

The green economy in Tunisia

an implementation tool of the new sustainable
development strategy (2014-2020)



United Nations
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Abstract

The development model implemented so far by Tunisia failed to meet a number of critical challenges. The 2011 revolution highlighted the growing social inequalities and regional disparities (notably between the coast and inland areas of the country) and the high unemployment rate (15.9% in 2013), especially among women and young graduates. The private sector's contribution remains below expectations, particularly in terms of job creation and region-developing opportunities (according to the NSI, 73% of businesses are located in the North-East and Central East of the country).

While the Tunisian economy is relatively diversified, it largely depends on limited natural resources which are over exploited and almost non-compliant with ecological balance. Productive sectors such as agriculture, fisheries and forests suffer from low productivity; industry, predominated by SMEs, still requires comprehensive environmental upgrading and technological development. Energy grows in importance in the budget both of the State and of businesses, thus limiting investment opportunities. Compensation spending has grown from 1.5 billion dinars in 2010 to 5.5 billion in 2013.

Significant progress has been made in incorporating environmental constraints and climate change impacts in some sectoral strategies and policies, but these efforts remain fragmented and poorly integrated. Challenges remain in the areas of industrial wastewater management, waste energy recovery, renewable energy development, promoting ecotourism, eco-innovation, education and training. Efforts are still needed for adapting and enforcing environmental legislation as well as using economic instruments (taxation, pricing of environmental services, environmental accounting).

Today, Tunisia is moving towards a new development model that integrates the green economy. The country considers that the green economy must develop in the context of a multi-dimensional integrated vision that takes into account limited natural resources, potential for sustainable job creation, competitiveness and value added industry improvement, regional disparity and poverty reduction. A national strategy for the green economy is being prepared and important reforms are underway.

In this context, the country needs a more innovative and competitive industrial policy that incorporates the principles of sustainable development, responds to new challenges (unemployment, exclusion, inequality, poverty, natural capital depletion and global warming) and promotes the emergence of socially responsible and environmentally friendly businesses. The new Investment Code and the PPP Act in preparation, provide an opportunity to promote green investment and encourage industries having comparative advantages and highly intensive employment potential.

The national strategy for the green economy must also meet needs in terms of skills development, innovation, and access to finance and technologies, in order to encourage private initiative, and SMEs in particular. It should include approaches likely to take into account local specificities and needs.

Towards the development of an integrated green economy strategy

Within the spirit of the new Constitution¹, Tunisia has developed a new National Sustainable Development Strategy (2014-2020) which identifies nine challenges within the concerns of the green economy, including the establishment of sustainable consumption and production, sustainable natural resources management, balanced regional development, and capacity building for adaptation to climate change, energy and renewable energy efficiency promotion, improvement of life quality, social equity and knowledge.

A National Strategy for the Green Economy² (2016-2036) is being formulated on the basis of an integrated approach that strengthens coherence between economic, social and environmental policies and a collaborative approach that involves all actors of the society. It will include a bill on the green economy.

Several workshops have been organized in recent years to discuss the green economy; they highlighted the urgent actions to be taken such as strengthening green economy legislation, evaluating the potential of green jobs and establishing a national green job map, matching training and qualification requirements and creating incentive mechanisms and programmes for green entrepreneurship. The importance of regional development, as an axis for the green job creation policy, is also highlighted. Tunisia has set a short term goal to integrate green jobs in the new national employment strategy (2014-2017), which is soon to be adopted. A green jobs platform has been set up in the Ministry of Employment.

Strategic green sectors and industries have been identified. They cover energy efficiency (construction, transport, industry - its investment cost is low and the impact on the energy bill and job creation is substantial), renewable energy, integrated waste management, water saving and wastewater recycling, biological agriculture, ecotourism at territorial level, industry, digital economy, infrastructure and sustainable construction.

Tunisia has set a short term goal to integrate green jobs in the new National Employment Strategy (2014-2017). According to a study in 2012, a green investment of 2% of GDP over 5 years could generate 300,000 direct jobs, more than 9% of total employment.

As part of its green job programme, the ILO estimated the number of green jobs in Tunisia at 102 000 in 2010, mainly in the sectors of water, waste, agriculture and services. An economic study conducted by the Millennium Institute in 2012 indicates that a green

1 The new Constitution (27 January 2014) integrates the environment and sustainable development. It provides for the creation of a constitutional sustainable development institution and the protection of the rights of future generations (Article 129).

2 The National Strategy for green economy will define sectoral objectives and identify potential sectors.

investment of 2% of GDP over a period of 5 years could create about 300 000 direct jobs in Tunisia in areas such as construction, agriculture, energy and water, representing over 9% of total employment.

Several initiatives³ supported by international cooperation (EU, UNDP, GIZ, UNIDO, UNOPS ...) have been taken since 2009 to promote training for green jobs and strengthen business environment management qualifications.

Tunisian Solar Plan (2014-2030)

- Investment: 4 billion Dinars
- 18 000 Direct and indirect jobs
- 30% renewable energy (PV + wind + CSP)
- Reduction by 53 MteCO₂

Organic farming:

- 2nd African producer: 335,000 ha of certified organic crops (2009)
- 4th largest producer of organic olive oil
- 1% of national exports or 116 million dinars (2013)
- Approximately 2,500 operators in 2012

Environmental upgrading:

- 133 companies certified ISO14001 (2009)
- 500 industries certified ISO 14001 (target 2014).

Distribution of environmental private firms (Source: Study on the qualifications for green jobs in Tunisia, 2012):

- 51%: Services related to pollution control (wastewater sanitation, waste management)
- 35%: Management and protection of natural resources
- 14%: Landscaping and green spaces.

3 UNOPS Project for the strengthening of green jobs, estimated at \$ 16.5 million is expected to create nearly 2,500 jobs over three years (2013/2015); project: "Green Employment and Protected Areas in Northwest Tunisia executed by the World Wide Fund for Nature (WWF) and the Forestry General Directorate (DGF). Tunisia subscribed to the OECD declaration on green growth with the aim of achieving economic recovery and economic growth that are environmentally and socially sustainable.

Challenge of the green economy in Tunisia: to optimize the management of limited natural resources; reduce youth unemployment and regional disparities.

The depletion and degradation of natural resources (water, soil, fossil fuels, ..) and the pressure of production activities on resources, ecosystems and the environment, are an obstacle to the economic and social development of the country. To address the challenge of climate change, several national and regional studies have highlighted the risk of a significant decline in water resources (- 28% for groundwater resources and -5% for surface water), degradation of the quality of water (higher salinity, especially on the coast and in southern Tunisia) and destocking, reduction of crop areas and olive oil production by 2030. Tunisia is also among the countries that are most exposed to an accelerated rise in sea level, the cost of which in terms of economic and environmental loss was estimated at 0.63% of GDP per year (MEDD, 2008).

Tunisia needs to initiate a model of economic and social development that is more inclusive and respectful of the environment, which can help create jobs, especially for young people, curtail the development significant imbalance between areas, food and energy security and climate change adaptation, which are the major challenges for the country.

The Tunisian economy is relatively diversified but largely dependent on natural resources. With a production of phosphates⁴ estimated at 8 million tons in 2010, the country was ranked 5th largest producer. The agricultural sector contributes, on average, 9% of GDP and provides 14-16% of employment (excluding fisheries). It is mainly based on arboriculture (olives, dates, and citrus), gardening and grains. Tunisia is the fourth largest producer of olive oil, which represents 44% of agricultural exports of the country. Agriculture consumes nearly 80% of exploited water resources and highly contributes to soil and water pollution (intensive agriculture). Fishing (13% of GDP, 100,000 jobs), is the second source of foreign exchange after olive oil but there is overfishing. Aquaculture is still poor; it has been increasing very slowly since 1999, from 1.17% to 2.56% of the total fish production in 2005. An aquaculture development strategy, aiming to reach 10% of the total fish production in 2016, has been developed. Food processing (fish canning and fruit and vegetable production, oil mills) is the second largest industry in terms of production and added value. It contributes nearly 3% of GDP and provides 75 000 jobs (with about 5,000 companies). A new plan to promote agribusiness by 2016 is being prepared; it aims at increasing the volume of investments in the sector from 385 million Tunisian Dinars in 2012 to 585 million in 2016, and generating 100,000 jobs.

4 Phosphate production dropped to 2.5 million tons in 2011.

Tourism plays a major role in the Tunisian economy. With revenues accounting for 7% of GDP in 2008, it provided 95,212 direct jobs and 285,635 indirect jobs that year. However, the concentration of tourism on the coast (85% of hotel capacity) raises water and sanitation management problems and increases environment and nature degradation. Ecotourism⁵ is still at its formative stage, and mainly depends on small private initiatives.

Industrial activities have a significant impact in terms of soil and water contamination (wastewater and waste⁶). The most polluting companies are those operating in the mining sector, phosphate processing, energy production and agribusiness. National studies indicate that few of them use waste processing methods, which poses a real problem especially with the closing down of the only centre for industrial and special⁷ waste treatment. Industrial emissions are estimated at 140,000 m³/d (for 5,000 industrial units listed) of which only 1/3 are treated; approximately 1700 units are not connected to the ONAS sewerage system. The industrial sector consumes about 35% of the overall energy consumption. The industrial strategy for 2016 does not take into account environmental issues.

The development model pursued so far by Tunisia has failed to meet a number of key challenges. GDP growth decreased from 3% over the period (2007-2010) to 2.3% in 2013⁸ and 2.8% in 2014, following the slowdown in industrial activity. Although the country has managed to reduce the level of relative poverty (15.5% in 2010), extreme poverty is still significant (4.6% in 2010), especially in rural areas. Social inequalities and regional disparities are glaring.

The coastal area concentrates 84% companies, 95% hotel capacity, 75% non-farm employment and is allocated 65% of public investment. Nearly 70% of the total population now lives in cities. Education and training policies are not fully in line with market expectations. The private sector's contribution falls short of what it could be, especially with regard to job creation opportunities. The unemployment rate remains high (15.9% in 2013). Female unemployment was estimated at 22.5% in 2013 and of young graduates at 23% (2010)⁹. The compensation system must be reformed and target the poorest of the poor.

5 A strategic study on the promotion of ecotourism was conducted in 2009.

6 The total amount of hazardous waste generated by industries is around 135,524 tons/year (2008).

7 The Centre established in 2009 was closed down in 2011 for technical design flaws risking groundwater pollution.

8 Source: INS

9 Source: UNDAF 2015-2019.

Environmental performance: Progress to consolidate under the new national strategy for green economy

Proactive policies underlined by incentives have been adopted in areas such as energy control, waste management, organic farming and environmental upgrading have mainly benefited large companies

Important reforms are underway

- An environmental draft code
- The adoption of a new regulatory framework for the liberalization of the production, sale and export of electricity produced from renewable energy
- An Energy Transition Fund (FNME reform) with an initial capital of 100 billion dinars (2014 Finance Act)
- An investment fund for waste recovery
- Progressive removal (3-6 years) of energy subsidy on certain sectors such as cement
- A National Ecotourism Strategy (2015 - 2024)
- A proposed new investment code and PPP Act
- An information system modernization programme in relation with sustainable development (SIDD).

Significant progress has been made in terms of incorporating environmental constraints and climate change impacts in some sectoral strategies and policies¹⁰. Proactive policies underlined by incentives (specific funds¹¹, credit lines, subsidies) have been adopted in areas such as energy control, waste management, organic farming and environmental upgrading. However, these measures have mainly benefited large companies at the expense of SMEs that constitute more than 90% of the country's economic fabric and of the informal sector, which remains marginal.

Greenhouse gas emissions are still relatively low, according to the data from inventories¹² compiled in 1994 and 2000. The country has great potential in terms of mitigation, of about 151 million t_{eq}CO₂ accumulated over the period 2008-2020, and distributed mainly between energy (73%), agriculture (14%) and waste (13%). A national strategy on climate change was developed (2012). So were adaptation strategies for agriculture and ecosystems, health, the

10 These include: national water strategy, the national strategy for development and sustainable forest management, national agricultural strategy, the four-year plan for energy conservation, the national strategy to promote ecotourism.

11 There are several environmental funds : Pollution Control Fund (FODEP), the latter will be strengthened in 2014 with contributions from members of public waste management systems (Eco-Zit and Eco-Filters); Environment Protection and aesthetics Fund; Tourist Area Protection Fund; National energy conservation fund (FNME) that will change into Energy Transition Fund (GTF).

12 Source: National Communications developed under the Convention on Climate Change.

coast and tourism. The new sustainable national development and forest management strategy (2015-2024) aims to increase the rate of forest cover from 8.2% currently to 10% of the total land area in 2024.

Challenges still remain in the areas of industrial¹³ wastewater management, energy recovery from biogas, waste composting, renewable energy development, promotion of ecotourism, the use of economic instruments (taxation, pricing of environmental services, environmental accounting), eco-innovation, education and training.

Efforts are still needed in terms of regulation adaptation and enforcement of environmental legislation including the "polluter pays" principle established in 2010, systematization of environmental impact assessment (EIA) and generalization of the strategic Environmental Assessment¹⁴ (SEA), monitoring and evaluation (data availability and reliability, regular reports¹⁵) and the participation of private actors, local communities and civil society. A national action plan for sustainable public procurement was adopted in 2012 and the new rules of public procurement (June 2014) introduced the principle of sustainable development, but the enforcement laws, are still lacking.

Business environmental performance is supported by the environmental upgrading programme, coordinated by the International Centre for Environmental Technology of Tunis (CITET). Since 2004, business environmental assessment has become mandatory. This initiative was reinforced by the creation of a Tunisian Eco-label (2009) and the implementation of an action plan (2009-2014) for strengthening business competitiveness, promoting good environmental practices, rationalising the use of energy and natural resources, and reducing waste and water discharges. A programme was recently launched to expand business use of natural gas. CITET is also preparing a capacity building programme on the green economy for Francophone countries, in collaboration with the IFDD, Senghor- Alexandria University and OSS. The Tunisian Confederation of Citizen Enterprises of Tunisia (CONECT) has just developed its CSR label in collaboration with the CITET.

The cost of environmental degradation is estimated at 2.1% of GDP¹⁶ but this estimate is in fact far below the real environmental damage (PEP 2012). The overall cost of water degradation is estimated at 0.6% of GDP (OTEDD, 2004). Given the magnitude of the challenges, the level of public investment allocated to the environment is still limited. The budget of the Ministry of Environment does not exceed 1% of the overall budget (2014 Finance Act). The 12th Economic and Social Development Plan (2010-2014) allocates 1.25% of GDP to the environment.

13 Discharges of 20 million cubic metres per year of industrial waste of which 15 million m³ do not comply with the standards (70% of companies are highly polluting).

14 Feasibility Study on Strategic Environmental Assessment Institutionalization (SEA), 2010.

15 The latest report of MEDD on the state of the environment dated 2010 (Arabic version) and most of the indicators are available for 2009 / 2010 only. A new report on sustainable development indicators, incorporating the recent indicators developed at the NSDS is being edited by OTEDD.

16 Main reference used after study by the World Bank (1999) to determine the cost of environmental degradation in Tunisia.

Progress in access to drinking water and sanitation

- Access of the population to drinking water (2010): 98.2% nationwide, including 100% in urban areas and 94% in rural areas.
- National connection to public sewerage: 88.7% in the 160 municipalities supported by ONAS (MEDD, 2009). ONAS objective is 92% (2016) and 95% (2021);
- Over 90% of the wastewater collected by ONAS (85% of urban population) are treated;
- 30% of treated wastewater is reused (56 million m³/year) in the ecological and agricultural fields. An objective of 50% (2014) is set through the treated wastewater transfer programme for inland areas.

Source : www.onas.nat.tn

Ranking in relation to international indicators:

- The Environmental Performance Index (EPI) :
 - 74th out of 163 countries in 2010 (5th in Africa)
 - 99th out of 132 countries in 2012
 - 52nd out of 178 countries in 2014 above Morocco (81st) and Algeria (92nd).
- The performance index of the global energy architecture (EAIP)¹ published in 2014 ranks Tunisia 60th out of 124 countries and the 3rd highest in Africa, followed by Algeria (4th), Morocco (5th), Egypt (7th) and Libya (10th).
- The natural resources governance index (RGI)¹ ranks Tunisia 28th out of 59 countries (50/100 score) and highlights the progress of the institutional and legal framework but also the shortcomings in terms of production and project environmental impact sharing contract management. At the level of North Africa and the Middle East region, Tunisia ranks second after Morocco (25th with a score of 53/100).
- 9th worldwide among countries threatened by water shortage with 433 m³/person/ year.
- In 2014, the Green Key label was awarded to eight hotels.

Examples of priority sectors

1- Solving the energy deficit that weighs heavily on public finance is a priority which requires the promotion of energy efficiency and renewable energy

Since 2001, Tunisia has been experiencing a structural energy deficit due to the increase in energy demand (average 4% per year) and the reduction of its hydrocarbon resources. In 2006, the energy sector accounted for only 6.4% of GDP as against 13% in the 1980s (STEG, 2010). The deficit in the energy balance was approximately 2.4 million toe (tons of oil equivalent) in late 2013.

The energy mix is dominated by natural gas (53%) and oil (43%). In 2012, average oil production reached 67,000 barrels/day and 60% of petroleum requirements were provided by imports. Production of natural gas, for its part, only covers 53% of national needs (2.8 million TOE in 2012), the rest is imported from Algeria.

Indicators (sources: General Directorate for Energy and Ministry of Finance)

Primary energy consumption (Mtep)

- 4,4 Mtep (1990)
- 8,5 Mtep (2012)

Primary energy intensity (Tep/1000dt GDP)

- 0,41 (1990)
- 0,352 (2005)
- 0,313 (2012)
- 0,275 (objective 2016)

Energy subsidies (billion dinars)

- 0,55 in 2010
- 2,1 in 2012
- 3,7 in 2013 (Supplementary Finance Law)
- 2,5 in 2014 (2014 Finance Act)

The Energy bill accounted for 14% of GDP in 2012 and public subsidies in this sector reached about 10% of the State budget in 2013. The amount of these subsidies should be significantly reduced in 2014, as part of the current reform (Finance Act 2014).

Through its energy control policy, the country has managed to reduce primary energy intensity by 25% over the period 1990-2012. Renewable energy (wind and hydraulic) account for only about 4% in the electricity mix dominated by natural gas (96%). The Tunisian Solar Plan focuses on enhancing energy efficiency and renewable energy development. Its implementation will require an adjustment of the legislative framework and the adoption of new financing mechanisms to encourage private investment and industrial participation.

2- Organic farming has become a strategic sector

Tunisia is ranked second African producer of organic agricultural products after Uganda and 24th worldwide, with about 335 000 ha of certified crops in 2009. It is the third largest producer of organic olive oil (with 115,000 ha of certified organic olive groves in 2012), after Spain and Italy. Olive oil, dates and organic fruits and vegetables are the major exports from this sector, mainly intended for the European market. In 2013, organic agricultural products accounted for 1% of national exports worth 116 million Dinars (against 89 million in 2011). Globally, exports of organic products vary between 1 and 2%. This significant growth of the sector was made possible by the implementation of the national strategy (2016), underpinned by the Law on organic farming, adopted in 1999.

In Tunisia, organic farming represents:

- 6.6% of the agricultural used area
 - An area of organic crops
87 000 ha (2004) and 580 operators, including 12 exporters
285 000 (2008) and about 1,800 operators
245 000 ha (2011 estimate)
330 000 ha (2013 estimate)
 - Approximately 2,500 operators are involved in the sector (2012)
 - 167 businesses/farms of which 35% produce olives and olive oil
 - 27% of organic farms keep their certified products for exports
 - Recognition of EU equivalence system
- (Source : DGAB, April 2013)

In this context, significant investments have been made to improve irrigation systems and incentives for producers (tax preferences, subsidies and incentives for certification fees). Emphasis was also laid on the organization of the sector, strengthening of research, training and monitoring of producer groupings as well as advocacy and promotion of organic products. The goal is to reach 500,000 ha in 2016, double exports of organic agricultural products and increase their share in national consumption.

This should contribute to the creation of jobs in the rural areas, especially for youth and women and the preservation of the environment and health. A Tunisian label "Bio Tunisia" was created in June 2010 (equivalent of the French AB label) for identification of organic production on the local market. Several foreign organizations for control and certification of organic farming, such as the National Institute of Standardization and Industrial Property (INNORPI) have been accredited in Tunisia since 2011.

3- Waste management: an opportunity to create businesses and jobs

Waste production is increasing in quantity and complexity with significant environmental and health impacts¹⁷. Organic waste is estimated at 7-8 million tons (2009), including 2.3 million tons of recyclables composed of livestock waste, agribusiness waste, municipal waste and sludge from wastewater treatment plants. The institutional framework was strengthened with the creation in 2005 of the National Agency for Waste Management (ANGed) and in 2009 an industrial and hazardous waste treatment center with a capacity of 90 000t/year¹⁸. After the Revolution, there was a proliferation of uncontrolled landfills and a sharp deterioration of conditions in the controlled landfills. In addition, construction and public works waste management today is a major problem as a result of the increase in uncontrolled and illegal construction.

Key indicators of the sector

- Production of municipal solid waste:
 - 2.25 million tons or 0.8 kg/person/day (2009)
 - 2.364 million tons (2011)
- DMS growth rate : 2,5%
- Collection of municipal solid waste: 80 to 100% (urban) and 50 to 100% (rural)
- DMS composition: 68% organic, 11% plastic, 9% paper, 2% metal, 2% glass and 8% miscellaneous
- Controlled landfill: 70% of the production of DMS
- Recycling: 5% of municipal waste collected (2009) and composting (0.5%)
- Industrial solid waste: 250 000t/year of which 160 000 t/year are hazardous
- 16,000 - 18,000 tons/year of hospital waste from care activities of which 7 000 tons of hazardous waste, or 40% of the total production
- Waste management
 - 988 companies, of which 86% in the non-hazardous waste sector (GIZ, 2012)
 - About 30 000 jobs (public and private) (ANPE, 2002)

www.ANGed.nat.tn

¹⁷ Domestic wastes contain high grades of chemicals (68%) and humidity (65% to 70%).

¹⁸ This special landfill was closed after the Revolution, following protests by the people.

Waste management is primarily financed by the State (80%), the private sector invests only in waste collection and transportation and very little in waste recovery and/or recycling. The current national strategy for sustainable and integrated waste management encourages private investment, with a view to achieving a participation rate of 50% by 2016. To this end, the economic and fiscal incentive instruments put in place include:

- FODEP¹⁹, established in 1992 and managed by the ANPE;
- The enhanced banking credit facility(FOCRED) covering 50% of the investment in pollution control, repayable over a 10-year period, with a 3-year grace period;
- FODEC (Industrial Competitiveness Development Fund);
- A waste recovery investment fund which should become operational in 2014.

Contribution of the private sector

- Strategic and technical studies carried out by consulting firms and consultants.
- Collection and transportation of household waste under contracts with municipalities.
- Collection and processing of industrial waste: fully provided by the private sector and under the responsibility of manufacturers, subject to ANGED authorization (150 companies in 2009).
- Operation of controlled landfills: fully provided by the private sector, 5-year operating contracts.
- Development of sectors: total integration of the private sector, subject to ANGED authorization.

ANGEd pays special attention to the development of recycling, recovery and waste treatment channels. Several programmes are in place (eco-batteries, used oils, packaging, cells, used filters, used tires, green and organic waste, electronic waste, etc.). These channels are a major and yet undervalued asset which offers significant investment opportunities for both the public and private sectors. Investments in this area take different forms, starting by foreign direct investment (FDI) in the framework of public-private partnerships (PPPs) or public service concessions, and ending by more innovative measures based on carbon credits under the clean development mechanism (CDM)²⁰. A study is being conducted to integrate the informal sector.

These channels are a major and yet undervalued asset which offers significant investment opportunities for both the public and private sectors.

19 FODEP's support is granted by decision of the Ministry of the Environment, as a subsidy of up to 20% of the amount of pollution control investment and a 3-point interest rate bonus. 227 industrial projects were approved by the FODEP, in the amount of 9.8 million dinars (1999).

20 The Government has signed two contracts with the World Bank for the sale of 50% of certificates for reduction of emission that will be generated during the period 2007-2016 in the 10 controlled landfills in operation, with revenues estimated at 35 million Euros.

Active firms in the waste sector

The Tunisian Company of Lubricants (SOTULUB) is assigned by ANGEd to provide collection, storage and transportation of used lubricating oils within the framework of the "Eco-Zit" public program. It is currently the only company licensed in this field, with an experience of over 25 years. It employs 11 subcontractors distributed throughout the country. The company currently collects about 60% of the quantities available, about 15 000 tons /year.

SOTUPILE (Société Tunisienne des Piles or Tunisian cells company) has a recycling unit for used battery cells. It is supported by ANGEd for the establishment of a waste collection network (in schools and in large commercial areas) for waste recycling. SEGOR (subsidiary of SITA, SUEZ Group and the Tunisian SCET) has the only unit that processes the leachate²¹ of the 5 household waste technical burying centres. It operates according to the reverse osmosis technology.

Eco-Lef labelling process in Tunisia

The Eco-Lef label set up in 1997 relates to the collection and recovery of recyclable waste. This system being managed by ANGEd encourages individual collectors to collect used plastic or metal packaging in return for a remuneration fixed according to the collected amount and category of packaging. The items collected must be conveyed by the collectors to collection centres, called Eco-Lef points. The balance sheet at the end of 2009 shows the following performances :

- 310 Eco-Lef points created, of which 79% managed by individuals;
- 231 companies founded by higher education graduates, with support from the State as part of a program to reduce unemployment of graduates;
- 109 recycling companies approved by ANGEd;
- 15,700 tons of collected plastics (2009) since the start of the system.

21 The opening of controlled landfills generates large volumes of leachate classified as hazardous waste.

A public-private partnership is needed to promote eco-innovation

Eco-innovation is an essential element for the development of green economy. The national innovation system is fully funded by the State. Spending on research and development is very limited; it would be around 1.1% in 2009 (source: World Bank) against 2.3% in France and 3.4% in Japan (2010). The 2013 Global Innovation Index ranks Tunisia 70th out of 142 countries (with 35.8 points/100 against 36.5 points in 2012). The national research system in Tunisia is very rich but faces lack of coordination and utilization of research findings. It includes the University (laboratories and research units), public research centres and institutes working on topics related to the green economy such as biotechnology, food technology, energy, water, sea and environment technology. There are also specialized institutes such as the Institute of Arid Regions in Medenine, the National Remote Sensing Centre and CITET. Technology parks are spread throughout the country and their mission is to develop highly-qualified managers that are able to manage innovative projects, promote scientific research and technological innovation in areas related to national priorities and the needs of the business world. There are also innovation support structures such as the Industry and Innovation Promotion Agency, the National Agency for Scientific Research Promotion and the National Institute of Standardisation and Industrial Property.

The development of private research is fundamental to improve business competitiveness. However, companies do not see innovation as a pillar for their strategy. Public measures to fund innovation and support for the creation of innovative companies are quite diverse but inadequate and highly dependent of international cooperation. They support research laboratories and companies as part of research-development and upgrading programmes. The programme to support the research and innovation system (PASRI) funded by the European Union and managed by the National Agency for the Promotion of Scientific Research (ANPRS), launched in 2014 a training program that may promote collaboration and technology transfer between research institutions and companies.

Eco innovation is essential to be able to develop the green economy and The development of private research is fundamental to improve business competitiveness.

Main findings

Today, Tunisia considers that the green economy must develop in the context of a multi-dimensional integrated vision that takes into account its limited natural resources, potential in terms of sustainable job creation, industry competitiveness improvement and regional disparity reduction. The introduction in late 2013 of a green economy support office within the Ministry of Equipment and Environment should help accelerate transition to a green economy.

Initiatives have been implemented to promote the development of green industries and help to create jobs (organic farming, energy efficiency, sanitation, waste treatment). However, no comprehensive assessment of these jobs has been made to-date, hence the importance of establishing a nomenclature and a national map of green jobs.

Successful experiments show that regulatory instruments (laws, environmental standards and taxes), incentives (grants, loans, tax exemptions) and awareness programmes are essential to encourage the sustainable use of natural resources and investment in clean technologies. However, special attention should be given to the sustainability and evaluation of financing mechanisms such as FODEP. Incentives should be geared to SMEs and the informal sector.

The lessons learned from current experiences should be enhanced and strengthened within the framework of the national strategy for green economy under preparation. For example, recycling and recovery of solid waste constitute an important market which is still largely unexploited (e.g. the potential of the sector of electrical and electronic waste is estimated at over 75 000 tons/year). In other areas such as wastewater treatment and renewable energy, efforts need to be sustained in order to develop these sectors in a context that would encourage participation of the private sector, particularly by facilitating access to funding and technology.

Despite business environment upgrading efforts, most companies are not fully aware of the need for and benefits of integrating environmental and social values in their business model. The country needs a more innovative and competitive industrial policy that incorporates the principles of sustainable development and contributes to the improvement of:

- Industrial zone eco-design capabilities
- The replication of CITET pilot actions and of scientific research findings
- Industry-University-Structures research synergies and partnerships
- The development of sectors: renewable energy, energy efficiency, water saving, waste recycling and recovery, wastewater, etc. ...
- The development of public-private partnerships (PPP)
- Support capacities of industrial enterprises for environmentally sustainable management and SER

Integration of the three dimensions of sustainable development in the various sectors remains insufficient (e.g. industrial strategy, tourist strategy), and requires better institutional coordination, capacity building in terms of planning, monitoring and evaluation by improving the availability of reliable and consistent environmental data and effective integration of the social dimension. A study on the institutional framework for sustainable development is underway.

In conclusion, it is to be noted that transitioning to a green economy is dependent on the adoption of reforms in a number of areas such as industrial policy, fiscal policy, education, technology transition, public awareness and continued efforts in terms of business support, financing mechanisms development and Public Private Partnership for the creation of green industries and innovation. Such an approach, to be truly effective, must rely on all socio-economic actors (Government, companies, citizens, interest groups and local authorities). In this context, it is important to strengthen dialogue, communication, dissemination of information and the provision of green education.

Some specific recommendations

- Finalizing and adopting the National Strategy for a green economy by including measurable targets, especially in terms of job creation, industrial and regional development, innovation and education;
- Developing environmental statistics and implementing an integrated information system on the green economy involving all stakeholders in order to improve understanding of the challenges and opportunities of the green economy and following up strategy implementation;
- Updating the assessment of the cost of environmental degradation and developing environmental economic approaches through a natural capital accounting system. Tunisia, with the support of MedStat, instituted mechanisms for water, tourism, agriculture and energy, but needs capacity building for better control of the methodology;
- Adapting regulations to the development of green strategic sectors;
- Making sure that the new investment code and PPP Act under preparation promote green investment;
- Enforcing the polluter pays principle by strengthening environmental control and introducing a green tax;
- Enhancing communication and social dialogue around environmental challenges and green economy opportunities;
- Diversifying and facilitating access to financial instruments and encouraging the creation of specific funds for research and innovation;
- Instituting research and innovation policies that take into account regional specificities and promote coordination and technology transfer among actors;
- Progressively introducing resource pricing that reflects actual cost and scarcity;
- Pursuing the promotion of Corporate Social Responsibility and encouraging companies to develop environmental accounting and reporting;
- Integrating concepts related to the green economy in national economic activity classification, the latter being the basis for the collection of key economic statistics.
- Integrating the green economy in national education systems

Acronyms

ANGed	National Agency for Waste Management
ANME	National Agency for Energy Management
ANPE	National Agency of Environmental Protection
CSP	Concentration Solar Power (Solaire thermique à concentration)
DGAB	Directorate-General for Organic Farming
FNME	National Fund for Energy Management
FODEC	Industrial Competitiveness Development Fund
FODEP	Industrial Pollution Control Fund
GES	Greenhouse gases
IFDD	Francophone Institute for Sustainable Development
MEDD	Ministry of Environment and Sustainable Development
MteCO ₂	Million tons CO ₂ equivalent
ONAS	National Sanitation Office
OSS	Observatory of the Sahara and Sahel
OTEDD	Tunisian Observatory for Environment and Development
PEP	Country Environmental Profile
PV	Photovoltaic
SEDD	Secretary of State for Sustainable Development
TIC	Information Technology and Communication

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