not restricting the availability of other options or making them more costly in and of themselves, it nevertheless creates opportunity costs for users such that most will not go through the process of switching options.

Finally, **target-setting** plays a central role in facilitating transformative policy processes. This may include a strategic target such as “Greenest City”² or a sectoral target such as “Fossil Free City”³ or even more specific “100% Renewable Energy”. Setting an ambitious, long-term renewable energy target demonstrates political commitment, and can provide both stakeholders and the population as a whole with a clearer view of the long-term vision for the region, as well as a better understanding of how they fit within it. It catalyses change by providing an official mandate for action. Identifying and communicating a concrete and measurable target has a number of additional advantages¹³⁰ : it can help engage a wide range of stakeholders; it can ensure a more efficient deployment of both technical and administrative resources, and reduce the risks of duplication and competing policy goals; it can help give key stakeholders (such as utilities companies or private investors) the confidence required to make large investments. By increasing investment certainty, setting ambitious targets can also help attract domestic and international investors, ultimately making it easier to achieve the target.

5.2 Sector-specific policy recommendations

On top of the transversal role of municipalities that has been highlighted above, concrete measures that specifically target critical issues in the delivery of public services are required. With Tunisia is

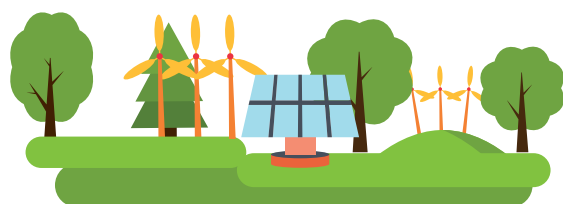
2 - E.g. Vancouver/ Canada

3 - E.g. Oslo/ Norway

4 -E.g. more than hundreds of jurisdictions worldwide www.go100re.net/map

set to experience further urban growth fuelled by demographic change, efforts to build liveable and sustainable cities are hampered by mounting challenges in areas like energy supply, water supply and sanitation, waste management, transport infrastructure and services, as well as agriculture.

5.2.1 Energy



Given the average 3000 hours of direct sunlight¹³¹ per year across the Tunisian territory, the potential benefits of expanding solar energy production from city-owned facilities through the installation of rooftop solar PV are vast. In addition, PV installations are all the more attractive due to the fact that the hours of solar exposure tend to coincide with heavier electricity consumption for air conditioning systems, thus making PV electricity generation match times of peak demand in the summertime. Furthermore, rooftop PV installations on city-owned facilities would come at relatively low cost. There would be little to no need for battery storage, while the surplus amount of electricity produced that is not met by on-site demand can be sold to the grid, thus making this measure readily available to municipalities in the short-run.

Equally accessible for many local governments is the achievement of full coverage of urban street lighting with energy-efficient lighting technologies. By replacing high pressure mercury vapour streetlight lamps (that are vastly used in Tunisia to this day) with more efficient luminaires such as light-emitting diodes (LED) and sodium vapour lamps, municipalities could effectively increase the efficiency of their public lighting system by a factor of up to 4¹³². LED technology has now become a mature technology with significant energy-saving potential. Operating for an average of 10 hours per day, LEDs have a life span of up to 13 years, and provide a pleasant spectrum of light¹³³. The lifetime and performance depends on the quality of the

LED, system design, operating environment, as well as other factors. Still, given the considerable share of public lighting-related costs in most municipalities' expenditures, the adoption of new energy-efficient technologies should constitute a primary concern for local decision makers.

In the longer run, large-scale assessments of the local renewable energy potential, resulting in the formulation of an adapted strategy on how to harvest this potential in each jurisdiction, can lead to fundamental advances for local sustainable development. Such an approach would particularly benefit from the adoption of the Code on Local Authorities. Local governments can develop local energy strategies, similar to the one supported by the Chilean "Comuna Energetica", to encourage the deployment of renewable technologies. Furthermore, such initiatives would create greater coherence and clarity for potential private investors, civil society stakeholders, and international finance institutions alike to participate in the process. While the value of international organisations for supporting local initiatives has already been mentioned above, private sector and citizen participation should equally be encouraged, as this can help shape economically beneficial models across the community and generate value for private enterprises. The case of the "Comuna Energetica" is particularly relevant in this regard since it showcases the value of cooperative models and crowdfunding platforms for encouraging grassroots democracy and finding alternate modes of project financing. Concretely, this approach can support more specific actions such as modernising the provision of information services available to individuals for the installation of residential photovoltaic panels as well as striking partnerships with private solar installers for accompanying the municipality's renewable agenda through the subsidisation of services for residential PV. For example, municipal initiatives supporting rooftop PV installations could further build upon the synergies previously created under national programmes such as PROSOL (which specifically targeted solar-water heaters) in order to consolidate cooperation models comprising institutional actors such as the STEG, international partners, financial institutions and individual households.

5.2.2 Water



Though services in the water sector are mainly the responsibility of national agencies (SONEDE, ONAS), several demand-side management possibilities exist to create more sustainable consumption patterns.

Integrated Water Management (IWM) is a comprehensive approach to water resource management that views water as a single resource with competing uses and linkages with other systems. Through this approach, water is treated as an economic, social and environmental good while policies and options that guide water resources management are analysed within an integrated framework. Application of IWM principles can include the development of local and inter-municipal water resource management plans as well as the development of water information management systems.

With the future passing of the Code on Local Authorities, municipalities can target certain consumption behaviour types through local financial and non-financial assistance for the adoption of solar water heaters (under the national PROSOL programme) and for the installation and/or retrofitting of water efficient equipment such as modern residential water meters that can help residents identify water leakages more efficiently. Although metering alone does not reduce water use, experiences such as the one from Johannesburg suggest that it is key for identifying water use by type of activity and identifying leaks and other operational problems.

Similar to Johannesburg, municipalities can, under the future Code, cooperate with private developers who undertake the management of municipally-owned water infrastructure so that the monitoring, operation, maintenance, or modernisation are contracted to professionals, creating potential

for greater water savings and cost-effectiveness. As the analysis of Johannesburg Water shows, concrete measures which local governments can conduct to improve water management (even in the short-term) include replacement of water mains, pressure management, leakage detection and repair, and monitoring of towers and reservoirs. In the Tunisian context, the “Groupements de développement agricole” (GDAs) could play a role in this type of framework, forming a consultative body to which some form of oversight over the private contractors would be granted.

5.2.3 Waste



While the transfer, transformation, and re-use of solid waste tend to fall under the responsibility of the ANGeD and national planners, municipal authorities still incur the majority of the costs associated with solid waste management¹³⁴. As already stated in section 2, municipalities have encountered several problems in this sector since the regime change, mainly due to budgetary constraints. However, the new competences and budgetary autonomy gains brought by decentralisation reforms in the near future will allow for carrying out several substantial changes. Indeed, local authorities have several options for improving the efficiency and cost-effectiveness of the collection and transport of waste to transfer centres, and as such can significantly improve the quality of life in public spaces with regards to enhancing the quality and reliability of waste collection services.

Preparing a geodatabase using a Geographical Information System from maps, municipal and statistical services data, GPS tracking and satellite images, monitoring and field work, and literature data can help optimise schemes in place for collecting and transporting solid waste. This has also been implemented in the Greater Irbid Municipality in Jordan (see chapter 4.3.). The data

in question would focus on the characteristics of the waste collection procedure, with targeted monitoring of starting times, number of workers, itinerary and coordinates of collection points, condition of waste on site, condition of containers and bins, time of arrival at the transfer station, amount of waste collected, and quantity of energy consumed. This collection of data would then translate into the production of technical scenarios assessing the savings associated with changing variables such as the location of containers and the relative distance between them. This type of tool is particularly relevant for densely populated municipalities endowed with the administrative and financial capacities to design such programmes and monitor results.

Relatively to other sectors, private sector participation in waste management in Tunisia is already quite pronounced. Indeed, some 998 companies have been identified as working in the sector¹³⁵. However, private sector participation in waste management has not effectively resulted in the valorisation of solid waste despite large potential for biogas¹³⁶. This is, to some extent, an unintended consequence of the incentive system in place whereby the revenues of private subcontractors depend largely on the amount of waste processed, rather than based on revalorisation or reduction. This problem is further deepened by the underdevelopment of the recycling industry in Tunisia. Under the Code of Local Authorities, municipalities will benefit from additional leverage for finding new mutually beneficial strategies with contractors, NGOs, as well as regional and national planners, so as to develop waste valorisation alternatives in contrast to landfill disposal. Such is the case of Seoul, in South Korea, which has become in recent years a leader worldwide with regards to waste recycling and composting, resulting in positive knock on effects in the agricultural sector in particular. Following the adoption in 2005 of measures banning organic waste from landfills and requiring source separation, a volume-based waste fee was put in place, whereby households are charged for the metered waste they generate. In parallel, the promotion of composting practices was supported jointly by NGOs and farmers, while public funds

were specially allocated for the expansion and modernisation of treatment facilities. As a result, 100% of Seoul's food waste was recycled in 2012¹³⁷.

More concretely, installing or supporting the installation of underground and semi-underground bins to save space and provide more waste capacity would further help municipalities reduce collection cost, while minimising visual pollution. Rising waste volumes, increased hygienic and amenity demands as well as environmental considerations impose additional requirements on the waste management system that traditional management schemes are either unable to meet or unwilling to respect due to increased operating costs. The utilisation of the subsurface space can provide the setting for the development of infrastructure which is capable of addressing the limitations of existing waste management schemes in a more efficient manner. Municipalities can also take advantage of the information and communication technologies widely disseminated across the population (most notably smartphones) to encourage citizens to help improve service delivery by identifying their needs and creating mechanisms for feedback and reports. Under this type of action, citizens have a more active role in managing their own neighbourhoods, and collaborate with their local governments to improve public services. Municipalities could for instance release relevant data for co-creating applications aimed at improving the quality of life of citizens, such as reporting the need for waste collection services at a particular point in real-time, thanks to which waste collection agents can accommodate their routes based on this information. Such initiatives have already been recorded in some regions. For example, the town of Grombalia, near Tunis, made a mobile application available for citizens to alert the municipal authorities of irregular dumping practices. Other similar experiences have occurred in Kasserine and Djerba. Furthermore, the number of mobile applications encouraging voluntary citizen waste collection efforts has also grown in recent years. Municipalities should hence build on these initiatives, while also working collectively so as to enhance their coherence and avoid overlapping and inefficiencies.

Finally, as the example of the Greater Irbid Municipality in Jordan and its cooperation with Viborg Municipality in Denmark shows, there are vast experiences and several business models across the world that can be adapted and replicated. Thus, international cooperation for shared learnings on a policy, planning as well as business level can leverage and improve environmental waste management in Tunisia.

5.2.4 Urban planning and infrastructure

Local authorities can contribute to sustainability through new housing developments and the refurbishment of older dwellings. This can include the consideration of environmental factors during site selection, as well as the design and landscaping of new developments. Implementing high standards of energy efficiency in buildings, providing facilities for recycling and other environmentally-friendly activities on estates, and involving tenants in the management and maintenance of their homes and communities demonstrate the range of possibilities available to municipalities. Localities can furthermore adopt measures to reduce energy use specifically targeted at municipally-operated facilities. Through the application of policies targeting existing building stocks by requiring all government executive agencies to reduce their energy use by a set percentage over a certain amount of time, or requiring new buildings to meet ambitious energy performance requirements, cities can create a dynamic whereby publicly-owned buildings are an example that is followed by private actors in the municipality.

Additionally, several national programmes aiming at enhancing energy savings and efficiency, both at the residential and commercial scales, have been formulated in recent years by the ANME (as enunciated in Chapter 2). By creating local information points on programmes such as PROMO-ISOL (thermal insulation) and supporting their adoption through the provision of technical and financial assistance, local governments can, with the help of the Code on Local Authorities, play a larger role in the country's ambitious GHG emission reduction goals in the building sector.

In addition to reducing fuel consumption and increasing energy security, energy efficiency can create positive knock-on effects. For example, better building insulation will reduce emissions, protect against extreme temperatures, and lower cooling costs as temperatures rise.

Education, information and awareness-raising campaigns also play an important role in influencing future behaviour and facilitating sustainable infrastructure choices. Urban planning and building rehabilitation policies have a very direct impact on people's lives and can sometimes be controversial: households should be given better information on the reasoning behind policy decisions and on the available alternatives. A better understanding of the challenges ahead is a precondition for public acceptance of the solutions offered. Greater public involvement in urban planning can be ensured by recourse to participatory instruments, namely open consultations, surveys, and stakeholders' representation in decision processes. Key local enterprises and sectoral social partners should be informed and consulted on the development, application and monitoring of infrastructure policy and related measures.

5.2.5 Transport



In order to make urban spaces more accessible to inhabitants and to create more liveable cities, decision makers urgently need to change the direction of urban transport development toward a more sustainable future. Establishing a sustainable urban transport system requires a comprehensive and integrated approach to policymaking and decision-making, with the aim of developing affordable, economically viable, people-oriented and environmentally-friendly transport systems.

Local authorities can significantly influence the quality of life in inner urban locations and protect

historic areas by developing innovative traffic management initiatives, restricting the through-traffic in residential areas, and optimising traffic flow on urban arterial routes. The rationale for this approach is that significant energy and transport efficiency can be realised through urban designs where mass transit provides rapid access to the main nodes of urban activity (home, work, education, recreation, health services). More specifically, the use of modern technologies and software for traffic control is available even to smaller municipalities, since these tools generally do not necessitate any heavy infrastructural development. Such systems may simultaneously integrate the management of traffic light systems, traffic detectors and parking garages so as to minimise inefficiencies and overall congestion.

Local authorities can also encourage environmentally-friendly modes of transport by providing safer facilities, such as cycle lanes and secure bicycle parks for cyclists, special pedestrian areas, and footbridges and (where appropriate) underpasses for walkers and cyclists. Right-of-way corridors specifically for bicycles would provide greater road safety and comfort for users of non-motorised vehicles, thus resulting in an increase of usage among urban residents.

Finally, local governments can carry out actions to improve and promote public modes of transport. By increasing the number of journeys via public transport relatively to private translates into reductions in energy consumption, congestion, and pollution levels. The improvement and promotion of public transport can be supported through the following means:

- Increasing the visibility of travel routes and times is crucial for creating a reliable set of transport services. This can notably be done through posters and screens displaying real-time service information for public modes of transport, including unplanned service changes, major delays and station closures as well as planned service changes and track work.
- Respecting the arrival time and increasing the frequency of buses, which has been a primary concern for residents of several cities (especially

the outskirts of Tunis¹³⁸) should be a primordial step towards achieving a public transport management approach by liaising with services providers on appropriate routes and on ticketing practices, by supporting the provision of park + ride and interchange facilities and the connection of public transport systems to parking areas outside the city/town centre. Local authorities can also support public transport by means of land use and other policies which incentivise commuters to use buses and discourage all-day car commuter parking in town centres where public transport provides an adequate alternative to car use. Among other things, this can be achieved through the designation of right-of-way corridors. Congestion problems could be addressed by creating dedicated right-of-ways on existing roadways, whereby traffic on determined lanes is limited to a single type of vehicle (e.g. buses, trucks etc.) in order to increase speed and reliability.

- Making the most of new information and communication technologies for users to make transactions easier (e.g. online recharge of monthly card) and to stay informed about real-time changes to the arrival and departure of metro/buses/trams/etc. The number of people with wireless web enabled handheld devices has increased tremendously in the past decade¹³⁹. With this trend comes the growing public expectation that nearly all web-based transportation information should also be accessible wirelessly. In addition, information systems that utilise smartphone technologies provide a unique information dissemination option for transit authorities, as many Tunisians already carry smartphones, making costly capital improvements unnecessary. Three portable real-time systems of note are:

- Phone Arrival Information Systems Apps
- Interactive Text Message (SMS) Arrival Information Systems
- Matrix Barcodes¹⁴⁰

Another type of measure that has gained prominence in recent discussions concerns the use of ridesharing solutions (whether through P2P or B2C frameworks) as an energy-efficient complement

to public transport¹⁴¹. In this context, Public-Private Partnerships can, if well implemented, maximise the benefits of ridesharing services, while avoiding the pauperisation of the local workforce. By setting clear rules for the operation of these services, including licensing and revenue transparency, local governments can reduce road congestion, air pollution, personal vehicle ownership, and associated costs. In terms of concrete measures, cities can designate parking spaces for carsharing vehicles, particularly near public transit facilities and multi-unit housing. These may include provisions for on-street parking, exemptions to parking time limits, the creation of carsharing parking zones, and free or reduced cost parking spaces or parking permits¹⁴². These types of measures would also apply to the existing “taxis collectifs” or “louages” that operate within and between cities, as well as in rural areas, and have been increasingly used as alternative modes of transport to traditional public transit in recent years.

5.2.6 Agriculture



To this day, the agricultural sector plays an important role in Tunisia’s development and export strategy, despite a sudden dip following the 2015 economic slump. In the less developed regions of Tunisia, farming is the main economic activity, employing over 40 percent of the labour force in the North-West region and more than a third in the Central-West region¹⁴³. In spite of this, however, Tunisian agricultural development remains barred by several challenges, as investment in agriculture accounts for less than 10 per cent of total investment in the overall economy, while financial loans are difficult to access for farmers¹⁴⁴, thus constraining the potential for green growth and the adoption of sustainable practices in rural areas. Tunisian local governments can however provide close support for SMEs in the food industry by

providing advice on investment planning and sustainable business development, and can work in concert with regional and national planners to encourage the adoption of more environmentally friendly practices.

Furthermore, as agriculture is responsible for the overwhelming majority of water consumption in Tunisia, policy tools such as local financial incentives (loans, grants) as well as training programmes are becoming increasingly necessary for sustainable water use for crop irrigation: i.e. underground irrigation as well as substitution of conventional water resources for saline water and wastewater reuse. The latter in particular is considered extremely important for meeting the increasing water demand not only in agriculture, but also industry and tourism, as projected water needs cannot be satisfied by freshwater resources alone. Irrigation is a well-established practice around the world, and is developed for nearly all food products, as it allows for both diversification and an increase in crop yields. However, typical irrigation systems consume a great amount of conventional energy through the use of electric motors and generators powered by fuel. Photovoltaic water pumping system is one of the best alternative methods for irrigation. With the significant decline in the price of PV installations that has been observed in recent years, their use for water pumping purposes has become increasingly advantageous in contrast to diesel generators or even grid-powered electric motors.

Despite the uncertainty around the definition of the competences that will be exclusively devolved to municipalities, many options for taking action towards sustainable development are available to local governments in both urban and rural areas in Tunisia.

6. Conclusion

This Guide unveiled the vast potential for local environmental action in Tunisia despite the current uncertainty surrounding the governance framework that will emerge from the decentralisation process. While ambiguity still remains regarding implications for the financial and administrative autonomy of local governments, and the resulting capabilities for municipalities to pursue local sustainable development policies, this Guide outlines concrete measures and possible approaches for local action in the policy areas energy, water, waste, infrastructure and urban planning, transport, and agriculture. Furthermore, it proposes wide-ranging policies that can facilitate the realisation of co-benefits for the local economy. The analysis unveiled the significant structural challenges in the country that currently hinder sustainable development at the necessary speed and scale. Additionally, it can be concluded that local governments are the key actors to address these barriers. While the national government needs to further pursue the decentralisation reform in the coming months and empower local authorities with the necessary political mandate, this Guide highlights several tools and policy options that can be adopted as early as possible. This includes implementation of sector-specific actions and

the development of targeted projects involving not only local stakeholders, but also a variety of regional, national, and international actors.

As the decentralisation process further develops, local governments are set to become prominent actors in achieving the country's long-term climate and energy goals. In order to carry out these plans so as to efficiently address key issues, however, municipalities need to accelerate the pace of political change, starting today.

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