

Industry and the green economy in North Africa: Challenges, practices and lessons learned





United Nations
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in North Africa:
Challenges, practices and lessons learned

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Abbreviations

ADEREE	Agence pour le développement des énergies renouvelable et de l'efficacité énergétique (Maroc)
AFEX	Arabic Future Energy Index
CNG	Compressed natural gas
ECA	Economic Commission for Africa
EEAA	Agence égyptienne des affaires environnementales
FCE	Forum des chefs d'entreprises
FNERC	Fonds National des Energies Renouvelables et Cogénération
FNME	Nanional Energy Management Fund
FTE	Energy Transition Fund
GDP	Gross domestic product
ISO	International Organization for Standardization
LPG	Liquefied petroleum gas
MASEN	Moroccan Agency for Solar Energy
MENA	Middle East and North Africa Region
RCREEE	Regional Centre for Renewable Energy and Energy Efficiency for the Middle East and North Africa
SIE	Société d'investissement énergétique (Maroc)
STEG	Société Tunisienne de l'Electricité et du Gaz
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
VAT	Value added tax



Foreword

The green economy is currently gaining prominence as an approach conducive to sustainable and inclusive economic growth. It has the ability to boost productivity and the efficient use of natural resources, while reducing pollution and emissions of greenhouse gases. Studies carried out in recent years at the international, regional and national levels also show that the ecological transition of the economy is a potentially labour-intensive sector which will stimulate the competitiveness of enterprises and, by that token, of the economy.

Many countries in the world, including in Africa, have already adopted green growth or green economy strategies, implemented appropriate policy instruments, undertaken sectoral reforms designed to support the development of strategic sectors and to set in place institutional, regulatory and financial frameworks and systems necessary for the transition to an inclusive green economy.

Unlike other subregions of Africa, North Africa has limited natural resources. Several countries are already in a situation of water stress and facing structural deficits in terms of food and energy security. Added to which, the subregion is one of the world's areas most vulnerable to climate change. Economic growth and social development policies have not brought the anticipated benefits, as unemployment and social and territorial disparities persist. While countries may have reduced absolute poverty, populations remain very vulnerable, in particular in rural areas, where about 70 per cent of the poor live.

Cognizant of the shortcomings of their development models, which have proved unable to balance economic priorities, environmental requirements and social aspirations, the countries of North Africa seem to be steadily moving towards a new path which is more inclusive and which takes into account their limited natural resources. To this end, they opted for a gradual learning process which will give them a better understanding of the challenges, opportunities, and also the implications in terms of reforms consequent upon such a transition, taking into account their respective situations (resources, institutional and human capacity) and their development priorities.

For a number of countries, the green economy is no longer a choice but a necessity dictated by their growing environmental degradation and depletion of natural resources, and also by the realities of climate change and its impact on food security, the energy transition, infrastructure and health.

Studies carried out in the subregion have highlighted the employment potential of certain strategic green industries and the appeal of these new jobs to young women and men. Social considerations should not, however, be confined to the issue of employment. Attention should also be given to other challenges, such as health, reduction of poverty and social inequality, and attending to the needs of rural populations, whose livelihoods are heavily dependent on natural resources.

While the State may have a fundamental role in promoting the green economy, by establishing a predictable global framework and conducting the reforms needed to stimulate investment and innovation, to rethink production and consumption models and to support capacity-building, the hoped-for

transformation cannot be achieved without the involvement of the industry sector. The contribution made by industry to gross domestic product (GDP) is currently well below its potential. The sector would therefore benefit from optimizing the use of natural capital to generate productivity gains, disseminate new goods and services, create more jobs, stand up to global competition and meet the demands of international markets.

The challenges of the energy transition and the need to optimize the management of land and water resources, to control pollution, to manage waste and to safeguard biodiversity and ecosystems require a change in the entire production system. Industries must take due account of, and control, the impact of their activities on the environment, land and consumers. They must espouse a new approach designed to ensure material savings, innovation and the development of new areas of competitiveness. Lastly, they must improve their social performance and contribute to the national effort in terms of job creation, regional development, and the reduction of poverty and inequality.

Public environmental upgrading programmes have been launched in most countries to promote sound environmental practices and enhance the competitiveness of industrial enterprises. These programmes are supported by a range of incentives and financial and technical measures to encourage the adoption of clean technology, efforts to obtain international certification or national recognition and the development of environmental expertise. These programmes, however, are largely inadequate and often dependent on international cooperation, with a consequent effect on their sustainability.

The present report gathers the views of industrialists on the issue of the green economy and reviews their understanding of the associated challenges and opportunities and the progress made in integrating environmental and social challenges into their strategies and activities. It also highlights the constraints and expectations of enterprises where public policy reforms are concerned.

The report was based on the results of a survey conducted by the Economic Commission for Africa (ECA) Subregional Office for North Africa of 200 enterprises operating in different sectors, in four countries of North Africa (Algeria, Egypt, Morocco and Tunisia). The data collected in the survey were supplemented by a desk study, interviews with some employer organizations and the findings of an expert meeting held in March 2015 in Rabat.

The report shows a growing willingness among enterprises to accept a sense of social responsibility. That said, however, only a few large enterprises have adopted charters for sustainable development, have an environmental management plan and publish annual reports. These enterprises are investing in research and development and setting up partnerships with international universities and laboratories. They are supporting local development initiatives in such areas as reforestation, free transport for schoolchildren, subsidies for associations, income-generating activities for rural women and projects in the areas of electrification, and access to clean water and education. For their part, small and medium-sized enterprises are facing financial constraints and lack the expertise to take full advantage of the opportunities afforded by the transition to the green economy.

Advances in the adoption and implementation of sustainable development practices include: the appointment of an official in charge of sustainable development within the enterprise; the development of technical processes to reduce the consumption of energy, water and raw materials; success in obtaining environmental certification and labels; the use of environmental assessments and energy audits; the conduct of staff awareness activities and in-service training on the enterprise's environmental policy; and also the conclusion of environmental performance contracts, even if these are still not widely used.

The enterprises surveyed cite, among the main environmental challenges that they face, the sound use of energy, the reduction and reuse of waste, the treatment and recycling of wastewater and the prevention of pollution. Sound water use and renewable energy development were deemed to be only medium-level priorities, because of the inadequate pricing of water (which does not encourage economy in its use) and the limited access to renewable energy technologies. The reduction of carbon dioxide emissions does not seem to be a priority, which demonstrates a poor understanding of climate risk.

According to the report, the environmental policy of enterprises is largely guided by their respect for regulations (international and national), their wish to reduce their energy and production costs, their desire to improve their image and their need to be able to compete internationally, in an increasingly globalized world market (noting in particular the requirements of European markets).

Besides regulations, the context of the specific industry, the growth of the market and public arrangements for technical and financial support all play an important role in promoting the green economy and creating a new landscape of environmentally innovative small and medium-sized enterprises. Most enterprises believe that the green economy will grow over the coming years because of the general outlook for the world market in technologies and green products. They draw attention, however, to the uncertainties related to the development of national markets, which are still not fully formed, and to the lack of government incentives to cover the additional costs related to the green economy. The growth in consumers' and customers' domestic demand is not sufficiently visible or significant to be taken into consideration. Among these constraints, attention may be drawn to the limited funding capacity, lack of expertise, poor access to technology, ineffective innovation systems and the diminutive scope of the domestic market. Although the survey did not gather information on the investments made by enterprises, it nevertheless highlighted the low level of private funding in the areas of research and development and training.

Companies generally link the idea of the green economy with its environmental and economic implications but pay little attention to social issues, including health, poverty reduction and local development.

We trust that the present publication will encourage further reforms designed to facilitate the transition to an inclusive green economy in North Africa and will feed into the next economic report on Africa. To be prepared by ECA, this report will focus on the theme "Greening industrialization in Africa".



1. Introduction

1.1 Framework for the study

The International Conference on Sustainable Development, held in June 2012, and the discussions on the 2030 Agenda for Sustainable Development have demonstrated the limits of the current development model. This model has failed to take sufficient account of the interdependence of economic, social and environmental factors, since it is essentially characterized by:

- Excessive use of environmental goods and services, with consequent impacts on the environment and the balance of ecosystems;
- Limited attention to the social dimension and to equality, with insufficient job creation and the exacerbation of social inequalities and poverty;
- Low resilience to external shocks, which undermines food and energy security and increases vulnerability to climate change.

The International Conference on Sustainable Development placed the goal of sustainable development at the very heart of policy development and stressed the need for integrated solutions in terms of policies, actions and means of implementation. In this context, the green economy was identified as a means of supporting sustainable development, reducing poverty and social exclusion. It has been defined by the United Nations Environment Programme (UNEP) as “one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities”.

The green economy forms part of a process aimed at establishing a new growth trajectory that is sustainable and socially inclusive, based on preservation of the environment and the efficient long-term management of natural resources. The success of such a process, which needs to be long-term, will depend on the efforts of all stakeholders (public, private and civil society).

While State intervention may be indispensable for channelling the investment and innovation needed for the development of a green economy which is competitive, sustainable and labour-intensive, private-sector stakeholders, including those from industry, also play a key role in this process. They must tackle the task of transforming their production and consumption patterns to optimize the use of natural resources, reduce pollution and greenhouse gas emissions, and enhance energy and food security – all challenges facing the countries of North Africa.

The present report, which covers four countries (Algeria, Egypt, Morocco and Tunisia), is a contribution to the debate on the green economy in North Africa, at a time when the national sustainable development strategies (Morocco, Tunisia and Egypt) and growth plans (Algeria) are being updated to face the

many challenges of sustainable growth, environmental governance, energy transition, job creation, industrial integration and the reduction of social and regional disparities.

At the outset, the report presents the green economy in the different national contexts by reviewing the various national approaches and the progress made in certain strategic sectors. Then, based on a survey of enterprises from different sectors, it goes on to consider, first, their perception of environmental issues, their views on the green economy and the opportunities which it offers; second, their policies and environmental and social practices; and, third, the constraints and expectations. The report concludes by presenting a number of policy priorities, including the definition of an integrated strategic framework for a green economy and measures to adapt industrial policy, to improve the regulatory framework, to strengthen support systems for businesses, to boost investments in research and development, to create green sectors in universities and, lastly, to launch an information, education and communication programme on the opportunities offered by the green economy, including job prospects for young women and men.

1.2 Methodology and limitations

To gain an insight into the way the green economy is perceived by enterprises and their associated experience, needs and expectations, the report is based on a questionnaire that covers four main areas:

- a. Understanding how the green economy is perceived by enterprises;
- b. Analysing policies and practices developed by enterprises to promote the green economy;
- c. Analysing the level of investments made by enterprises companies in connection with the green economy;
- d. Reviewing the constraints and expectations of enterprises relating to public policies and incentives to promote implementation of the green economy.

The questionnaire was sent to 200 enterprises operating in various public and private economic sectors in the four countries surveyed (Algeria, Egypt, Morocco and Tunisia). Only 40 per cent of the enterprises responded (these tended to be large concerns¹ and a few small and medium-sized enterprises which are leaders in sustainable practices), averaging some 20 per country. The size and representativeness of the responding sample (80 companies) and the fact that some responses (especially those relating to investments) were incomplete or insufficiently documented,² limited the scope of the analysis. To remedy this shortcoming, additional research³ and interviews were conducted with certain employer organizations (the Algerian business leaders' forum – FCE, the World Trade Centre Algiers, the Egyptian Industrial Federation), to provide further insights and to confirm certain trends. In its turn, the meeting of experts organized by the Subregional Office for North Africa in March 2015 helped to identify good practices of enterprises, to confirm their expectations and to draw useful lessons.

1 For the most part, the questionnaires were completed by the senior managers of enterprises, those in charge of environment and quality, or directors of research and development.

2 The open questions did not generate much interest.

3 Websites of enterprises (most of which – barring those of a few large businesses – are not updated), and various reports and studies.



2. Regional context: key development challenges

2.1 Principal social and economic characteristics of the four countries

The four countries (Algeria, Egypt, Morocco and Tunisia) are home to over 150 million people. Egypt is the most populous, with over 83 million inhabitants, and Tunisia the least, with 11 million inhabitants. Algeria and Morocco lie in-between, with 39.93 million and 33.49 million inhabitants, respectively. Levels of national wealth are quite uneven from country to country, as shown in table 1.

The countries' economic performance largely depends on the exploitation of their natural capital (agriculture, phosphates, mineral resources, fisheries, hydrocarbons). This capital is being steadily depleted and its added value remains well below its potential, in particular because of the relatively slow modernization of agriculture and industry. In addition, the limited diversification of the national economies and their high dependence on international food and energy markets render the countries particularly vulnerable to external shocks and hamper the achievement of a balanced and sustained growth over the long term.

Agriculture is one of the basic pillars of the economies of these countries. It therefore has considerable social importance, constituting the main source of employment in rural areas. At the same time, the agribusiness subsector is still underdeveloped. In general, industry is unevenly developed across the four countries. It has a very large share of the economy in Algeria – accounting for some 50 per cent of GDP – made up mainly by the oil and gas sectors. Elsewhere, it is small and medium-sized enterprises in the processing sector which predominate, constituting as much as 40 per cent of GDP in Egypt. The industrial sector is bedevilled by a lack of diversification and competitiveness; it does not innovate enough, creates insufficient jobs, contributes little to inland development (concentrating on coastal areas) and faces stiff global competition and the demands of international markets. This sector is a heavy consumer of natural resources and it generates significant sources of pollution.

Table 1: Main social and economic characteristics of Algeria, Egypt, Morocco and Tunisia

	Morocco	Algeria	Tunisia	Egypt
Population (in millions)a	33.49	39.93	11.02	83.39
GDP/inhabitant in United States dollars at current valuesb	3 099	5 264	4 264	3 261
Human Development Index, 2014c	0.617	0.717	0.721	0.682
Life expectancy at birth in 2012d	71	71	75	71
Poverty rate	6.2% (2011, Central Planning Office)	5% (2008, National Statistics Office)	15,5%(2010, National Statistics Institute)	26% (2012, Central Agency for Public Mobilization and Statistics)
Unemployment rate 2013e	9.2%	9.8%	15.9%	13.4%
Share of agriculture in GDP (in %)	14.6	9.7	8.7	14.5
Share of industry in GDP (in %)	29.6	48.5	29.4	39.2
Share of services in GDP (in %)	55.8	42.2	61.9	46.3

Source: Economic and social conditions in North Africa, ECA, 2014. Human Development Report 2014, World Bank, 2012, 2013.

(a) World Bank, 2014.

(b) World Bank, 2013.

(c) UNDP, 2014. Human Development Report.

(d) World Bank, 2012.

(e) ECA, 2014. Economic and Social Conditions in North Africa.

In terms of human development, the four countries, Tunisia, Algeria, Egypt and Morocco, are ranked 90th, 93rd, 110th and 129th, respectively, out of 187 countries, with human development levels considered high for Tunisia and Algeria and moderate for Egypt and Morocco. Youth unemployment is high, in particular in Tunisia, where it was reassessed at 16 per cent in 2013. The poverty level has declined in Morocco and Algeria, but rural poverty and income inequalities remain high. The very costly food and energy subsidies applied by these countries generally do not benefit the poorest populations, encouraging wasteful consumption and limiting productive and social investment; reforms are under way gradually to reduce subsidies and to ensure that they are better targeted.

2.2 Key environmental issues across the subregion

Among the countries studied, three are under water stress conditions (with a water availability lower than 1,000 m³ per capita per year), in particular Algeria and Tunisia, and, to a lesser extent, Morocco. Desertification affects over 80 per cent of land in the region, which has relatively limited forest resources. In Morocco and Tunisia, vegetation covers 11.5 per cent and 6.6 per cent, respectively, of the total area of the country, and forested areas are marginal (0.1 per cent in Egypt). The pollution caused by heavy urbanization and the concentration of economic activities on the coast is growing (traffic congestion and inadequate waste and sewage processing infrastructure, in particular for industries). Sewage processing facilities are particularly scarce in rural areas.

Overfishing is reported (Morocco, Tunisia) and a decline in energy resources (Algeria, Egypt and Tunisia). The energy mix is dominated by fossil fuels, accounting for over 90 per cent, while all the countries have a significant renewable energy potential. To ensure their energy security in the context of grow-

ing demand (6–8 per cent per year), the countries have undertaken to diversify their energy sources and to enhance the efficiency of electricity use. In most countries (Algeria, Egypt, Morocco), greenhouse gas emissions have significantly increased, although the overall level of emissions remains low in international terms. This increase is attributable mainly to the energy, industry and transport sectors.

All these problems are further exacerbated by the region's acute vulnerability to climate change and natural disasters. Forecasts indicate a warming of about 1°C by the year 2020 and disrupted rainfall patterns, with a downward trend in the range of 5–10 per cent. By 2050, temperatures could rise by 3°C and precipitation decrease by between 10 and 30 per cent. The impacts of climate change and increasingly frequent natural disasters are already evident: water resources are shrinking, desertification and land degradation are spreading, agricultural productivity is declining and infrastructure is deteriorating. These adverse effects are particularly severe for rural economies and the livelihoods of the poor, who depend heavily on climate-sensitive resources. Many coastal cities (Egypt, Morocco and Tunisia) are highly exposed to the risks of coastal and inland flooding, and coastal erosion.

Table 2: Main environmental indicators

Main environmental indicators	Morocco	Algeria	Tunisia	Egypt
Potential renewable freshwater resources in m ³ /inhabitant/yr ^a	878	297	423	1 057
Freshwater offtake as a percentage of total renewable resources ^b	43.5%	48.9%	61.7%	96.6%
Fossil fuel supply rate	93.6%	99.9%	85.3%	96.5%
Forest area as a percentage of the total area, 2011	11.5%	0.6%	6.6%	0.1%
Annual changes in forest area over the period 1990–2010	0.9%	0.35%	5.88%	2.98%
Protected areas as a percentage of total area, 2013	1.5%	6.2%	1.3%	6.1%
Percentage of the population living on degraded land, 2010	39.1%	28.8%	36.7%	25.3%
CO ₂ emissions in tons per inhabitant ^c	1.6	3.3	2.5	2.6
Household waste recycling rated	8%	7%	4%	10–15%

Source: Aquastat, FAO, 2013, FAO, 2011, Human Development Report, UNDP, 2014, Key World Energy Statistics, IEA, 2014.

(a) FAO, Aquastat, 2013.

(b) UNDP, 2014. Human Development Report.

(c) World Bank, 2010.

(d) SWEEP-Net reports.



3. State of the green economy

3.1 Visions, policies and strategic approaches

The countries of North Africa are gradually shifting to a development path designed to reconfigure their current economic growth model to meet the major challenges of resource scarcity, energy transition, adaptation to climate change, job creation for young people, industrial integration and the reduction of social and regional inequalities.

Morocco and Tunisia have developed new sustainable development strategies. Where Morocco is concerned, its strategy priorities are the green economy and climate change control for the period 2015–2020. The green economy is also at the heart of Tunisia's sustainable development strategy for 2014–2020. Tunisia is currently preparing a green economy strategy for 2016–2036. Egypt's macroeconomic strategy for 2015–2019 aims to cut the unemployment rate to below 10 per cent and to raise the growth rate to 6 per cent by 2019; it is counting on an increase in public investment, in particular in the areas of infrastructure, traditional and renewable energy, education (6 per cent of GDP) and research and development (1 per cent of GDP). Algeria, through its new five-year growth plan for the period 2015–2019, considered the green economy as a cornerstone of development and technological progress. Climate plans and sectoral strategies for climate change adaptation are being implemented in all four countries.

Box 1: Morocco's progress in countering climate change and promoting the energy transition

Morocco is the first Arab and second African country to submit its Intended Nationally Determined Contribution to the process of reducing greenhouse gas emissions, pursuant to the new international climate agreement. In the process, the greenhouse gas emissions target has been set at 13 per cent for 2030, assuming a constant scenario (2010), and could be as high as 32 per cent depending on international financial support. In recognition of its commitment, the country was selected to host the twenty-second climate summit in 2016. Morocco continues to improve its performance in the campaign to counter climate change, notably through its efforts in the area of energy transition. It is now one of the world's top 10 countries in terms of progress, lying ninth out of 61 countries, according to the Climate Change Performance Indicator 2015. Egypt is in 24th position, followed by Algeria, in 39th. Morocco has also set up a climate change competence centre (2015), which aims to develop national expertise on adaptation to climate change and mitigation of greenhouse gas emissions and to promote research and knowledge management in this area. This centre will also serve as the regional platform for strengthening South-South cooperation.

Morocco and Tunisia are continuing their efforts to improve their systems for gathering and disseminating information related to sustainable development. Morocco has just published its fourth national report on sustainable development indicators (2014) and Tunisia is working on a report on sustainable development indicators⁴ in the context of the implementation of its national sustainable development strategy. The lack of data, however, in particular relating to the territories of the four countries

4 The most recent reports date back to 2009–2010.

under consideration, remains an impediment to the preparation of comprehensive environmental assessments and the incorporation of environmental issues in public and sector-specific policies.

Initiatives to promote employment and entrepreneurship in green businesses have been launched in the four countries, with support from a number of donors, including the United Nations Development Programme (UNDP), the German Agency for International Cooperation (GIZ), the European Union, the United Nations Industrial Development Organization (UNIDO), the Organization for Economic Cooperation and Development (OECD), the International Labour Organization (ILO), the World Bank and others, with a view to reducing youth unemployment, in particular for young graduates. These initiatives offer training in new green jobs and support for the creation of innovative projects and green businesses through a mix of microfinance and technical supervision.

Tunisia has set a short-term goal of including green jobs in its new national employment strategy for 2014–2017. It also aims to include environmental jobs in its new system for the classification of occupations, currently under development. The sectors that have contributed most to the creation of green jobs are water management, waste management, agriculture and services; significant potential is also offered by renewable energy and construction (ILO, national green jobs assessment reports).

An exercise carried out by Morocco to map green job opportunities⁵ identifies four sectors with high job-creation potential: solid waste management, energy efficiency, renewable energy and water management and sanitation. A green economy study carried out by Egypt in collaboration with UNEP⁶ highlights the existing opportunities in the areas of water, agriculture, energy and waste. Algeria and Egypt are also banking on education and training in green jobs to stimulate employment: specialized courses are being introduced in universities, in such fields as renewable energy, energy efficiency, water management and climate.

Current skill levels are not commensurate with the challenges posed by the green economy and the needs of enterprises.

The many analyses, studies and experiments carried out to date show the complexity of the concept of the green economy, primarily due to its multidimensional nature and the wide range of approaches followed by developed countries, in accordance with their national priorities and characteristics. In all countries, however, the green economy is seen as a vehicle for economic growth and diversification, job creation, industrial integration and regional development.

All four countries under consideration have introduced reforms in environmental governance and reoriented their sectoral policies, in particular in the strategic domains of energy, waste management, water and sanitation, agriculture, aquaculture and industry. These reforms are supported with the establishment of specialized agencies, promulgation of new environmental and sectoral regulations, preparation of innovative financing instruments (dedicated funds, grants, environmental taxation schemes, public-private partnerships) and creation of research and training institutes. Greater efforts are still needed to ensure the implementation of environmental regulations,⁷ to raise awareness among stakeholders, to mobilize support (through incentives, efficient funding systems, advisory services, training and skills development), and to revitalize moribund national innovation systems (ham-

5 Studies carried out by the Department of Environment with UNDP support as part of the “Yes Green” project.

6 UNEP, Egyptian Environmental Affairs Agency, Ministry of Environment. Green Economy Scoping Study. March 2015.

7 In Morocco, an environmental police force has been deployed to some of the country’s most polluted regions.

pered by the lack of funding,⁸ poor coordination of efforts and insufficient collaboration between universities, research centres and enterprises). Attention is drawn to the absence of effective incentives to encourage the private sector to invest in research and development.

In summary, significant steps forward have been made, even if, in some countries, tangible signs of progress are less evident (Algeria) and, in others, efforts have been constrained by continuing crises (Egypt and Tunisia). Sector-specific initiatives which have already been launched must, however, be pursued as part of a comprehensive and integrated approach designed to place the green economy at the very heart of development policies. Such an approach should be accompanied by a change in governance systems, the transformation of investment models through the use of innovative financing mechanisms, regulatory and fiscal instruments designed to steer existing financial resources towards green investments, better policy integration and, last but not least, the consolidation of efforts at national and local levels.

3.2 Reviewing industrial policy: an opportunity to transition to the green economy

The economic systems of the four countries under consideration have not developed very far. They are mainly based on the export of raw materials (phosphates, agricultural produce, minerals, oil) and low-tech products. There is insufficient value addition by the manufacturing sector, which also has little impact on employment, despite the adoption of ambitious policies. Today, over 90 per cent of businesses are medium-sized, small and very small enterprises, conducting a limited range of activities, lacking competitiveness and relying mainly on unskilled labour. They face constraints in access to finance, technology and skills, preventing them from entering the value chain and measuring up to global competition.

On the environmental front, industrial activities are a major source of pollution. Added to which, they are often the largest consumers of energy. In Algeria, for example, the cost of environmental damage caused by the industrial sector is equivalent to some 1.8–2.0 per cent of GDP.⁹ In Morocco, the country's industries annually produce 1.6 million tons of waste, 290,000 tons of which are hazardous waste (Ministry of Environment) and usually end up in dumps, watercourses or coastal waters, without any prior treatment or control; only 23 per cent of the country's industrial waste is recycled (2010) and 73 per cent is dumped in landfills. In Tunisia, studies carried out by the Ministry of Infrastructure and Environment, indicate that, of a total of some 5,000 industrial units, only 661 use waste treatment processes; nearly 75 per cent of all industrial wastes are dumped on open land. In Egypt, industrial wastewater is the main source of pollution of the Nile and the country's annual industrial waste output is estimated at some 6 million tons.

Despite the many national industrial pollution abatement programmes and incentive schemes set up to help industries reduce their environmental footprint and, at the same time, enhance their competitiveness, the results remain inadequate both in terms of their environmental performance and in reducing costs and boosting productivity. Recent studies also point out the negative health impacts of industrial pollution, which is responsible for the emergence of many chronic diseases. To promote sound environmental governance of industrial activities, efforts must be made to improve understanding of industrial pollution, to foster a sense of corporate social responsibility among industries,

⁸ For example, Egypt allocates a mere 0.2 per cent of its GDP to research and development (UNEP, Egyptian Environmental Affairs Agency, Ministry of Environment. Green Economy Scoping Study. March 2015).

⁹ Data from Ministry of Land-Use Planning and Environment.

to create technical and financial systems to support innovation and investments in clean technology and to strengthen controls.

In Morocco, the industrial sector has become relatively diversified in recent years thanks to the rapid growth of new sectors (automotive, aerospace, electronics and offshoring). But the share in GDP of added value from manufacturing has declined since the mid-1980s and is now fluctuating at around 14 per cent, as compared to 17.3 per cent in 2003. In addition, the dynamism of the private sector, whose investments represent over 25 per cent of GDP, has been of only marginal benefit to the country's industries. These have struggled to create new jobs (adding only some 75,000 jobs over the last decade). The manufacturing sector is suffering from a dominance of labour-intensive, low-skilled occupations. Exports, undiversified and low-tech, depend heavily on a limited number of markets. The propensity of manufacturing firms for innovation remains extremely low. Fewer than 10 per cent of such firms have International Organization for Standardization (ISO) certification. Under the new accelerated growth plan for its industry, for the period 2014–2020, Morocco aims to boost the sector's GDP contribution to 23 per cent (as compared to 14 per cent at present), to diversify the range of industries and to create 500,000 jobs, in particular for young people. The plan makes provision for the revamping of the country's investment charter and public guarantee scheme for small and medium-sized enterprises and the creation of a 20 billion dirham industrial investment fund. By supporting the development of green industries and innovation, bringing the green economy into this strategy could help to diversify production, develop effective value chains, reduce the trade deficit and create jobs. Synergies should be sought with existing industry-specific (in energy, agriculture, waste management, water management, transport, etc.) and cross-cutting strategies (in employment, training and innovation).

In Algeria, the industrial sector is still struggling to find its place in a rentier economy which is strongly oriented towards trade and import. Non-hydrocarbon industries¹⁰ accounted for less than 5 per cent of GDP in 2013 and 6 per cent of jobs. Hydrocarbon exports, mostly unprocessed, constitute 97 per cent of total exports and the trade balance is in deficit because domestic manufacturing covers only 20 per cent of the country's needs. The diversification of economic activities with higher added value is now a priority of the Government, which has set itself the aim of gradually and substantially reducing its economic dependence on foreign markets and achieving a growth rate of 7 per cent by 2019.¹¹ To this end, a new industrial policy has just been adopted, designed to promote more competitive strategic sectors, based on the country's comparative advantages. It is underpinned by such measures as restructuring public enterprises, acquiring international knowhow with regard to the positioning of the various components of the industry, ensuring better quality, supporting small and medium-sized enterprises, encouraging innovation and training young people. A system of incentives will be provided by upgrading the public procurement code, facilitating domestic and foreign investment, creating specialized industrial hubs and improving the business climate. The sectors identified for these purposes include the chemical and petrochemical industry, energy, water treatment, environmental technology, food processing, transport and construction.

Tunisia's industrial strategy for the period 2008–2016 aims to double the country's exports, triple its industrial investments and raise the share of technology in its industrial exports from 25 to 50 per cent. By 2011, the contribution of manufacturing to GDP had risen to over 18 per cent and manufactured goods accounted for 75 per cent of total exports, as compared to 35 per cent in 1980. The industrial sector has also benefited from a national upgrading programme. Despite these achievements, there is still a need for the industrial sector to contribute to unemployment reduction targets and to regional development, the principal challenges facing the country. To date, the industrialization model followed in Tunisia has favoured the development of a relatively diversified industrial base and the con-

10 Hydrocarbons account for 97 per cent of exports, 37 per cent of GDP and 60 per cent of tax revenues.

11 New five-year growth plan for the period 2015–2019.

centration of skilled labour at the coast, at the expense of inland and southern regions of the country that have less efficient industrial infrastructure. The current industrial strategy ignores environmental issues. A new investment code and a public-private partnership act are under preparation.

The Egyptian economy is relatively diversified, between agriculture (14 per cent of GDP), industry (37 per cent of GDP, 16 per cent of which is accounted for by manufacturing), and services (49 per cent),¹² including tourism (11.5 per cent of GDP in 2010). Exports are dominated by primary goods with low technological content, including petroleum products. Political instability has had a negative impact on growth (2.2 per cent in 2012–2014, as compared to 5.9 per cent on average before the revolution). Since 2013, the country has become a net importer of hydrocarbons. In addition, it is now experiencing an energy deficit (due to the decline in production of oil and natural gas) that is affecting the industrial sector. The Government has embarked on major reforms consisting, among other measures, in large infrastructure projects (such as expansion of the Suez Canal), the promotion of renewable energy, improving the business climate and promoting domestic and foreign private investment. The Government has set itself the target of raising the contribution of manufacturing to 25 per cent of GDP and creating at least 3 million jobs by 2020.

It is evident that industrial policy plays a key role in determining the success of the transition to the green economy. It encourages the development of green sectors and industries with high added value and high productivity, conducive to the creation of sustainable jobs and upgrading of living conditions. The process under way in most countries to refashion their industrial policies provides an opportunity to align their industrial policy with the sectoral policies and to incorporate environmental and social issues, support scientific research and innovation, develop effective partnerships that prioritize small and medium-sized enterprises and, lastly, meet the demands of international markets in a globalizing marketplace. The primary challenge that countries will face is the need to reshape their industrial policy and mobilize the capital required to build modern, competitive and inclusive industries.

3.3 Key strategic sectors of the green economy

In studies conducted by the four countries, the following priority sectors have been identified with regard, on the one hand, to their potential for job creation and value addition, and, on the other, their response to the main challenges facing the region, namely: renewable energy, efficiency energy, water management and sanitation, sustainable transport, waste management, ecotourism, sustainable agriculture and fishing, and green industries.

Strategies and programmes are already being implemented to support the development of some of these sectors. These programmes are very promising in terms of job creation and the development of innovative and competitive businesses, industrial integration, technological progress and capacity-building. The sectors that have made most progress are described below, namely: energy efficiency, renewable energy, waste management and organic farming. Aquaculture is still in its early stages, with the adoption of strategies and ambitious goals.

12 World Bank figures from 2011.

3.3.1 Energy efficiency

Today, energy efficiency is one of the foremost goals in national energy policies. Programmes are being implemented in the major energy-consuming sectors, such as transport, industry, construction and agriculture.

According to the Arabic Future Energy Index (AFEX),¹³ Tunisia is ranked first among the Arab countries in terms of energy efficiency, followed by Morocco (in third place), Algeria (in seventh place) and Egypt (in ninth place). Egypt, Morocco and Tunisia have embarked on a gradual reform of their energy subsidies. It is worth noting that, in 2013, energy subsidies constituted some 22 per cent of the total State expenditure of Egypt, or 6.3 per cent of its GDP.

Implementation of the energy efficiency policy of Tunisia helped to reduce energy use by 26 per cent over the period 1990–2010, in particular in the industrial and transport sectors, where a system of energy audits and programme contracts has been set in place for the control of energy consumption. The national energy efficiency programme, the Energy Management Act and the Energy Transition Fund (FTE) – formerly the National Energy Management Fund (FNME) – provide the main levers supporting investments in this area. Significant energy savings have been achieved primarily thanks to the promotion of solar water heating in the residential, industrial and services sectors, the promotion of low-energy light bulbs, the use of electricity cogeneration techniques and the certification of refrigerators. These efforts will be consolidated under the new energy management strategy developed in 2014 and its action plan for the period 2014–2020.

In Morocco, the national energy efficiency programme launched in 2011 aims to reduce the consumption of primary energy by 12 per cent in 2020 and 15 per cent in 2030. An energy efficiency act was adopted in 2011 and an energy efficiency fund is being established. Measures to optimize energy consumption are being applied in all key sectors (construction, public lighting, industry, transport and agriculture). Notable among these measures are the national programme to promote low-energy light bulbs, the establishment of an incentive-based pricing system (offering a 20 per cent discount for a 20 per cent reduction in consumption), the propagation of energy audits in industry, promotion of the use of solar water heaters, with targets of 1.7 million m² of solar water heaters by 2020 and some 3 million m² by 2030. An energy efficiency strategy for the period 2014–2030 is currently being finalized. Its objectives are to cut carbon dioxide emissions by 320 million tons, reduce national energy consumption by 25 per cent¹⁴ and energy costs by 15 per cent, while creating 520,000 direct and indirect jobs in five key sectors (agriculture and fishing, construction, industry, public lighting and transport).

In Algeria, energy consumption has reached 0,357 tons of oil equivalent per \$1,000 of GDP (2012), twice the rate of the OECD countries. Measures to boost energy efficiency are focused in particular on promoting the use of clean fuels – liquefied petroleum gas (LPG), compressed natural gas (CNG) and unleaded petrol – and solar water heaters, the widespread use of energy-saving lights; thermal insulation of buildings, solar-powered air-conditioning systems, and the promotion of energy efficiency in the construction sector (the most energy-guzzling, accounting for more than 42 per cent of total consumption) and in industry, in particular cement manufacture, which accounts for nearly 60 per cent of the total industrial energy consumption. The new national energy efficiency programme for

13 AFEX was developed by the Regional Centre for Renewable Energy and Energy Efficiency the Middle East and North Africa (RCREEE). It provides a quantitative and qualitative analysis of the market for renewable energy and energy efficiency. The Arab countries are ranked by more than 20 indicators, covering key aspects of the energy market, including political conditions, institutional and technical capacities, strategies, social and economic data and investments.

14 The country's industry sector aims to cut energy consumption by 2.5 per cent per year until 2030 (source: National energy efficiency strategy for the period 2014–2030, interim report, March 2014).

the period 2015–2030, which aims to achieve a 9 per cent reduction in energy consumption, should encourage the emergence, over time, of a sustainable energy efficiency market in Algeria. The programme envisages the thermal insulation of 100,000 homes per year, the distribution of 10 million low-energy light bulbs and the conversion of 1.3 million vehicles to LPG in 2030. It will be supported by the National Energy Management Fund, and its implementation will be facilitated by the appropriate revision of the legal framework and the adoption of incentives for investors. The manufacture of energy-saving lamps (for both domestic and public lighting), thermal insulators, solar water heaters and LPG kits represents niches in which Algeria can develop an vibrant local industry. To that end, a private company has already started producing low-energy light bulbs, but its production remains insufficient.

Lastly, Egypt is lagging behind somewhat in the task of setting in place a regulatory framework and financial mechanisms for the promotion of energy efficiency. Its aim is to reduce energy consumption by 2020 by 20 per cent. An energy efficiency office was established in 2009 and a national energy efficiency action plan adopted for the period 2012–2015. Current efforts are focused on reducing the energy consumption of public buildings and public lighting and, to that end, a project is to be launched to refit 3.89 million street lights with energy-saving lamps. Solar water heaters are being manufactured locally at relatively affordable prices. These are used in public offices, schools, hotels and health centres, primarily those in remote and impoverished areas.

Controlling consumption and improving energy efficiency in industry are major priorities, both for protection of the environment and to boost the competitiveness of the sector. The Government can enhance energy efficiency in industries through a variety of measures, such as the provision of financial incentives, conducting awareness campaigns for relevant stakeholders, improving the energy services market, promoting the adoption of energy management systems such as, in particular, ISO 50001, and facilitating access to innovative solutions. Special measures should be developed to support small and medium-sized enterprises.

3.3.2 Renewable energy

Where the development of renewable energy is concerned, the four countries have initiated policies and programmes to increase the use of photovoltaic systems, concentrated solar power and wind power, with a view to reducing dependence on fossil fuels, cutting greenhouse gas emissions and creating new jobs.

The AFEX 2015 renewable energy report ranks Morocco in first place among the 17 Arab countries members of the Regional Centre for Renewable Energy and Energy Efficiency for the Middle East and North Africa (RCREEE), followed by Egypt (in fourth place), Tunisia (in sixth place) and Algeria (in seventh place). Egypt currently has the largest installed capacity in renewable energy but the current crisis in the country has hindered projects in this area.

Morocco's energy strategy is supported by public-private partnerships. It has set itself a target of increasing its renewable energy capacity (solar and wind) to 28 per cent of total electricity capacity, or 4,000 MW, by 2020. Under the Noor solar energy plan (2,000 MW), the country aims to develop a competitive solar industry and to facilitate bilateral industrial partnerships, including with foreign technical and financial partners, to achieve a level of over 35 per cent of industrial integration. Major steps taken in support of this aim include the establishment of an energy development fund, subsidies in the form of goods and equipment, the designation of special renewable energy zones and the promotion

of training programmes and research and development.¹⁵ Various institutions have been created to implement the strategy (the national renewable energy and energy efficiency agency – ADEREE, the Moroccan Agency for Solar Energy – MASEN, the Research Institute for Solar Energy and New Energies – IRESEN, and the energy investment fund – SIE), but these have yet to provide coordinated support for small and medium-sized enterprises in the sector, to enable these enterprises to join the value chain of solar technology applications and wind turbines. It is estimated that Moroccan renewable energy businesses have the potential to create more than 23 000 new jobs (2020).

Its significant energy potential notwithstanding, Egypt has become dependent on oil imports because of the structural rise in domestic consumption and the stagnation of investment in the sector. The energy strategy adopted in 2008 aims to increase the share of renewable energy by 2020 to 20 per cent of the total electricity generated, 12 per cent of that consisting of wind power (7,200 MW). The country's hydropower capacity is almost exhausted. It is planned to build a number of solar power plants (4,300 MW) over the next three years. A variety of reforms have been launched, to encourage domestic and foreign private investment in renewable energy, including the phasing out of energy subsidies granted in July 2014, the gradual and targeted increase in electricity rates, the adoption of the Renewable Energy Act (December 2014) and the introduction of State-guaranteed feed-in tariffs. An electricity act is in the process of adoption; this will enable the private sector to sell electricity directly to large industrial concerns. Other incentives including subsidies, the reduction on import duty for wind power equipment, land-use incentives (the issuance of long-term leases at a rate of 2 per cent of the value of the energy produced), and agreements to buy the electricity produced, are also in the process of adoption and implementation. The renewable energy fund established in 2011 is not yet operational.

Since 2000, Tunisia has gradually become a net importer of oil, with domestic production falling from 120,000 barrels per day in the 1980s to about 60,000 in 2013, according to the United States Energy Information Administration. It now has a structural energy deficit, amounting to 3.8 million tons of oil equivalent in 2014, as compared to 0.5 million tons of oil equivalent in 2010; this deficit is due to the stagnation of domestic resources (which have declined by 6 per cent) and a 2 per cent increase in primary energy demand. The country imports 40 per cent of its primary energy needs and its electricity mix consists of nearly 97 per cent natural gas. Tunisia's solar energy plan for the period 2014–2030 aims to increase the share of renewable energies in the electricity mix to 30 per cent by 2030,¹⁶ compared to nearly 4 per cent today, in other words, boosting its renewable energy capacity (not including hydraulic energy) to 3,815 MW in 2030, as compared to its installed capacity at the end of 2014 of some 275 MW, mainly from wind power (245 MW) and photovoltaic systems (28 MW).¹⁷ Solar water heater technology is well established and commercially viable in the country today. The country's total area of water heating solar panels grew from 30,000 m² in 1990 to more than 634,000 m² in 2012. A new law on electricity generation from renewable sources was adopted in May 2015, and provides for the preparation of a renewable energy-based national electricity generation plan, the extension of independent power producer status to local authorities, public companies and private companies, with the right to sell any surplus to the State electricity and gas corporation (STEG), authorization of the production of electricity for export and the creation of commissions and boards responsible for regulating the sector. Other reforms are under way with the aim of creating an energy transition fund (revision of the FNME), the adoption of a new investment code and a law on public-private partnerships.

Algeria has just overhauled its national renewable energy development programme, for the period 2015–2030, with the upward adjustment of its overall objective, with the aim of increasing the share

15 A research platform is being set up by MASEN in Ouarzazate and a green energy park by IRESEN in Ben Guerir.

16 Of this, 15 per cent is wind power, 10 per cent solar photovoltaic and 5 per cent CSP.

17 Source: National Agency for Energy Conservation (ANME).

of renewable energy in the national electricity generation mix to nearly 37 per cent, or 25 GW. Implementation of the programme, which is based essentially on solar energy production,¹⁸ will require an investment of some \$60 billion. The programme's first phase focused on pilot projects and the testing of the various technologies on the market, and it was then revised in the light of the results. The new programme focuses on the large-scale development of photovoltaic and wind power (given the lower costs of these two sources), the harnessing of biomass chains (waste recovery), cogeneration and geothermal energy, and the introduction from 2021 of concentrated solar power, which remains a high-cost option. Implementation of the programme is supported by the National Renewable Energy and Cogeneration Fund (FNERC), created from a 1 per cent levy on oil revenues. New regulations have set in place a preferential pricing incentive scheme,¹⁹ guaranteed for a period of 20 years, for photovoltaic installations and wind power. The sectors not covered by the guaranteed purchase prices will be financed by FNERC to a level of 50–90 per cent of the investment cost, depending on the technology and sector. Incentives are provided for businesses, such as rebates in import duties and value added tax (VAT) for components, raw materials and semi-finished products used in the manufacture of renewable energy and energy efficiency equipment.

Lastly, all four countries have made concerted efforts to improve their institutional and regulatory frameworks, to develop innovative financing schemes and to forge technology partnerships for the development of renewable energy systems. At the same time, however, the processes of industrial integration and moving up the sectoral value chain will require an increased effort in research and development and the training of local skills. In addition, special attention should be paid to the integration – and, therefore, upgrading – of local small and medium-sized enterprises in major national projects. These challenges could be tackled through enhanced cross-border cooperation in the renewable energy sector.

3.3.3 *Solid waste*

Solid waste in all four countries is constantly increasing because of economic and municipal activities and of changes in consumption and supply patterns (imports of manufactured goods), with damaging effects for the environment and public health. The industrialization of economies and access to consumer goods are accompanied by a change in waste characteristics marked by an abundance of organic waste (around 60 per cent) and plastic packaging. Waste management strategies and programmes have not achieved expected results. Although notable progress has been made in household waste collection in urban areas and in controlled landfills, there are significant shortfalls in disposing of other types of waste, especially industrial waste, selective waste sorting, recycling and waste recovery. Few efforts have been made in the areas of waste prevention and reduction.

This sector still faces a number of constraints, including gaps in regulation, a lack of funding, weak coordination and collaboration between stakeholders (public institutions, specialized agencies, local communities, private operators and informal stakeholders) limited technological innovation, inadequate local governance and a lack of public awareness. However, Governments have renewed their interest in this sector, which provides plenty of opportunities for investment, job creation and poverty reduction. New guidelines aim to increase waste recovery, share management costs and integrate the informal sector into a more efficient system of shared responsibility between different actors.

18 Solar power plants are already under construction.

19 For projects with a capacity between 1 and 5 MW, electricity produced by photovoltaic systems is charged at a base rate of 16 Algerian dinars (0.14 euros) per kWh for the first five years, with a different preferential rate applied to those with a capacity exceeding 5 MW. After an initial period of five years, rates are indexed to performance.

In Morocco, waste recovery has become a priority. A waste recovery programme was launched in 2014. Efforts revolve around the creation of new industries (plastic waste, paper and cardboard waste, waste oil, electrical and electronic waste and used tires). The aim is to recover 20 per cent of waste by 2020 (compared with 10 per cent in 2013) and create 150,000 jobs in five years. The focus is on integrating informal actors and improving institutional and legal mechanisms and financing schemes to boost private investment. The programme also provides support for large local authorities to establish waste storing, sorting and recovery centres instead of landfills.

*Achieved by revising intervention methods through enhanced cooperation between organizations
Effective management of the waste sector is and stakeholders
and by integrating the informal sector, promoting innovative waste recovery technologies and training human resources at all levels of the value chain.*

Box 2: Environmental tax for developing the plastic recycling industry in Morocco

The environmental tax on plastics (introduced by the 2013 Finance Act) came into effect in 2015. Revenue from this tax are allocated to the National Environment Fund to develop and restructure the plastics recycling industry.

- Aim: finance the emergence and development of the plastic recycling sector, and integrate the informal sector;
- Revenue (estimation): 157 million dirhams per year earmarked for the National Environment Fund;
- Implementation: a strategic committee composed of all stakeholders prioritizes projects, organizes their financing and manages their implementation.

In Tunisia, the waste sector has sharply deteriorated in recent years with an increase in illegal dumping after the revolution. Around 50 per cent of collected waste is disposed of in landfills and recovery structures for solid household waste are still weak. Only 5 per cent of collected waste is recycled and 0.5 per cent is composted, although 65 per cent of organic waste is composted. The existing waste management model, which utilizes landfills, is no longer viable. Efforts must be directed towards the development of a policy for waste reduction and improved recovery (sorting and recycling).

The National Waste Management Strategy (2007-2016) encourages private investment and the recycling and recovery of material and energy, with the objective of achieving a private sector participation rate of 50 per cent by 2016. Despite significant efforts to improve the management of household and similar waste, progress has remained limited given that only 5 per cent of solid waste is composted and 4 per cent is recycled (German Agency for International Cooperation, 2014). The private sector is reluctant to invest in the waste sector, particularly given its institutional, regulatory and financial deficiencies. Private operators are usually involved in the collection and transportation of household and similar waste (contracts with local authorities) and in the operation of transfer stations and landfills (contracts with the National Waste Management Agency). Public development programmes currently being implemented (eco-batteries, used oils, packaging, used tires and filters, green and organic waste, etc.) include the private sector, and an investment fund for waste recovery should soon be operational. Improving the waste management process and promoting its various industries require a review of partnership and financing arrangements by integrating the informal sector that comprises many stakeholders at different levels, a revision of the regulatory framework and local taxation, improving

offence-monitoring systems, promoting scientific research, building the capacity of stakeholders at all levels of the value chain, and greater citizen involvement.

Box 3: Eco-Lef programme: a public-private partnership for the collection and recovery of used plastic packaging in Tunisia

Aim:

- Encourage private sector involvement and the establishment of small enterprises for the collection and recycling/recovery of plastics that represent 11 per cent of total waste;
- Promote partnerships with regional and local authorities for better management of pollution caused by plastic waste.

Methods and funding: the industry is financed by tax revenues from imported raw material and plastics and from taxes paid to the National Waste Management Agency for the collection and recovery of waste by producers and distributors of packaged goods and plastic bags. The Agency works in partnership with private collectors, which send waste packaging to sorting and compaction centres (Eco-Lef sites) before transporting it to private recycling/recovery units. Collectors are paid according to the weight of collected waste, at a price that guarantees them sustainable jobs.

Key results (2012):

- 350 enterprises authorized by the Environment Ministry to collect, transport and recycle plastics;
- 18,000 jobs created;
- A network of around 370 Eco-Lef sites used by the Agency and private organizations, allowing for the collection of 9,500 tons of plastic for recycling in 2012, compared to 16,000 tons in 2008;
- Partnerships with 110 companies that recycle plastic waste;
- Today, the majority of companies that package water, carbonated drinks, juices and milk products have adopted the Eco-Lef system.

Algeria has set an ambitious short-term goal to achieve a waste recycling level of 40 per cent in 2016 compared to a current level of 5-6 per cent. Consequently, several measures have been put in place, including providing subsidies, reforming the regulatory framework, strengthening public awareness and finalizing agreements with businesses. The establishment of a waste heat treatment plant, a plastic processing plant and a composting plant should begin in 2015. Waste recycling could generate an added value of 3.5 billion Algerian dinars a year.

In Egypt, the implementation of the National Strategy for Integrated Municipal Solid Waste Management has not achieved expected results. Average collection rates vary between 40 per cent and 75 per cent in urban areas, while collection systems remain limited in rural areas. Formal sector recycling only represents 2.5 per cent of total collected waste and 8 per cent of composting. Waste management is facing significant constraints, including a lack of vision and clear policy, a shortage of financial resources allocated to the sector because of other economic and social priorities, the limitations of institutional and regulatory frameworks, a lack of expertise and the absence of effective mechanisms to strengthen private sector participation.

3.3.4 Aquaculture: development prospects

The role of aquaculture in fish production is insignificant in all four countries. Its development faces a number of constraints, including limited access to land, weak scientific research and mastery of aquaculture production technology, the high cost of investment and stiff international competition. The current trend, however, is to promote this sub-sector, which has the potential to generate added value and jobs.

In Algeria, the new Aquapêche 2020 plan for the period 2015-2020 aims to double national fish production, with a target of 240,000 tonnes of fish per year, by developing aquaculture industries representing nearly 70 per cent of total production. The plan aims to increase public and private investment, strengthen regulatory frameworks and adapt training to the needs of industry professionals. It will promote support for young enterprises and strengthen fishing training systems.

In 2011, Morocco established the National Agency for the Development of Aquaculture. The country has also launched several plans for aquaculture development. Its short-term goal (2015-2017) is to produce 200,000 tons of fish per year, compared to less than 500 tons per year in 2012, and create 4,000 jobs. The Agency is working to reform the legal framework to give greater visibility to investors and is identifying aquaculture zones along the coast. It has also established partnerships with actors in the sector at the national and international levels.

In Tunisia, the Aquaculture Development Strategy 2007-2016 aims to produce 15,000 tons by 2016, or 10 per cent of total fish production. In 2013, production was 10,000 tons. To promote private investment and stimulate production, incentives have been introduced such as providing investment premiums, financing project feasibility studies and implementing tax and customs exemptions on the import of inputs.

Egypt has the largest aquaculture industry in Africa, which currently provides 65 per cent of the country's fish products, mainly from small and medium private farms. The sector is also a major provider of jobs (approximately 100,000 employees of whom 50 per cent are young people). Producers face a number of constraints, however, including access to land, water, quality inputs, markets and export opportunities; high production costs; and difficulties obtaining licences for establishing aquaculture farms. The sector also lacks effective food control systems.

4. Industry and the green economy: key survey results

Industry plays an important role in sustainable development policy, through its contribution to economic growth, job creation, environmental sustainability and innovation and by improving living conditions for local communities. The information in this chapter is drawn from enterprises' responses to a survey distributed in the four countries covered by this study and from the results of an expert group meeting.

In general, large enterprises make environmental commitments an integral part of their management systems, while small and medium enterprises are mostly content to enforce environmental standards. They complain about a lack of information, financial resources and necessary expertise and of limited access to public support systems.

4.1 Key environmental challenges faced by enterprises

Enterprises face several environmental issues, two of which appear systematically in all the surveyed units: the rational use of energy and waste management (reduction, recycling and recover). Wastewater treatment and pollution prevention are also concerns and priorities for all enterprises. Another priority is the rational use of water resources that shows disparities between countries (weak in Egypt and strong in Tunisia) and the promotion of renewable energy. Reducing carbon dioxide emissions and protecting biodiversity are the lowest priorities for subregional enterprises. Table 3 sets out the key challenges faced by enterprises and their priority levels.

Table 3: Priority level assigned by enterprises to key environmental challenges

Environmental challenges faced by enterprises	Assigned priority level	Justification
Rational use of energy (energy efficiency)	Very high	To control energy costs
Waste reduction and recovery	Very high	To reduce costs and increase profit
Wastewater treatment and recycling	High	Regulatory compliance
Pollution prevention (water, soil, air)	High	Regulatory compliance
Rational water use	Medium	Low costs do not encourage efficiency
Renewable energy development	Medium	Limited access to technological solutions
Reducing carbon dioxide emissions	Low	Poor understanding of climate risks
Biodiversity protection	Very low	Not directly linked to enterprises' activities

It is clear that energy cost is considered an obstacle, hence the need to reduce energy bills. Suitable waste management, including recovery, entails certain economic gain. Wastewater treatment and pollution prevention are becoming priorities in Algeria, Morocco and Tunisia, but less so in Egypt. Although progress is still limited, it is the result of regulation and the implementation of national environmental upgrading and industrial pollution prevention programmes.

In contrast, water prices are relatively low in the region, meaning that limiting water consumption is not a priority for enterprises although the subregion suffers from a water deficit. Weak knowledge of and limited access to renewable energy technologies and the absence of legal incentives are hindering enterprises' ability to develop such industries.

Reducing carbon dioxide emissions and protecting biodiversity, two purely environmental notions, do not interest enterprises. They do not see the connection between their activities and those components that they tend to describe as extraneous to their interests.

4.2 Enterprises' perspectives on the green economy

Given the current status of the green economy in the region and the world, only a quarter of surveyed enterprises believe that the green economy is a reality but almost half think it will grow in the coming years because of the global market outlook on green products and technologies. They emphasize the uncertainties related to the development of national markets, which are still immature, and the lack of government incentives to tackle extra costs.

- ***Green economy as a multi-opportunity alternative, primarily environmental and economic***

Almost all surveyed enterprises have knowledge of the main pillars of the green economy, its environmental and economic benefits and, to a lesser extent, its social benefits.

For enterprises, the green economy is an opportunity to reduce the environmental impact caused by their activities and to develop cleaner and more efficient production patterns in terms of natural resource use. To a lesser but still elevated degree, the green economy offers enterprises the opportunity to innovate and develop new technologies and products, to access new markets and to improve their positions in accessed markets.

At the social level, creating sustainable jobs and reducing social inequalities have been assigned medium to low priority. Enterprises in Algeria, Morocco and Tunisia have however strongly stressed their desire to improve working conditions and build the capacity of their staff. This aspiration is less apparent in Egypt.

Enterprises, especially small and medium enterprises, are not generally very involved in social projects. Only a few large enterprises have the means to fund projects and local development activities (tree planting and reforestation, free transport for schoolchildren, subsidies to associations, income-generating activities for rural women, electrification projects, access to drinking water and education).

Table 4: Levels of opportunities offered by the green economy to enterprises

Opportunities offered by the green economy	Opportunity level
Ensuring cleaner production that reduces the environmental impact of an enterprise's activities	Very high
Developing innovative technologies and products	High ++
Reducing production costs resulting in economic gain	High ++
Providing access to new markets	High +
Offering a marketing position that gives enterprises a competitive advantage	High +
Creating/diversifying industries	Medium
Creating sustainable jobs	Medium
Reducing social inequalities (except in Egypt)	Weak

4.3 Policies and practices developed by enterprises

4.3.1 Policies

- **Enterprises are gradually, but slowly, implementing green economy policies**

In general, there has been some progress in the voluntary commitment of enterprises to corporate social responsibility, with the most marked progress in Morocco and Tunisia where employer organizations (the General Confederation of Moroccan Enterprises and more recently CONECT) have developed their own corporate social responsibility labels and assist other enterprises in this process.

Over half of surveyed enterprises said that they had a policy to promote the green economy; enterprises in Morocco seem most involved in this dynamic. Enterprises' environmental policy is mainly dictated in all four countries under consideration by the following:

- Complying with an industry's environmental regulations;
- Reducing energy and production costs;
- Strengthening the enterprise's brand image;
- Taking into account international competition in globalized trade (requirements of European markets in particular).

In economic terms, improving company productivity and competitiveness is of great concern, especially in Algeria and Morocco. However, investment in research and development and innovation is not a priority in corporate strategies; only 15 per cent of Algerian enterprises clearly show their involvement in this area.

According to enterprises, both social pressure and consumer domestic demand are not sufficiently visible or significant to be considered. Small domestic markets are an obstacle to the development of the green economy.

Regarding governance, enterprises consider that staff awareness of environmental issues must be the core component of any green economy policy. Establishing dialogue mechanisms with communities and information and awareness-raising programmes for customers on environmental process do not appear to be priorities, except in Algeria to some extent.

Over half of the surveyed enterprises have indicated their desire to undertake actions, over the next two years, for more efficient water and energy use, waste recovery, renewable energy integration and the implementation of research programmes.

4.3.2 Practices

- **Environmental management is increasingly proving to be an essential tool for business performance improvement**

Many enterprises have announced their involvement in environmental management development processes within their production units. Regulatory monitoring in the field of environment, environmental diagnosis and corporate social responsibility is well-developed in Algeria, Morocco and Tunisia, and to a lesser extent in Egypt. Environmental performance contracts, carbon audits and eco-labelling, although sometimes used in Algeria, Egypt and Tunisia, are still uncommon tools in all four countries.

With regard to environmental certification, ISO 9001 (quality management) is the most common certification in all four countries. ISO 14001 (environmental management) is gradually gaining ground in Morocco and Tunisia, while ISO 26000 (social responsibility), which seems fairly widespread in Algeria, is absent elsewhere. ISO 50001 (energy management) is not at all present in the surveyed enterprises.

In Morocco, advances in environmental certification are the result of recent binding texts and national environment policies, including a framework law, the National Charter for Environment and Sustainable Development and a sustainable development strategy. As at April 2015, 69 companies had obtained the corporate social responsibility label from the General Confederation of Moroccan Enterprises. The number of ISO 14001 certified enterprises, although limited, is growing. This progress reflects the requirements of environmental upgrading and of export markets.

In Algeria, only 16 enterprises have obtained ISO 26000 certification under the aegis of the Algerian Institute for Standardization and only seven enterprises have received the ISO 14001 certification. This is directly related to a lack of awareness of environmental management standards and limited information about government upgrade and incentive programmes. Many business owners are unaware that the State pays 50 per cent of the costs incurred by ISO 14001 certification. The National Centre for Cleaner Technologies Production encourages industrial enterprises to use environmental management tools.

In Tunisia, the most common approach to assessing enterprises' environmental performance is environmental certification. Although there are around 5,500 industrial enterprises, only 200 are ISO 14001 certified. The authorities have implemented an environmental upgrade programme to award 500 in-

dustrial enterprises ISO 2014 certification in 2014. To achieve this, additional efforts were needed to provide information to small and medium enterprises and raise their awareness.

In Egypt, environmental certification is primarily awarded to farms. Many farmers are attempting to reduce the effects of their activities on the environment. These initiatives are voluntary, and are undertaken by industries, territories and individuals.

Enterprises that have not developed environmental management systems, especially small and medium enterprises, evoke the limitations imposed by certain factors, such as high costs, the complexity of the process and a lack of specialized resources.

- ***Research and development and training in areas related to the green economy remain limited***

Most enterprises have stressed the importance of research and training in the establishment of the green economy. In-house training programmes are poorly developed and not always relevant to staff daily practices, and often have a low impact on environmental management performance. Only a few large enterprises have training centres. In partnership with national and international training organizations, they have developed programmes in areas such as energy efficiency and waste management. Investment in research and development, when it exists, is driven by large companies that have research centres that develop, in partnership with businesses, universities and foreign laboratories, technical solutions to reduce their consumption of energy, water and raw materials, and create new greener products. The general trend is to acquire ready-to-use technologies rather than to focus on internal innovation and adaptation based on experience and enterprise specificities. Few small and medium enterprises are involved in public research or training programmes.

- ***Examples of good practices***

Analysis of good practices followed by some enterprises shows improvements in returns on investments as a result of eco-innovation in production processes and improvements in the quality of end products. Production costs have decreased significantly owing to a reduction in raw materials used and in enterprises' energy bills. The increasingly common practice of energy audits identifies high consumption sources in enterprises and inconsistencies that lead to excessive energy consumption. The reuse of treated water and the development of recycling and waste recovery industries are also part of enterprises' business concerns. Table 5 sets out some examples of good practices developed by large enterprises.

Table 5: Examples of good practices

Enterprise	Initiatives
<p>SASACE- Société algérienne des sacs enduits (Tipaza, Algeria) Plastics industry: polypropylene packaging production Capacity: 45 million bags/year Turnover: 490 million Algerian dinars 200 employees</p>	<p>Leading manufacturer of bags woven using oxo-biodegradable polypropylene. An environmentally friendly manufacturing method: thermal bonding, solvent inks substituted by water inks for printing on bags. Establishment of a bio air conditioning system that contributes to the improvement of working conditions and industrial performance and reduces energy consumption. Industrial property acquired through a research and development partnership with world-class laboratories. SASACE has invested 14 million dinars in research and development. ISO 14001 certified management system since 2012 and its products have carried the TEDJ national conformity mark from the Algerian Institute of Standardization since 2010. It has joined the MENA programme for the promotion of corporate social responsibility, piloted by the Organization of the French Standardization System (AFNOR). It has benefited from support and training offered by national and international experts. The Ministry of Industry, small and medium enterprises and investment promotion agencies have covered 80 per cent of costs for the support and management of ISO 14001. It raises awareness among employees of its environmental policy and invests in the continuous improvement of staff skills (training/coaching). It has formed a research team with a polytechnic to guide the production of plastics towards environmentally friendly alternatives that do not harm human health.</p>
<p>Les eaux minérales d'Oulmès (Casablanca, Morocco) Water collection, production and bottling 3 production sites 2,000 employees</p>	<p>It is launching a new bottle, Sidi Ali, made from 30 per cent vegetable matter, fully recyclable, and made partly from sugar cane residue. It has adopted an environmental charter and light packaging with an environmentally friendly design. Management systems: ISO 9001 (2008), food safety ISO 22000 (2005), environmental management ISO 14001 (2004) and OHSAS 18001 is being obtained. It conducts social dialogue and involves staff in social activities. It offers professional training. Social activities: protecting Oulmes forest and raising awareness among local farmers on the dangers of pesticides; planting trees around water sources; providing free transport for school children in the region; and conducting activities in the field of education.</p>
<p>Office Cherifien des Phosphates-Morocco World leader in the production/exportation of raw phosphates, phosphoric acid and phosphate fertilizers</p>	<p>It supports the establishment of small and medium local enterprises. It finances and implements structural projects (roads, infrastructure, new towns, schools, universities). It awards grants and subsidies to charitable and civic associations. It favours foreign companies that involve Moroccan companies in tenders. Its new procurement policy is guided a rule to promote small enterprises, intended to benefit local bidders for any tender under 1 million dirhams. In 2010, it launched, in collaboration with the Green Morocco Plan, a programme for all stakeholders on the rational use of fertilizers and better costs, based on an improved understanding of soils and their needs through a «national fertility card». This program aims to boost the local fertilizer market. It is a research and development entity that works on water, energy and environmental issues. It works with national and international research institutes.</p>
<p>Managem, Morocco International mining industry group Production and processing of base metals, precious metals and cobalt</p>	<p>It plans to invest 35 billion dirhams in 2014 to promote sustainable local development Corporate social responsibility label from the General Confederation of Moroccan Enterprises for two subsidiaries, namely Compagnie Minière des Guemassa and Compagnie de Tifnout Tighanimine. It promotes income-generating activities for rural women, supports education and electrification, and provides access to drinking water It has a research centre that employs international researchers.</p>
<p>Lafarge, Morocco Leader in the cement sector with over 40 per cent of the market share</p>	<p>Reduces carbon dioxide emissions / develops renewable energy sources (Tetouan wind farm: 32MW). 132,000 trees planted over 200 hectares, costing 22 million dirhams. Awarded the corporate social responsibility label by the General Confederation of Moroccan Enterprises.</p>

Enterprise	Initiatives
El Mazraa, subsidiary of Poulina Group Holding, Tunisia Agri-food: production, processing and marketing of poultry products 12,000 tons/year 1,200 employees	<i>70 per cent of its employees are women. It has implemented an environmental management system. It treats waste water in line with the NT 106.01 standard and treats organic waste by composting (recovery of sludge from waste water treatment plants). HACCP certification according to NT46.01 and NT46.06 standards (October 2004). ISO 9001 certification, version 2000 - INNORPI March 2006. Waste is recycled into a powder (animal protein) that is exported, mainly to Taiwan, Turkey and Viet Nam, to be turned into kibble for cats and dogs.</i>

4.4 Main constraints identified by enterprises

- **Weak financing capacities, access to new technologies and expertise are the main barriers to promoting the green economy**

Despite a clear desire of most enterprises to implement programmes and actions related to the green economy, so as to reduce their environmental impact and improve the efficiency natural resource use, they face many constraints.

The often difficult financial situation of enterprises, of which 80 per cent are very small, small and medium enterprises, and their low capacity to mobilize additional funding, limits their investments in support of the green economy. Access opportunities to special funds or specialized credit lines are either overlooked or are often considered burdensome and poorly adapted. Over 75 per cent of enterprises state that limited access to financing is the main obstacle to the emergence of the green economy.

Surveyed enterprises did not wish to disclose information on investment levels in areas related to the green economy. The absence of separate records for activities in these areas may partially explain this position, but weak green investment is definitely a prominent factor. Some large groups have estimated investments related to environmental upgrading and the green economy to be between 0 per cent and 10 per cent.

Enterprises also mention another constraint that poses major obstacles in various countries to the adaptation and implementation of new, less polluting processes that consume less natural resources and energy: the ability to access new technologies and integrate them into business processes. This double challenge, despite relatively satisfactory access to information, results in barriers in terms of technology transfer between developed countries and those of the region, and weak local expertise in identifying the best technical solutions and adapting them to the local context. Enterprises highlight a lack of collaboration with universities and research centres, as well as the weakness and inadequacy of national innovation systems with regard to the needs of industries. They advocate strengthening and adapting research and development initiatives and programmes, education and training to face the challenges of the green economy and meet the needs of industries. Current investments (public and private) in research and development are insufficient to support necessary innovation.

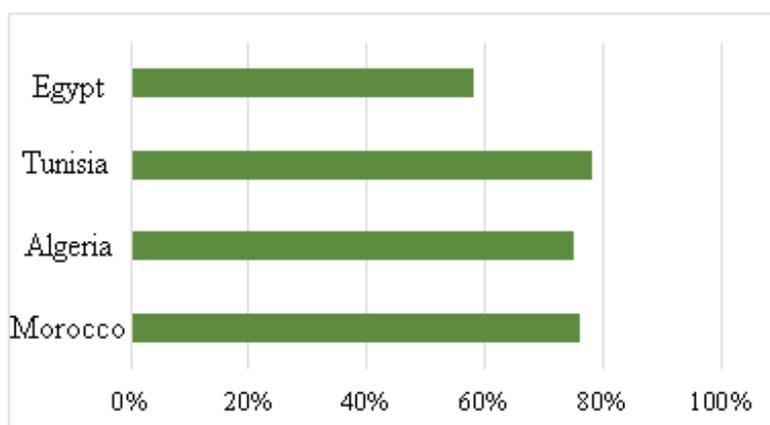
- **Dialogue and partnerships between the State and enterprises are improving on the basis of a win-win approach**

At this stage of its development, green economy promotion is dependent on the establishment of effective mechanisms for dialogue and consultation between the State and enterprises. This exchange must demonstrate to enterprises the benefits of committing to and investing in the green economy, and of jointly developing the necessary political, regulatory and financial frameworks. Dialogue mechanisms between the State and enterprises on this issue are currently almost non-existent. They are either ineffective or are only partially implemented. Where they exist, these mechanisms mainly involve only large companies.

- **Industrial enterprises do not benefit enough from the few incentives introduced by the authorities to support the green economy**

Although most countries have recently implemented upgrade programmes and technical and financial incentives to promote the green economy, very few enterprises have access to them. Over 70 per cent of respondents in the four countries said that they did not have access to such mechanisms. Several factors can explain this situation: a lack of information and the limited scale and sustainability of public support mechanisms that often depend on international cooperation and incentives that are inadequately adapted to enterprise capacities and specificities, especially those of small and medium enterprises.

Enterprises not benefiting from green economy initiatives



Companies that do benefit from these incentives are particularly interested by the following: subsidies, tax breaks, direct financial aid for investment and training, environmental certification support and general advice and support for undertaking studies and diagnostics.

4.5 Business expectations

Enterprises in the four countries under consideration have sufficient knowledge of the gaps that currently hinder the emergence of the green economy and have a relatively clear picture of the measures that should be implemented by the authorities. These measures, which are primarily strategic, regulatory, financial and technical, are summarized in table 6.

Table 6: Public policy priorities advocated by enterprises

Nature of measures	Public policy priority
Strategic	Asserting the role of the State and of political will
	Adopting a long-term strategic framework for the green economy
	Reorienting industrial policy by integrating green industries
Regulatory	Adapting environmental and sectoral regulatory frameworks and adopting environmental standards for ecological processes and products
	Strengthening environmental compliance monitoring
Financial, fiscal and tariff-based	Improving access to finance by creating a fund dedicated to the green economy and strengthening the contribution of the banking sector
	Establishing an appropriate environmental taxation system
	Reforming energy and water pricing
Technical	Strengthening and generalizing the environmental upgrading of enterprises
	Promoting and capitalizing on good business practices and encouraging the exchange of experience through the creation of exchange networks
Governance	Involving businesses in the development and evaluation of strategies, programmes and regulatory texts related to the green economy
	Launching an information, education and communication programme on the opportunities of the green economy and on public policy in this field

Consequently, a transition to the green economy is conditioned by the following:

A strategic and integrated vision. Enterprises consider it essential that authorities clearly state their political will in support of transitioning to the green economy. These statements must be underpinned by clear guidelines regarding government strategy and must be reflected in budget development processes. The foundations and principles of a national green economy strategy must be integrated into development policy and programmes for key sectors and actors. A monitoring system based on relevant indicators should accompany the implementation of this policy, so as to facilitate the implementation of necessary corrective measures.

Industrial policy must be aligned with the objectives of the strategy and should promote the development of priority green industries. To this end, it is essential to adopt a forward-thinking approach to industrial development that balances economic, social and environmental requirements by taking into account the progressive adjustment of supply to changing consumption patterns.

Incentive regulation, considered one of the main levers of the green economy. A regulatory framework adapted to green economy targets should frame the various methods of production in all development sectors to reduce their environmental impact and boost the green economy. Governments should have control and monitoring capacity to ensure the proper application of those regulations and sanction any violations, both in terms of pollutant emissions and overexploitation of certain environments and resources.

Multi-stakeholder funding. For enterprises, access to funding through a specific fund, for example, is necessary to promote green economy activities. Existing funding mechanisms should be sustained and oriented towards green technologies and the emergence of new professions in the field. The

banking sector is an important player in funding business development projects, but it is not currently sufficiently involved and does not provide tailored financing solutions.

Appropriate resource pricing. Introducing an appropriate environmental taxation system and revising the prices of certain strategic resources, such as water and energy, would encourage actors to limit waste and to engage in activities that are more environmentally friendly. Resource pricing should, however, take into account lower income classes, which would entail modulating energy and water prices.

Reinforced accompanying measures. Universalizing environmental upgrading and strengthening advisory services are considered by enterprises as necessary and indispensable conditions for the emergence and development of green practices. All actors currently involved in green economy programmes (sectoral departments, enterprises, local authorities, support structures and business support systems) need to strengthen their capabilities to perform adequately the tasks assigned to them, in accordance with accepted standards. It is therefore necessary to promote training, higher education and scientific research in the field of green economy and new related technologies, while promoting collaboration between universities, research centres and enterprises to adapt training and scientific research projects to the needs of industries and the private sector. Particular attention should be given to the creation of exchange networks to develop and improve the initiatives of leading enterprises in favour of small and medium enterprises, in particular.

Improved participatory governance. Transitioning to a green economy and altering related consumption and production patterns is accomplished by redefining natural resource governance methods and building new business models, as part of an integrated development approach involving all stakeholders. This will mainly entail participation by enterprises and local authorities in the development, implementation and evaluation of strategies, programmes and regulatory texts related to the green economy. This will be underpinned by the launch of an information, education and communication programme, which will also target consumers.



5. Conclusion

Algeria, Egypt, Morocco and Tunisia are facing multiple political, socioeconomic, environmental and governance challenges.

A marked desertification and degradation of fragile ecosystems (oases, forests) has decreased land productivity, and natural resource scarcity is jeopardizing long-term growth prospects, mainly because of water scarcity, overfishing and declining reserves of non-renewable energy resources. The energy mix in those four countries is still dominated by fossil fuels, with a marginal contribution from renewable energy. They are highly vulnerable to climate change and are facing increasing pollution levels caused by urbanization and the concentration of economic activities along the coast. There is also a lack of sewerage infrastructure, limited management of liquid waste and industrial waste and a limited recovery of solid waste.

In economic terms, these four countries have a structural cereal deficit; inadequate industrial productivity (low employment, added value and technological content); a predominance of exports of primary goods; extreme dependence on the global energy market; and a large informal sector. Enterprises, mostly small and medium enterprises, lack competitiveness and have limited access to funding, technology and expertise.

In social terms, food and energy subsidies promote over-consumption, worsen the budget deficit, limit social investment and cause uneven development within countries. Added to these are other challenges, including inadequate targeting of social protection systems, high unemployment among young people, insecure jobs in rural areas, extreme poverty and food insecurity, which particularly affect poor households.

Faced with such situations and mounting social pressures, these countries are now forced to establish new development models based on a new economic approach that respects environmental balances, anticipates changes on the international stage and can respond positively to population needs in terms of wealth creation and redistribution, employment and food and energy security.

Transitioning to the green economy could provide these four countries with opportunities. Several reasons justify the emergence of this new development method in these countries: great potential for energy saving and renewable energy production, a will to reduce the impact of development activities on the environment, preserving increasingly scarce natural resources and streamlining their use, adapting to the effects of climate change and the need to improve the socioeconomic conditions of populations, especially the most vulnerable.

The approaches of these four countries to the green economy are fundamentally similar in that they pursue the same objectives: support growth, create jobs, protect the environment, ensure energy transition, improve industrial integration and contribute to a more balanced regional development. These priorities are included in new development plans (Algeria) and sustainable development strat-

egies (Egypt, Morocco and Tunisia). These planning tools also integrate green economy issues. Tunisia is currently preparing a green economy strategy (2016-2036).

In this context, reforms have been expedited, especially in Morocco and Tunisia, to strengthen environmental policies, adapt and operationalize environmental and sectoral regulations (in connection with identified strategic industries, notably energy, water and waste management), and increase green investments through the creation of dedicated funds and innovative partnerships to boost innovation and promote training, especially for young people, in green jobs. In Egypt, the constraints of democratic transition and the basic needs of a large part of the population have extended the deadline for transitioning to the green economy. A passive industrial sector with little concern for the environment and an overlooked need for saving energy have so far limited the involvement of Algeria in the green economy.

These mainly sectoral initiatives, however, may not have enough impact to drive a real transformation if they are not part of a comprehensive, integrated and consistent planning approach, reflected in country budgeting processes. To ultimately measure the real impact of programmes in terms of green jobs, it will be necessary to establish a repository of green activities and jobs and ensure its integration into national account systems. Sustained efforts are still needed to strengthen investment and partnerships for research and development, improve understanding of skill sets needed in the short, medium and long term, and enhance dialogue and communication on the benefits of the green economy.

The survey of industrial sector enterprises has revealed a real awareness of the potential of the green economy. The experiences of some large companies (with ISO 9001, ISO 14001, ISO 26000, OHSAS 18001 certified) have demonstrated that ecological innovations could significantly increase profits through improved cost control and optimized resource use. However, small and medium enterprises, which make up the larger part of the industrial landscape, are facing significant internal bottlenecks (limited financing capacity and access to technology, weak expertise, small domestic markets and insufficient regulations) that inhibit their involvement. Moreover, public measures to support small and medium enterprises should be reviewed, adapted and expanded through win-win partnerships that encourage them to comply with environmental rules and regulations and invest in clean production technologies. Awareness-raising and support programmes for companies in the field of corporate social responsibility are currently insufficient and badly structured.

Box 4: Key findings and recommendations

- Understanding the green economy is a primarily environmental exercise (the need to comply with regulatory requirements and opportunities to benefit from government incentives in this area) with significant economic factors (costs/benefits). The positive experiences of some large enterprises, which have shown that improving resource efficiency has enormous potential to reduce production costs and gains in productivity and therefore improve competitiveness, should be followed and disseminated to encourage “reluctant” enterprises.
- The social aspect of the green economy is little understood by small and medium enterprises. This should not be limited to the issue of employment but should incorporate the challenges of reducing poverty and inequality, with particular focus on rural populations whose lives are dependent on natural resources, women and young people. In general, only large enterprises invest in local development and support to communities.
- Enterprise size and activity sector (pollutant or not, exporter or not) are determinants of corporate commitment to sustainable development. Small and medium enterprises face more constraints, especially financial and technical.
- Enterprises, especially small and medium enterprises, are a strategic link in the transition to the green economy. They can provide communities with solutions adapted to local issues. However, the industrial landscape of the region is characterized by a low presence of small and medium enterprises specializing in new green sectors. Specific upgrade and support programmes should be implemented for small and medium enterprises, which often do not have access to public support systems and government procurement programmes, including those provided by local authorities.
- Access to information on investments and sustainable business practices is limited since very few enterprises publish reports; their websites (if they exist) are not always updated and enterprises are generally reluctant to divulge such information.

Annex: Synthetic and comparative analysis of green economy issues, opportunities and practices in Algeria, Egypt, Morocco and Tunisia

Country	Key socioeconomic and environmental challenges	Opportunities and new directions	Strategic framework and key programmes and initiatives	Assessment of green economy promotion
Morocco	<ul style="list-style-type: none"> • High poverty rates • Limited and fragile natural capital (water, forests and soil) and strong desertification • Majority of industrial waste is untreated • Risk of natural resource degradation and harm to human health (waste water, waste, gas) • Unbalanced energy mix 	<ul style="list-style-type: none"> • Democratic transition • Significant potential for electrical and renewable energy • Significant impact on the environment and will to reduce it • Will to preserve natural resources • Adaptation to the effects of climate change • Need to improve the socioeconomic conditions of poor populations 	<ul style="list-style-type: none"> • National Charter for Environment and Sustainable Development • National Plan against Global Warming • Development of electric and renewable energy (Solar Plan, wind farms and institutional and legal frameworks) • National Sanitation Programme • National Programme for Solid Waste Management 	<ul style="list-style-type: none"> • Morocco is actively engaged in promoting green economy policy • This commitment is more or less equal between fields • Renewable energy is a national priority • Industrial pollution control and environmental upgrading of enterprises are the main future commitments
Algeria	<ul style="list-style-type: none"> • Industry does not comply with environmental requirements, which only large private groups take into account • Limited and fragile natural capital (water, forests and soil) and strong desertification • Risk of natural resource degradation and harm to human health (waste water, waste, gas) 	<ul style="list-style-type: none"> • Significant potential for energy efficiency and renewable energy • Significant impact on the environment and will to reduce it • Will to preserve natural resources • Adaptation to the effects of climate change • Need to improve the socioeconomic conditions of poor populations 	<ul style="list-style-type: none"> • National Strategy for Sustainable development • National Renewable Energy and Efficiency Plan • Energy management programme • Integrated national management programme for household and similar waste • National programme for waste water treatment • Programme for the development of a national quality system • National research programme • Support programme 	<ul style="list-style-type: none"> • Algeria has launched important national projects in the areas of waste management, wastewater treatment and the development of renewable energy • Implemented and research and development policy • Research and development by large industrial private groups • Significant challenges regarding industrial pollution control and the environmental upgrading of enterprises

Country	Key socioeconomic and environmental challenges	Opportunities and new directions	Strategic framework and key programmes and initiatives	Assessment of green economy promotion
Tunisia	<ul style="list-style-type: none"> • High unemployment rate • Significant regional imbalance • Limited and fragile natural capital (water, forests and soil) and strong desertification • Several areas affected by pollution, especially the coast • Risk of natural resource degradation and harm to human health (waste water, waste, gas) • Unbalanced energy mix 	<ul style="list-style-type: none"> • Democratic transition • Significant potential for electrical and renewable energy • Significant impact on the environment and will to reduce it • Will to preserve natural resources • Adaptation to the effects of climate change • Need to improve the socioeconomic conditions of poor populations 	<ul style="list-style-type: none"> • Green economy strategy under development • Programme for electric energy and the promotion of renewable energy (solar plan, financial incentives, thermal regulation) • Waste management and recovery programme • Environmental upgrading of enterprises programme • National programme for the treatment of waste water 	<ul style="list-style-type: none"> • Tunisia is promoting the green economy • Several projects have been launched in this field • Enterprises are seeking means to become gradually involved in the new dynamic • The democratic transition slowed momentum towards the green economy
Egypt	<ul style="list-style-type: none"> • Large population • Weak GDP per capita • High poverty and unemployment rates • Limited and fragile natural capital (water, forests and soil) and strong desertification • Risk of natural resource degradation and harm to human health (waste water, waste, gas) • Unbalanced energy mix 	<ul style="list-style-type: none"> • Significant potential for electrical and renewable energy • Significant impact on the environment and will to reduce it • Will to preserve natural resources • Adaptation to the effects of climate change • Need to improve the socioeconomic conditions of poor populations 	<ul style="list-style-type: none"> • Promoting renewable energy, especially wind and solar • Project to reduce industrial pollution, the Environmental Pollution Abatement Programme 	<ul style="list-style-type: none"> • Significant initiatives have been launched, especially for the promotion of renewable energy and industrial pollution reduction • Integrating the green economy principles within enterprises is the main challenge for the next period

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